

**Phoenix Program
of
The University of Arizona
College of Medicine**

LEVEL I -- Five Year Projection

"Our Stand: Medical School in Phoenix Vital"
– Arizona Republic, 4/8/05



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“Arizona has among the lowest number of working nurses and physicians per capita of all 50 states.” -“Meds and Eds”, March 2005 edition

Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING REGARDING THE EXPANSION OF MEDICAL EDUCATION AND RESEARCH IN PHOENIX

August 4, 2004

The Arizona Board of Regents

The University of Arizona

The Arizona State University

The doctrinal mandate of the Arizona Board of Regents—Article XI, Sections 1, 2, 5, and 10 of the Arizona Constitution—distinctly vests in ABOR the general conduct and supervision of Arizona's universities. The Arizona Constitution also vests in the Arizona Legislature the power to appropriate tax monies for the establishment and maintenance of Arizona's universities. Thus, ABOR's constitutional autonomy is ultimately defined by judicial decisions confirming its general powers and by the Arizona Legislature's authority over appropriations for the general support of higher educational endeavors.

With this Constitutional mandate, ABOR is responsible for advancing the design and direction of our universities as they move forward to address the needs of the people of Arizona. In this design, ABOR manages a three-university system that has emerged from the original single university campus of the University of Arizona and the subsequent growth and maturation of Arizona State University and Northern Arizona University. As demand for higher education and advanced research services has increased in Arizona the Arizona University System has evolved and its design updated.

The University of Arizona was established by the 13th Territorial Legislature in 1885 as Arizona's land-grant university, with the first class held in 1891. With this history, a developed infrastructure, and its status as Arizona's first research university, the U of A was considered by all to be the natural choice for the location of Arizona's College of Medicine. Arizona's first and only public college of medicine was created by ABOR in 1962 and opened in the fall of 1967. Since 1992 the U of A College of Medicine has been conducting clinical instruction for medical students in conjunction with the major hospitals in Maricopa County, where approximately 40% of the MD students receive their third and fourth-year clinical education today, operating out of leased offices and classrooms in Phoenix with clinical instruction in nine area hospitals.

Arizona State University's status was changed from college to university in 1958 and its first Ph.D. was authorized by ABOR in 1958. ASU's trajectory, from a "normal" college just four years prior to the creation of the U of A's college of medicine, to its present status as a "Research Extensive" Carnegie level university makes it imperative that it participate in and benefit from the expansion of medical education and research in Arizona.

Memorandum of Understanding (Continued)

The need for expanding and enhancing the design is acute and ABOR has undertaken a broad redesign effort with regard to the overall system. In addition, but on a much narrower basis the time has come to begin the efforts of expanding the system's capacity in biomedical education and research. This acute need derives from the fact that as the state has grown in population and complexity the Phoenix metropolitan area and all of its healthcare enterprises have been left without the benefit of a fully developed, public, research-grade, teaching medical school. The absence of a fully developed college of medicine in Phoenix disadvantages Phoenix and Arizona now and will adversely influence the quality of healthcare and the environment for continued development of Arizona's biotechnology industry.

The U of A's college of medicine has a solid reputation and a proven record of obtaining medical research grants. The synergistic effect of the college of medicine and its teaching hospitals in Tucson, and surrounding areas, provides high quality healthcare services and a research environment conducive to the development of the biomedical and biotechnology industries. ABOR wishes to expand the operations of the U of A's college of medicine in Phoenix to include first and second year students and complementary research. It also wishes to build facilities on the Phoenix Biomedical Campus of the Arizona University System in conjunction with one or more existing teaching hospitals.

The goal is to leverage cost efficiencies without uprooting the significant financial investment already vested in our statewide medical education and research efforts. ABOR also wishes to reaffirm the planned relocation of ASU College of Nursing to the Phoenix Biomedical Campus, where ASU and the U of A are also planning research facilities to be operated jointly by the U of A and ASU through the Arizona Biomedical Collaborative.

It was thought by some that ASU's ability to move from normal school status to Research Extensive University status would be impaired by its lack of a college of medicine. This has not proved to be the case as ASU has already achieved Research Extensive University status without the cost burdens associated with a medical school and a teaching hospital. Both ASU and U of A stand poised to advance significantly their research grants and their contribution to medical education in Arizona by cooperation and collaboration on an expanded U of A college of medicine in the greater Phoenix area. It is anticipated by ABOR that this expansion from Tucson to Phoenix will involve no less than the development of full-time faculty providing instruction to M.D. candidates for all four years while also engaging in research and clinical practice. ABOR wishes to advance this programmatic theme by providing for joint faculty appointments of basic science faculty at ASU and the U of A, and simultaneously expanding the faculties of both universities in fields related to the health sciences. ABOR will also rely on Arizona's pioneering Telemedicine Network to connect all medical education participants in a unified curriculum.

Memorandum of Understanding (Continued)

ABOR does not wish to build a separately accredited or separately managed college of medicine in Phoenix. It believes that a significantly expanded presence of the U of A's college of medicine in Phoenix, with two synergistically related campuses, involving faculty from both the U of A and ASU is the best strategic choice to advance Arizona's healthcare needs and its expansion of bio-medical education, research and technology.

This Memorandum of Understanding¹ is intended to memorialize ABOR's commitment to this approach to the U of A College of Medicine's expanded presence on the Phoenix Biomedical Campus. It is not intended as a comprehensive agreement or as a path to the difficult funding and important collaborations and partnerships that must necessarily come from the healthcare industry in general and the many state, county and municipal interests that must be accommodated. Our purpose in executing this Memorandum of Understanding is to establish several First Principles that we determine critical to the design and development process.

First Principles

1. ABOR does not wish to entertain the funding, accrediting, logistical, or staffing hurdles that are inherent in building a second college of medicine in Arizona and firmly believes that its existing college of medicine should be expanded to meet Arizona's healthcare and medical education needs.
2. This method of expansion of the U of A college of medicine must serve the social and economic needs of the people of Arizona by fully developing a research grade medical school in Phoenix designed to address our 21st century healthcare challenges.
3. This method of expansion will involve both physical and intellectual assets of the U of A's college of medicine. It will link with and draw from other critical physical and intellectual assets from Arizona State University to complement its programs in teaching and research.
4. The design of the Phoenix-based expansion of the college of medicine will focus on the unique social, cultural and healthcare system needs in metropolitan Phoenix. Its training and research programs will be reflective of these needs and synergistic with existing capabilities at ASU, T-Gen and area hospitals, institutes and foundations.
5. The design of this expansion unit of the college of medicine will be done in a way that complements rather than replicates the research strengths of the Tucson campus of the medical school or the Tempe campus of Arizona State University.
6. The design is to be done in a way that maximizes the collective assets of the U of A and ASU and most efficiently builds upon existing capabilities throughout the State of Arizona.
7. The U of A college of medicine will offer a single united curriculum for accreditation, making efficient use of the Telemedicine Network for interconnecting all centers of learning.
8. ABOR wishes to avoid the political and cultural obstacles inherent in the historical development of its two Research Extensive Universities and does not wish to exacerbate the many obstacles that must be overcome to advance our approach to the building of a college of medicine for the betterment of the people of Arizona. ABOR therefore proposes that the U of A and ASU agree to collaborate in the development of the Phoenix Biomedical Campus and to give appropriate attention to the interests of both universities in this process.

Memorandum of Understanding (Continued)

9. ABOR has asked the U of A to assume the lead in conceptualizing the expansion of its college of medicine on the Phoenix Biomedical Campus. The U of A agrees to assume the lead position and to involve directly ASU's administration and faculty in the planning process.

10. ABOR has asked ASU to assume the lead in conceptualizing how it can serve this expansion of healthcare, medical research and medical education by making its faculty and research facilities available and to assist the U of A in a collaborative process of identifying faculty interested in joint appointments in the U of A's college of medicine. ASU agrees to take this initiative and to involve directly the U of A's administration and appropriate faculty as it evaluates its faculty and research offerings.

11. ABOR has asked the U of A and ASU to coordinate their mutual efforts in expanding medical education and research efforts to the mutual end that healthcare, biomedical science and biomedical engineering efforts are steadily advanced by the addition of a Phoenix campus to our existing college of medicine. Both universities have pledged to ABOR that they will coordinate and cooperate and that they understand that this effort is considered by ABOR to be a primary policy initiative.

12. ABOR has asked the U of A and ASU to emphasize the advancement of the Arizona University System goals and public needs and to do everything possible to inhibit the natural tendencies of individual institutions to advance their own reputational interests to the possible detriment of the needs of medical education and research in Arizona.

13. ABOR, the U of A and ASU believe that the planning process should evolve over the short term. Attached hereto as "Addendum A" is the current understanding regarding the planning process. It is anticipated that other areas may be added as the partnerships and new collaborations come into being.

***"The school won't get
sidetracked from
educating doctors."***

*-"Doctor Deficiency",
Arizona Republic 4/8/05*

Summary

It is the intent of ABOR to advance our university system and our two Research Extensive universities to the level of national prominence in biomedical teaching and research. We intend to lay the foundation for the M.D. demands of a state of 8 to 10 million people and to expand our presence in the biomedical research arena. This will be accomplished by expanding the college of medicine into Phoenix in a way that ensures the success of our community, the college of medicine and both the U of A and ASU.

The implementation of this planning, design and development process will occur at several levels as specified in the thirteen First Principles set forth above. Adherence to and implementation of these First Principles will require the ongoing participation and leadership of the presidents of ABOR, U of A, and ASU. It is anticipated that ABOR will ratify this Memorandum of Understanding at its August 2004 meeting and that the presidents of the U of A and ASU will present a design and development plan for these coordinated efforts on or before the ABOR January 2005 meeting.

Memorandum of Understanding (Continued)

The First Principles stated in the Memorandum of Understanding will be utilized in all forthcoming discussions and planning endeavors. The four areas of planning, design and development stated in Addendum A will be monitored and utilized as the development of the Phoenix Biomedical Campus of the Arizona University System evolves. Our purpose in signing this memorandum of understanding is to convey to the people of Arizona our joint commitment to the advancement of medical education and research in Arizona and to forestall tangential and historical arguments predicated on geographical boundaries or institutional perceptions of favoritism. By our signatures today, we commit to one another and to the people of Arizona our promise to work together to advance medical education and research under a single college of medicine in Arizona.

Gary L. Stuart, President
Arizona Board of Regents
Peter W. Likins, President
University of Arizona
Michael M. Crow, President
Arizona State University

ADDENDUM "A" TO ABOR, U OF A, ASU MEMORANDUM OF UNDERSTANDING REGARDING EXPANSION OF MEDICAL EDUCATION AND RESEARCH IN PHOENIX

August 4, 2004

In expanding the college of medicine into Phoenix four areas of planning, design and development will be required. These areas are each essential to the success of this expansion and in a critically important way essential to the success of the further maturation of the university system and the development of a great biomedical teaching and research base in Phoenix. The four areas of planning, design and development include:

1. The Phoenix Biomedical Campus of the Arizona University System: The Phoenix Biomedical Campus will be linked to the planning of the capital center campus of ASU and a joint planning, design and development effort will be undertaken to establish a physical environment that can be the home for TGEN, the U of A College of Medicine, new hospital facilities and associated research and teaching enterprises. This will include the ASU College of Nursing and an appropriate presence for the U of A College of Pharmacy, and public health faculty from both universities. This campus must establish an environment for maximum cooperation.
2. The University of Arizona College of Medicine: An expansion plan must be carefully developed that positions the U of A college of medicine not only for expansion in M.D. production but also for research and clinical engagement. This plan will involve the U of A faculty and a wide range of healthcare provider organizations. In addition, this process will involve those elements available or developable at ASU that would complement the value and heighten the success of this expansion.

Memorandum of Understanding (Continued)

3. Arizona State University: It is anticipated that ASU will assist in the expansion of the college of medicine through a focused set of designed linkages. Each of these linkages is intended to complement, augment and speed the expansion of the college of medicine and to secure for ASU a clearly articulated linkage in the best interests of the college of medicine, ASU, and the university system as a whole. The specific assets of ASU to be considered in this planning, design and development process include:

- a. A medical undergraduate teaching linkage as required by the dean of the college of medicine.
- b. Defined and specific research linkages through the Arizona Biomedical Collaborative in areas such as; personalized medicine research, urban health, Native American health and biodesign.
- c. The development of a new department at ASU in Biomedical Informatics that would be a department in the Fulton School of Engineering and Applied Science and the U of A college of medicine, subject to the appropriate approvals of the academic community in both universities.
- d. Specified linkages with the ASU College of Nursing and the ASU Nutrition Program.
- e. Joint faculty appointments as approved by appropriate faculties in the same way as joint appointments are handled internal to either university.
- f. Joint degrees with the college of medicine as developed and approved through the normal review process basis.

4. Telemedicine Teaching and Research: It is anticipated that this planning, design and development process will make full use of emerging telemedicine teaching and research enhancement technologies between Tucson and Phoenix in both directions. This parameter is intended to illustrate that it is assumed that the level of cooperation between the campuses of the college of medicine will be unparalleled.

“This isn’t unknown territory. We’re already educating medical doctors in the Valley. About 40 percent of the University of Arizona’s medical students come here for clinical study....” -Doctor Deficiency, Arizona Republic 4/8/05

**Phoenix Program
UA College of Medicine
State Budgets for FY 06 and FY 07**

Narrative

The start-up process for the UA College of Medicine Phoenix Program is quite complex but relatively inexpensive for Level I operations, which can accommodate 24 first year students in each class in renovated Phoenix Union High School buildings and build toward a steady-state operation with 48 students combined in the first and second years and almost 150 students in the third and fourth years, including medical students who began their medical training in Tucson. Level I operations also require State investments in the ASU Biomedical Informatics Program, which is budgeted separately.

Level II operations, which could have as many as 150 new students starting medical education in Phoenix each year, is also not included in this budget summary, as it will require separate actions by the State several years into the future.

If the Phoenix Program steps up to 150 new students at Level II and the Tucson Program expands slightly to 120 new medical students each year, Arizona will be producing as many as 270 practicing physicians every year in response to the keenly felt societal need for doctors in this growing state.

In order to secure permission from the accrediting body (the Liaison Committee for Medical Education) to enroll new medical students in Phoenix when the academic year begins in July, we must host a site visit the preceding Fall and demonstrate that standards are met in three areas: Facilities, Faculty and Curriculum.

The renovated facilities will be available in July 2006, when about 100 upper division students already in Phoenix will move with faculty and staff from leased facilities elsewhere in Phoenix. If we add \$6.0 million in new State funds for FY06 to the \$2.8 million of UA funds currently committed, the facilities will be equipped and the faculty in place for the LCME site visit, tentatively scheduled for November of '06, with the curriculum in an advanced stage of development.

The attached flow chart illustrates schematically how the \$6.0 million in State funds will be used in FY06 and FY07. Although the dollars are the same for both years, the uses of funds are quite different. In FY06 approximately \$3.8 million of the \$6.0 million would be invested in equipping the facilities, which must be adequate to meet very high telecommunications standards as required by the telemedicine program that enables the UA College of Medicine to serve the entire State. The balance would be used to begin assembling the required faculty and staff.

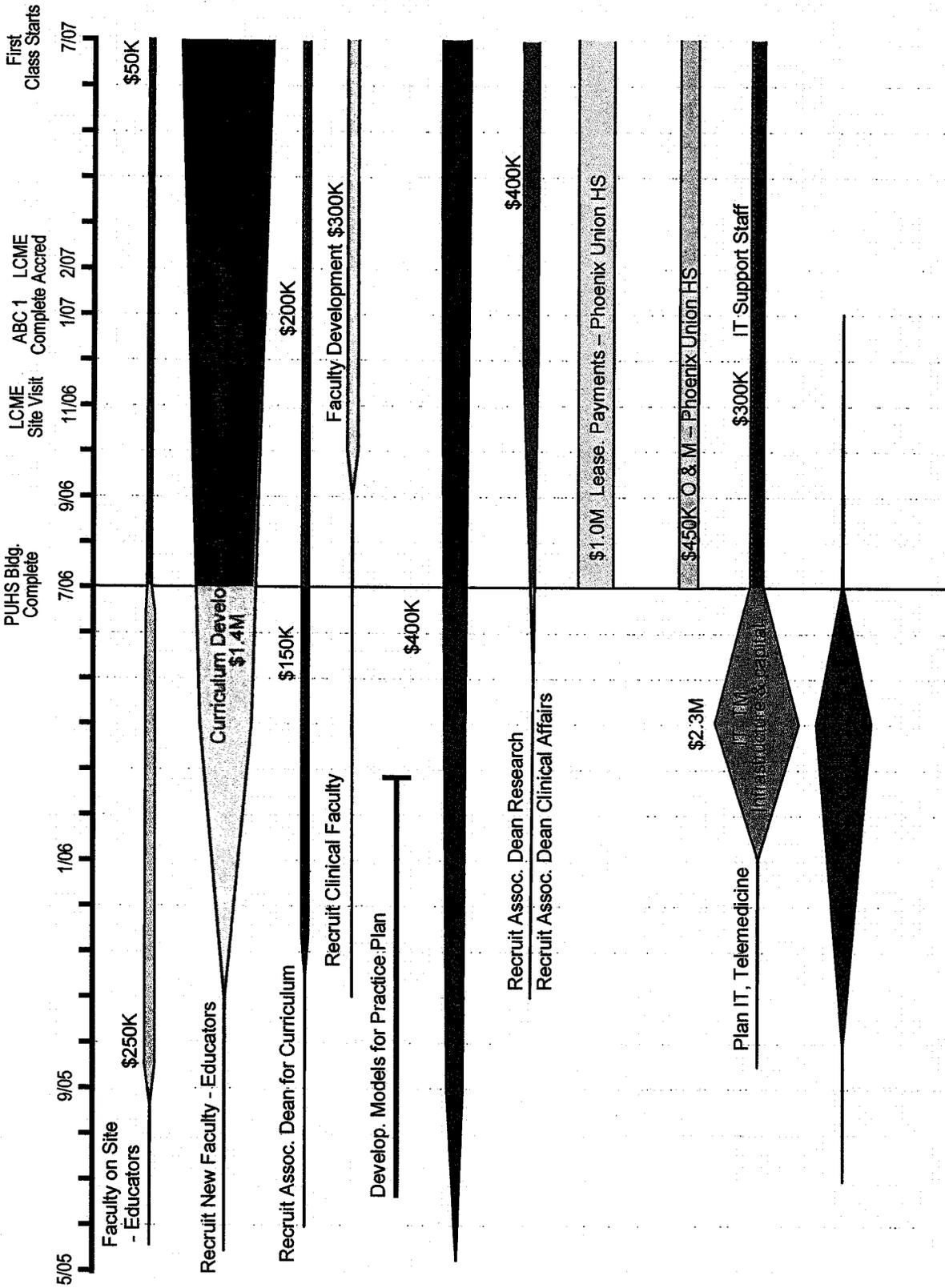
The budget for the second year, FY07, is displayed schematically in the attached flow chart and described in more detail in the second attachment, which shows \$6.0 million in State funds in combination with \$2,774,000 in UA funds.

PL/lis

Attachment 1. Flow chart for FY06, FY07

Attachment 2. Budget for FY07

Incremental Expenses- Phoenix Program UA COM



Phoenix Program – University of Arizona College of Medicine
Budget Breakdown FY 07
(in thousands, \$K)

	Existing UA Funds/Grants (\$K)	Total (\$K)	Requested (\$K)
OPERATIONS AND MAINTENANCE			
Operations	509	909	400
Lease Costs	448	1,448	1,000
Operations and Maintenance	0	450	450
Travel	175	175	0
EDUCATION			
Administration			
Dean of Academic Affairs (1)	1,223	1,823	600
Associate and Assistant Deans (5)			
Admissions/Academic/Financial Support (3)			
Admin Assistant and Admin Associates/Reception (6)			
Business Affairs/Development/Facilities (3)			
Special Assistant to Dean (2)			
Minority Affairs			
Director	257	257	0
Student Recruiters (3)			
Administrative Assistant (1)			
Basic Science Faculty for Year 1 and 2 Students			
Ph.D. faculty (6)	0	2,640	2,640
M.D. faculty (2)			
Clinical Science half-time M.D. (6)			
Clinical Science M.D. (3)			
Educational Consultants M.D., part-time (20)			
Administrative Assistant (5)			
Information Technology			
Media support (2)	162	462	300
Medical computing (2)			
Gross Anatomy Lab			
Staff (1)	0	47	47
Pre-Clinical Training			
Faculty M.D. (1)	0	210	210
Administrative Assistant (1)			
Medical Library			
Librarian (1)	0	309	309
Library Support staff (2)			
Computer staff (1)			
Medical Bookstore			
Office staff (1)	0	44	44
TOTALS (\$K)	2,774	8,774	6,000

State Funding Requirements (six year projection)
Phoenix Program, LEVEL I
The University of Arizona College of Medicine
 (Not including related budget for ASU, which starts at \$1.0 Million)

FISCAL YEAR	UA	NEW REQUEST
	\$ M	Δ\$ M
06	6.00	6.00
07	6.00	0.00
08	8.50	2.50
09	12.00	3.50
10	16.00	4.00
11	20.00	4.00

The appropriations for LEVEL I funding will provide the following:

- Start-up: Facilities, equipment, faculty and staff
- Year 1 – 24 new students, plus 100 students from the Tucson campus in clinical rotations, or 124 students
- Year 2 – 24 new students, plus 24 second year students, plus 100 in clinical rotations, or 148 new students
- Year 3 – 24 new students, plus 48 second and third year students, plus 100 in clinical rotations, or 172 students
- Year 4 – 24 new students, plus 72 second, third and fourth year students, plus 100 in clinical rotations, or 196 students

NOTE: These are LEVEL I funding requirements, at which level the facilities on the Phoenix Biomedical Campus are limited to the renovated Phoenix Union High School buildings, with maximum capacity of 24 first year medical students per year, for a total capacity of approximately 100 medical school students (first through fourth year). However, the funding requirement reflects increases in the number of students supported by the Phoenix campus. Currently, there are approximately 100 third and fourth year medical students doing clinical rotations in Phoenix. At full complement, LEVEL I will support nearly 200 students (48 first and second year students and about 148 third and fourth year students).

During the first two years of the program, faculty and staff are needed for the basic science education. Paid clinical faculty are required as more students transition into this area of training. Currently, the UA College of Medicine utilizes 400 volunteer, unpaid faculty in Phoenix, however, clinical faculty will need to be paid as they contribute a greater portion of their time to the training of medical students.

State Funding Requirements (six year projection)
Phoenix Program, LEVEL I
The University of Arizona College of Medicine
(Continued)

The funding requirements display a tremendous cost savings by utilizing shared resources with the Tucson campus. In addition to the requested state appropriation the UA is contributing over these six years approximately \$21 million in operating costs and investing over \$17 million in Phoenix Biomedical Campus capital facilities.

In addition, tremendous cost savings are achieved through the use of the land (valued at approximately \$3.2 million), the use of the Phoenix Union High School buildings (purchased by the City of Phoenix at a cost of approximately \$10 million) and through the utilization of federal "New Market Tax Credits" by the City of Phoenix for \$25 million.

A business plan will be developed in CY05 for LEVEL II operations, permitting up to 150 first year medical students per year, but requiring major public and private investments in facilities and operations. The timing of the move to LEVEL II will depend on the final recommendations of the Arizona Commission on Medical Education and Research, the type of public-private partnerships formed through the City of Phoenix's biomedical campus and the desire of the Arizona State Legislature and Governor to increase class size in the future. Current state policy-makers cannot bind future legislators, or Governors, to a pre-set appropriation. LEVEL I funding is the only commitment being sought.

Contrary to certain perceptions, only a fraction of medical school graduates focus solely on research. It is anticipated that the students graduating from the Phoenix Program of The University of Arizona College of Medicine will practice in hospitals, private offices and clinics throughout the state. Moreover, expansion of the Arizona telemedicine program will increase our capacity to serve all areas of Arizona, especially the most remote. Currently, Arizona has a shortage of physicians (45th per capita in number of physicians) and lacks the academic support in Maricopa County to retain many of these physicians.

***"Metropolitan Phoenix
was the 14th largest
metropolitan area in the
nation in the 2000
census – and it is by far
the largest metro area in
the nation without a
four-year allopathic
medical school and
major academic medical
center."***

-*"Meds and Eds"*,
March 2005 edition

State Funding Requirements (five year projection)
Department of Biomedical Informatics
Arizona State University

Category of Expense	FY06	FY07	FY08	FY09	FY10
Faculty	600000	1200000	1800000	2100000	2400000
Staff	75000	150000	200000	250000	250000
Student assistants	50000	100000	250000	350000	500000
Operations	100000	150000	200000	225000	250000
Library/Information Resources	100000	150000	200000	200000	200000
Rent	75000	250000	350000	375000	400000
Totals	1000000	2000000	3000000	3500000	4000000

Notes: Facilities and classroom renovations are not included; Rental calculation based on 25/sq ft starting mid year 06

Faculty: The funds for faculty hires are for full-time faculty in Biomedical Informatics Department and joint faculty hired with Computer Science and Engineering Department (CSE), Bioengineering Department (BE) and the School of Life Sciences (SOLS) at ASU.

Staff: The funds are for staff positions for administering the department, educational programs (including student advising) and technical support.

Student Assistants: These are for research and teaching assistants to help with the curriculum/ laboratory design and instructional support.

Library/Information Resources: This is required for faculty and students to have access to the medical information databases and publications.

Implementation Plan

FY06

- 4 Faculty, 1.5 staff, and 1 teaching assistant and 0.5 research assistant
- Students: 10 graduate students in BMI concentrations (through CSE, BE and SOLS)

FY07

- 8 Faculty, 3 staff, and 2 teaching assistants and 1 research assistant
- Students: 10 in graduate degree program, 10 in BMI concentrations; Informatics instruction for 24 medical students (Year 1)

FY08

- 12 Faculty, 4 staff, and 4 teaching assistants and 3 research assistants
- Students: 20 in graduate program, 10 in BMI concentrations; Informatics instruction for 48 medical students (Year 1 and Year 2)

FY09

- 14 Faculty, 5 staff, 6 teaching assistants and 4 research assistants
- Students: 30 in graduate program; 10 graduate and 20 undergraduate in BMI concentrations; Informatics instruction for 72 medical students (Years 1, 2 and 3)

FY10

- 16 Faculty, 6 staff, 6 teaching assistants, 4 research assistants and 3 Fellowships
- Students: 40 in graduate program; 10 graduate and 20 undergraduate in BMI concentrations; Informatics instruction for 96 medical students (Years 1 to 4)

Biomedical Informatics Department Arizona State University

Biomedical informatics (BMI) is a rapidly expanding field that merges biological/medical sciences and public health with the latest advances in computer science, information technology and telecommunications.

- **Mission:** The BMI department at ASU will be a world-class partnership between academic researchers, clinical practitioners, and regional healthcare providers to advance research and education in the science and practice of biomedical informatics. Working with partners such as TGen, the University of Arizona College of Medicine, BNI and the Mayo Clinic, the Department will bring together a unique synthesis of biomedical informatics and experimental investigations seamlessly integrated to predict, test, and elucidate the connections in the continuum from genotype to phenotype to provide the highest quality of care. The Department will prepare individuals who are capable of making major contributions to the creation and evaluation of computational and informatics tools and their application to biomedical or clinical research, health care practice and administration, public health, and the education of health professionals and patients.

- **Establishing Biomedical Informatics Education:** Arizona is one of very few states that does not yet have a strong university-based biomedical informatics program. Biomedical informatics is one of the areas of biotech that is growing fastest. To remain competitive in the bioscience sphere, Arizona needs to develop a doctoral-level training program in biomedical informatics, as well as masters and undergraduate programs. The Department will offer graduate and undergraduate degrees in biomedical informatics, joint degrees with the medical school and other allied health professional programs, and continuing and executive education for health professionals.

- **Advancing & Supporting Medical School Development:** The integration of biomedical informatics into the new medical school curriculum will ensure that the Phoenix track of the University of Arizona College of Medicine develops a world-class medical education program and research program. Educating physicians about the use of information technology is an essential component of physician education and training in the future including President Bush's plan to establish a national system for electronic medical records and health information technology.

- **Enhancing Relationships with Clinical Partners.** A strong biomedical informatics program at ASU will help to leverage the related resources in Phoenix and further develop Arizona as a bioscience hub. By combining ASU's expertise in computing and informatics with the resources of our partners such as the University of Arizona College of Medicine, TGen, BNI and the Mayo Clinic, the ASU Department of Biomedical Informatics will help solidify Phoenix's position as a leader in the biosciences.

"Arizona has 195 doctors for every 100,000 population – a figure well below the national average of 253.

Furthermore, the pool of physicians practicing in Arizona is aging rapidly, and the 200-250 physicians per year graduating is barely enough to keep up with the growing population."

*–"Meds and Eds",
March 2005 edition*

**Biomedical Informatics Department
Arizona State University
(continued)**

- **Attracting New NIH Research Funding:** Biomedical and Bioinformatics are a key element of the NIH strategic plan, the *NIH Roadmap: Accelerating Medical Discoveries to Improve Health*. As a result, a great number of NIH requests for research funding require a biomedical informatics component. Existing biomedical informatics' programs bring large funding and prestige to their universities. For example, Ohio State University has received over \$18 million and the Virginia Bioinformatics Institute at Virginia Tech has received over \$12 million in such funding.
- **Improving Healthcare.** A strong biomedical informatics program at ASU will ensure that Arizonans have access to state-of-the art, efficient, safe, and low-cost clinical care. For example, Columbia University's Department of Biomedical Informatics has played an instrumental role in advancing health care in New York City hospitals through the development of a patient record database that can be accessed by physicians from a variety of locations, a superior system for securing patients' electronic data records, and a computerized event monitor that alerts physicians when a patient's vital signs rise to critical levels.
- **Building the Arizona Knowledge Economy.** The BMI Department at ASU will yield many economic benefits to the local and regional economy.
 - A recent industry survey found that the market for bioinformatics products is estimated to be as much as \$37 billion in 2006.
 - Over 20,000 new positions for people with bioinformatics degrees will open by the end of 2005, with even more opportunities for those who receive masters and graduate degrees. Salaries for those with bioinformatics training are high, ranging from \$40,000 for those with a Bachelor's degree to over \$100,000 for those with a doctoral degree
 - Biomedical informatics tools and applications will lead to the establishment of several new companies in Arizona creating numerous new jobs for Arizonans.

"According to the AzHHA Healthcare Institute, in 2001, virtually all hospitals in the state experienced severe problems in dealing with overcrowding and capacity – a vastly different picture than the rest of the nation..."

-“Meds and Eds”, March 2005 edition.

Doctor deficiency

Our stand: Medical school in Phoenix vital

The diagnosis: physician deficiency

The symptoms: Arizona's population is growing at a feverish pace, adding nearly the equivalent of three Flagstaffs every year.

Our white-coat count is low: The number of doctors per 100,000 residents is 23 percent below the national average. We have a touch of economic anemia.

The treatment: Establish a medical school in downtown Phoenix.

As the Legislature negotiates with Gov. Janet Napolitano over the state budget, lawmakers should make sure that it includes \$7 million in start-up funding for the medical school.

This isn't a start-from-scratch project. It will be a joint endeavor between the University of Arizona and Arizona State University, landmark cooperation between the two traditional rivals, with the blessing of the Arizona Board of Regents. Technically, it will be part of UA's College of Medicine.

Napolitano's budget proposal includes the medical school funding. The Legislature passed a budget without it, even though the Senate proposal had been for \$5 million.

The hang-up shouldn't be the dollars. We're talking about less than 1/1,000th of an \$8 billion-plus budget.

And we hope that lawmakers will set aside political gamesmanship for a project so vital to the health of Arizonans.

A few clouds of concern need blowing away. For starters:

■ **This isn't unknown territory.** We're already educating medical doctors in the Valley. About 40 percent of the University of Arizona's medical students come here for clinical study in hospitals in their third and fourth years.

■ **The school won't get sidetracked from edu-**



The Arizona Republic

Another medical school could ease Arizona's shortage of physicians.

cating doctors. Skeptics predict the medical school will overemphasize research because it will be in downtown Phoenix by Translational Genomics Research Institute and the universities' planned bioscience facilities. But the location is a crucial link, giving future doctors a chance to learn about cutting-edge science and to forge relationships that they can draw on once they're in practice.

■ **Approving the initial funding doesn't commit us to a full-blown medical complex.** The plans for

the medical school are divided into two levels. The first one is very defined and limited: using the historic Phoenix Union High School buildings to create a campus that admits two dozen medical students a year. Including 100 students in clinical rotations, the campus eventually would serve about 200 students annually. It would house a telemedicine facility to connect with rural Arizona.

■ **This isn't the start of a massive drain on state coffers.** States typically fund just 10 to 15 percent of a medical school's operations. The rest comes from such sources as federal grants, private endowments and partnerships.

Yes, there are ambitious plans for a full medical campus, including colleges of pharmacy and nursing, and a hospital, which may be a specialty facility.

Yes, those plans are still being pulled together. Many players need to work together to develop the best strategies.

But we would be shortsighted to delay starting a medical school that we urgently need.

In the four years that a student takes to go through medical studies, Arizona is adding more than two-thirds of a million people.

We need to put up the money now to supply the doctors for tomorrow.

Appendix

Preservation Plan for Phoenix Union High
School Building One

Preservation Plan for Phoenix Union High
School Building Two

Preservation Plan for Phoenix Union High
School Building Three

Preservation Plan for Site Plan and Landscape

“...the lack of a fully developed major medical school and academic medical center in Phoenix has been an enormous gap in the state’s Meds and Eds infrastructure.”

-“Meds and Eds”, March 2005 edition.

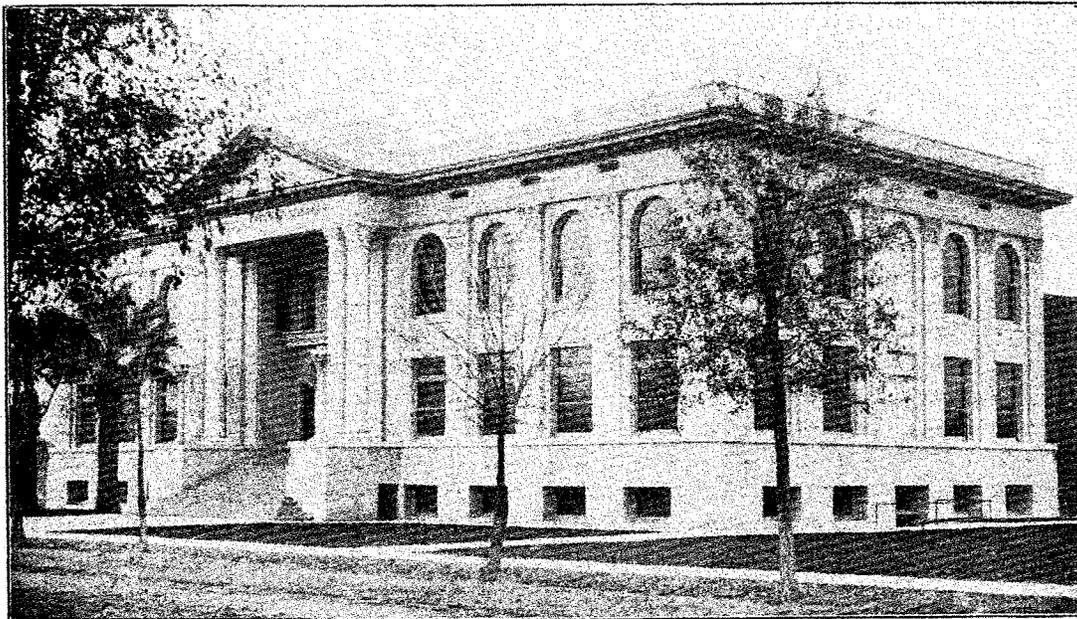
Preservation Plan for:

**Building One
Domestic Arts Building**

**Phoenix Union High School
Historic District**

**512 East Van Buren Street
Phoenix, Arizona**

January, 2005



SMITHGROUP
architecture engineering interiors planning

METROPOLIS
Design Group LLC

Preservation Plan
for:

PHOENIX UNION HIGH SCHOOL
Building One:
Domestic Arts Building

Phoenix, Arizona

Prepared for:

SmithGroup
Phoenix, Arizona

By:

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Project No. 1239
January, 2005



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Executive Summary

This report presents a preservation plan for Building One at the Phoenix Union High School campus. It is one of a series that develops the overall adaptive re-use plan of the campus for the University of Arizona's expansion of its Phoenix Medical School.

Building One's rehabilitation will provide administrative and support spaces for the Medical School. The Bookstore, Library, Dean's Office and Financial Aid offices will be located in the building. The pre-clinical training area, containing exam rooms and offices will be located on the first floor.

The first medical school class of 24 students is scheduled to begin in July of 2006. This schedule requirement is absolute, and provides the main driver for the project.

Building One was constructed in 1911 and remained largely unchanged until the late 1940s. At this time the original wood stairs were replaced with cast-in-place concrete stairs. A major remodeling project in the 1950s expanded administration spaces. This project removed all of the 1911 interior wood trim, replaced almost all of the doors, and lowered the ceilings. In 1964 the building was further modified when the windows were removed and replaced with masonry infill panels.

Despite the modifications, the exterior does retain its historic character. The main entry porch to the south remains with most of its details intact. Although filled with masonry, window openings remain clearly visible.

As part of this project, the building facades will be returned to their 1911 character. Masonry infill panels will be removed, and new

windows installed. Architectural detailing will be repaired. The stucco exterior will be patched and repainted.

To meet current accessibility and code requirements, a new addition will be constructed to the north of the building. It will contain an elevator, ADA accessible restrooms, and a second exit stair.

The existing wood structure exhibits extensive termite and water damage. Over the years it has been heavily modified. Bearing walls have been removed and replaced with steel beams and pipe columns. Large parts of this work were done as part of the 1950s remodel project, but field inspection reveals continued undocumented modifications, some of which have created conditions expressly forbidden under existing codes. The current structure does not meet either vertical or lateral loading requirements for the proposed reuse.

Structural investigation has revealed that the level of modification required to repair the current structure and bring it up to code is such that complete replacement is a more cost and schedule effective option.

The interior of the building will be modified to meet the needs of the Medical School program. The 1949 cast-in-place concrete stairs will be retained, and the original lobby function will be retained and enhanced at the Main entry on the second floor. New floor plans will be developed. The plans will respect the historic features of the buildings. Walls will be positioned so that all windows remain unobstructed. Ceiling heights at the perimeter will be set to allow windows to extend the full height of the historic openings.

Methodology

This report integrates known historical data with the inspection of existing building conditions to make adaptive re-use recommendations in conformance with the Secretary of the Interior's Standards for Rehabilitation.

The Historic Structures Report for Phoenix Union High School Historic District prepared in March of 2004 by Ryden Architects for the City of Phoenix was the starting point for this plan. This information was augmented with inspection and analysis of the buildings, reviews of historic drawings, and specific programmatic information developed for the University of Arizona Medical School.

Architectural and structural teams visited the site on numerous occasions between October and December of 2004. Because original drawings were not available, buildings were field measured to the extent needed to prepare dimensioned floor plans representing existing conditions.

Original 1911 drawings for the buildings have not been located. The University of California

in Santa Barbara maintains a collection of Norman F. Marsh drawings, but does not have any information on this campus. The Arizona Historical Society Lescher & Mahoney Archive was also searched for drawings, because Lescher & Mahoney had done some renovation work on the campus. The 1949 stair remodel plans for Buildings One and Three were located, but no other drawings could be found.

Most of the historic photographic information was obtained from old yearbooks in the alumni association's archive. Yearbooks from 1911 through 1959 were reviewed.

A NOTE ON TERMINOLOGY:

The three buildings all have three habitable floors. The lowest floor is partially below grade. It has been referred to as both a "basement" and "first floor" in various documents. Because this floor does meet the current code's definition of a story, it will be referred to in this report as the first floor. The main floor will be referred to as the second floor.

Project Team

Tenants/End Users:

University of Arizon, College of Medicine
David H. Harris, Senior Project Manager

University of Arizona Facilities Management
Ann Libecap, Director

Developer:

DESCO Southwest
Bruce Gillespie, Principal

Contractor

DPR Construction
Dave Elrod, Project Manager

Principal Architect

SmithGroup, Inc.
A. Bradley Woodman AIA, Project Director
Art Lara AIA, Project Manager
G. Craig Randock AIA LEED, Design/Programming
John H. Abed, Project Architect
Adam Denmark, Architect
Linda Salzmman, IIDA LEED, Interior Design
Eric Kirkland PE, Mechanical Engineer
Gerry Lopez PE, Electrical Engineer

Historic Preservation Consultants:

Metropolis Design Group LLC
Robert Graham AIA, Historical Architect
Anne Bilsbarrow AIA, Historical Architect

Structural Engineer:

Paragon Structural Design, Inc.
Bryan Salt PE, Principal

Landscape Design

Floor and Associates
Christopher Joy , Project Manager

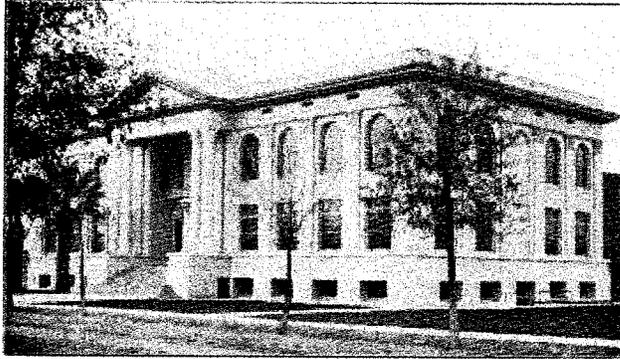
Civil Engineering

Dibble and Associates
Jeff McBride PE, Project Manager

Historical Overview

Building One

YEAR	EVENT
1897	Phoenix Union High School begins operation at the Van Buren Street site
1911	Buildings One, Two, Three and central plant constructed
1929	Building Two completely renovated. Lobby portion collapses during construction and is rebuilt.
1949	Cast-in-place concrete stairs added at Buildings One and Three. "Modernization" of campus site plan. International style addition built at west end of Building One (addition demolished in late 1980's).
1950's	Building Two windows removed. Building Two ceiling revised
1952	Major Building One remodel, to create additional administration space.
1964	Major Building Three remodel, including replacement of structure. Windows removed in Buildings One and Three
1984	Classes end, campus closes and is sold for private development.
1990's	Remodeling of Building Three for use as a charter "arts" high school. Remodeling of Building Two for use as a live music venue. New paving for surface parking.
2003	Campus purchased by City of Phoenix Central Plant and Building Five demolished.



DOMESTIC ARTS AND SCIENCES BUILDING

Phoenix Union High School
 Preservation Plan
 Building Analysis
Building One

Year Constructed	1911
Stairs Added	1949
Major Renovation & Addition	1952
Windows removed	1964

SIGNIFICANCE AND INTEGRITY REVIEW

Character Defining Features

The primary character defining elements of Building One, as determined by the Ryden report *(page 62)* :

<i>Exterior facades</i>	Especially the front and side facades.
<i>Architectural details</i>	Colonnaded portico and stairs, cornice and parapet, pilasters, spandrel panels, water table, window openings, main entrance, cast plaster moldings and cartouches, fluted steel lamp posts, ventilator grilles, wood windows and doors
<i>Spatial volumes</i>	Spatial volumes and layout of lobby and main corridors and classrooms (although hidden by later additions)
<i>Partition walls</i>	Original positions of partition walls.
<i>Finishes</i>	Interior architectural finishes
<i>Wood trim</i>	Wood floors and crown molding
<i>Stairways</i>	1949 cast-in-place concrete stair

Sequence of Construction

SEQUENCE OF ADDITIONS AND ALTERATIONS

The building has been continually remodeled over the years. The concrete cast-in-place stairs were built in 1949. An addition was constructed to the west of the building in the 1940s, and demolished in the late 1980s. The largest documented remodeling was done in the mid-1950s according to plans developed by Fred M. Guirey in 1952. Field investigations have revealed considerable undocumented alterations since that project.

LEVEL OF CHANGE TO FLOOR PLANS

Although no original floor plan drawings have been found, conjectural pre-1952 floor plans have been developed using the 1952 drawings. The walls slated for demolition, and the walls indicated as "existing to remain" were traced, but the new (1952) walls were not. The resulting plans were compared to historic photos, and it would appear that, aside from the 1949 stairs, the pre-1952 plans do substantially reflect the originals. A comparison of these plans to the existing indicates that the layout has been heavily modified.

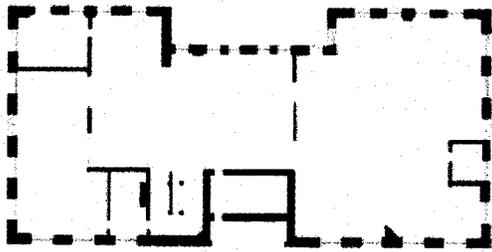
Although destructive testing has not been authorized by the City, the current condition of the building is such that many of the walls have holes in them. An examination of these walls indicates that none of them are finished in wood lath and plaster, although some of them are still framed with full size rough sawn lumber. Where the lumber extends above the wall finishes, the marks of the original wood lath can be seen. It would appear that over the course of time, the original finishes were removed from the walls, but that at least some of the original framing was retained.

Walls where this condition are found on the second and third floor to the north of the lobby, in the northwest corner of the second floor, and to the north of the original Principal's office on the second floor. Walls adjacent to the third floor corridor also exhibit these characteristics. No walls with original framing were found on the first floor.

The changes between the original and existing floor plans are illustrated in the following graphics: Walls where the framing members could be inspected, and were found to be original, are shown in red.

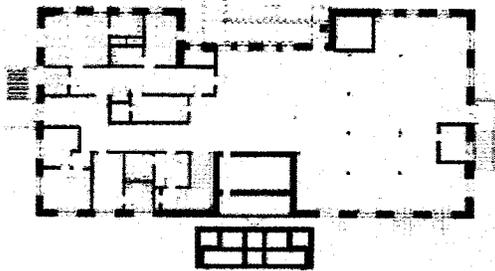
Building One: First Floor Plans

Pre-1952 First Floor Plan:



The first floor originally contained the lunch room and cafeteria, and “modern and scientific” laundry, where “young ladies were instructed in the principles of laundry”.

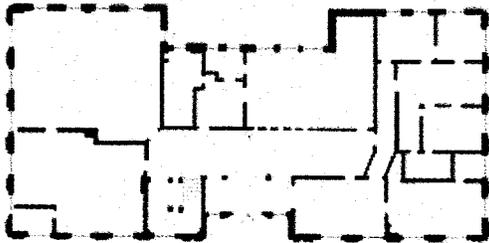
Existing First Floor Plan:



The current floor plan shows that the first floor has been extensively modified. The last use of this space appears to have been as a nightclub. The structure has been heavily modified, with the result that there are currently 23 columns on this floor. No original framing has been found in the first floor walls.

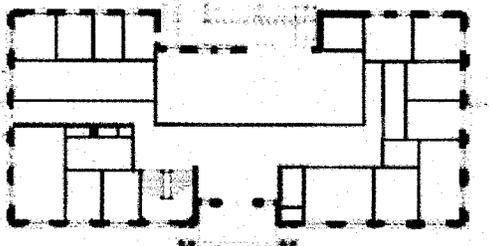
Building One: Second Floor Plans

Pre-1952 Second Floor Plan:



Cooking, sewing, and millinery were taught on this floor. Administration spaces were also located here. There was a model five room “cottage” on this floor, where girls were “required to spend a given number of days in practical housekeeping”.

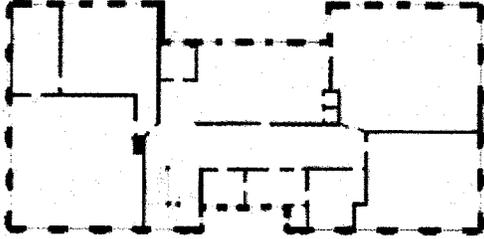
Existing Second Floor Plan:



The existing floor plan shows that a number of renovations have taken place over the years. Although no walls were found with the original wood lath and plaster finishes, there are walls with original framing in place, primarily around the main corridor.

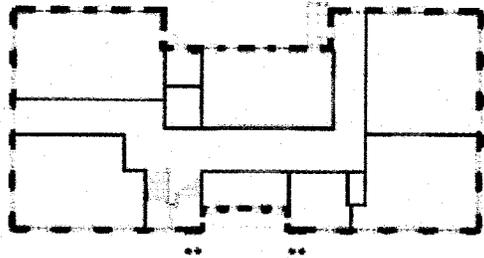
Building One: Third Floor Plans

Pre-1952 Third Floor Plan:



The third floor was dedicated to “domestic arts” including “drawing, leather carving, clay modeling, metal hammering and ... weaving”. It appears that the purpose of the skylights was to light the art studios.

Existing Floor Plan:



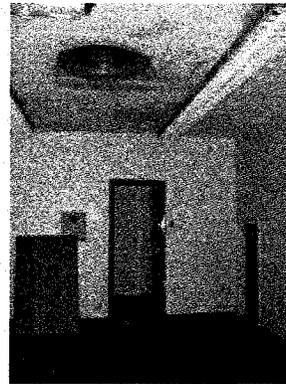
The third floor has had extensive modification. No original wall finishes remain although original wood framing members have been found.

IMPACT TO INTEGRITY OF FLOOR PLAN

The first floor plan has been heavily modified. No original wall finishes or wall framing have been found. At the second floor, some original framing materials are present in the walls, but no original wall finishes or trim remain. The third floor is in much the same condition. While some walls retain their original locations, and some original framing, there are no original wall finishes.



A 1914 picture of the Principal's office. The original wood stair can be seen through the open door.



A modern photo of the same space illustrates the extent to which historic finishes have been lost.

IMPACT TO INTEGRITY OF INTERIORS

None of the original 1911 wood trim remains, with the possible exception of a portion of picture rail in a third floor mechanical room. Except for this mechanical room, the entire original wood floor has been covered with vinyl asbestos tile or carpet, or both. The oldest interior doors date to the 1950s remodeling project, and some are newer than that. Marks on the wood framing indicate that original ceilings were plaster on wood lath. These ceilings were replaced by furred down ceilings, which were mostly covered with 12-inch square acoustical tiles at some point. The oldest existing light fixtures date to the 1950s. Decades of standing vacant have left the interior significantly damaged. There is graffiti evident throughout, and numerous holes in walls and ceilings.

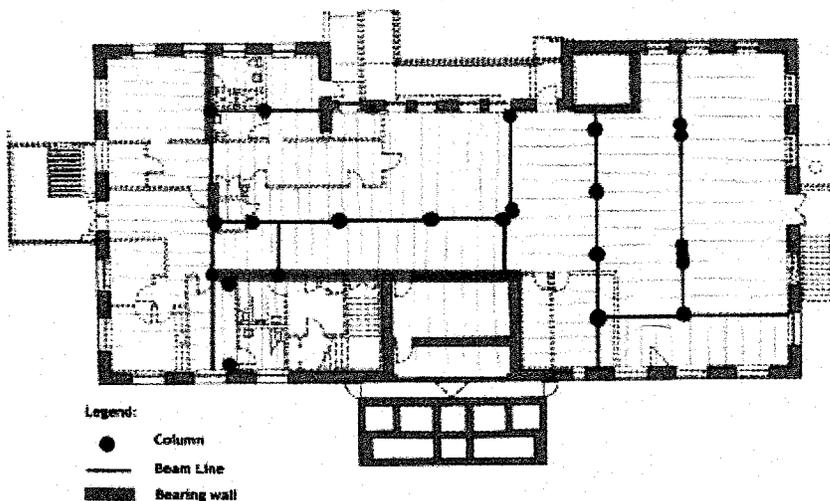
REPORT ON CONDITIONS

EXISTING STRUCTURAL SYSTEMS

The existing construction consists of unreinforced masonry bearing walls at the building exterior with wood-framed floors. The roof consists of wood joists supported by steel trusses bearing on the unreinforced masonry walls.

The floor structure is supported at the interior by a combination of wood bearing walls with wood posts and steel beams with steel columns. The original structure used primarily wood posts, although two steel lattice columns are original to the 1911 construction, and some steel pipe columns at the first floor appear to be original. Field inspection indicates that the vertical structural system has been heavily modified over the years. Wood bearing walls were removed in the first floor as part of the 1952 remodel, and replaced with steel columns and beams.

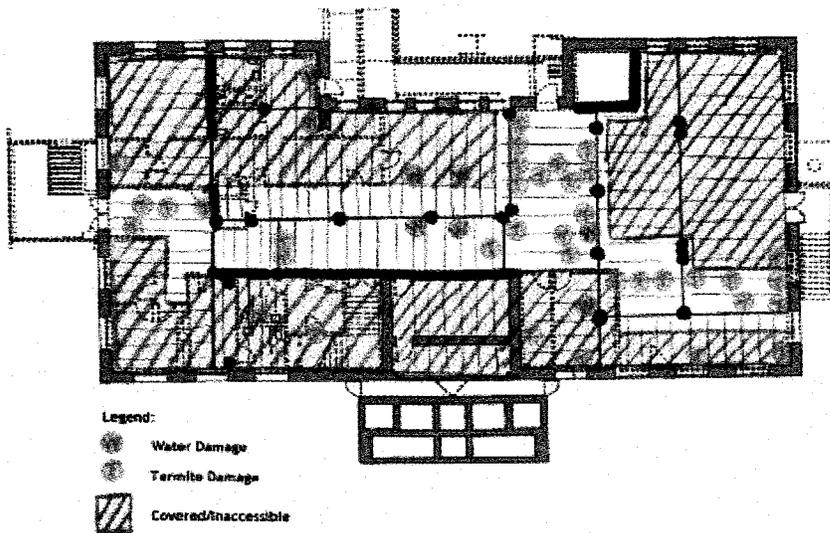
Since then, additional steel structural elements have been added on an ad-hoc basis. In some cases, steel structural members bear on wood members, a condition that is not permitted under current codes. The level of modification has been such that at present, 23 columns exist in the 7000 square foot first floor.



The extent of the changes to the structural system can be seen in the framing plan for the second floor. The continued additions and revisions over the years have left a column system far more complex than necessary.

EXISTING STRUCTURAL CONDITIONS

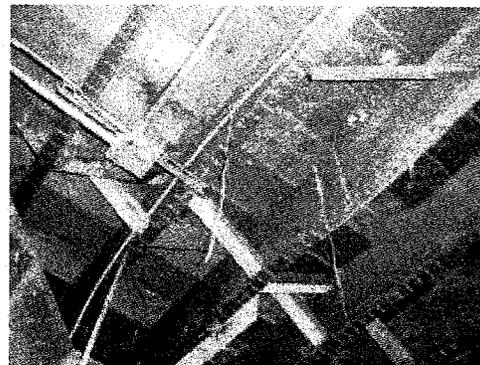
Termite and water damage are extensive in the second floor structure and wood floor. Termite tubes are visible on the first floor walls, and hanging from the wood structure above. Damage appears to extend through the entire assembly. Damaged wood can be scraped from the bottom of the floor structure, and, in the same place, from the top of the wood floor. Although destructive testing was not authorized by the City of Phoenix, a portion of the first floor ceiling had been removed at some time, leaving the floor framing above open to view. Inspection of this framing indicates substantial termite damage. It would be reasonable to expect that the extent of damage in the concealed areas would be similar. There have been extensive roof leaks, and as a result, there is substantial water damage to the third floor sheathing.



This graphic illustrates the extent of termite and water damage to the bottom of the second floor structure. Orange dots indicate areas where termite damage was observed. Blue dots show water damage. Areas where ceilings are in place and structure could not be examined are shown shaded.



There are portions of severe water damage visible at the second and third floors.



Termite tubes hanging from the second floor structure

Existing Floor Load Capacity:

Minimum recommended live load capacities for the 1997 UBC are as follows: 40 pounds per square foot for classrooms, 50 pounds per square foot for offices, 80 pounds per square foot for third floor corridors, and 100 pounds per square foot at second floor corridors and stairs.

In addition to the live loads noted above, the 1997 UBC recommends a minimum addition of 20 pounds per square foot of loading, for the weight of interior partitions in occupancies where the locations of partitions are subject to change over the life of the building.

The existing wood structure was analyzed assuming no termite or water damage. Results show that the majority of the floor area has a live load capacity of approximately 40 to 50 pounds per square foot in combination with a 20 pounds per square foot partition load.

The load capacity of the current floor system, in a hypothetical undamaged state, would meet the minimum 40 pounds per square foot requirement for classroom spaces. Except for some limited portions, however, it would not meet the 50 pounds per square foot requirement for offices spaces.

There is no generally accepted calculation method for the reduction of allowable load for termite or water damage. However, some facts are clear:

- In the areas that can be inspected, termite and water damage are substantial.
- Even in an undamaged condition, the current floor structure meets only the most minimal loading requirements for classrooms, generally does not meet the requirements for offices, and cannot meet the requirements for corridors.

The conclusion would be that even the smallest reduction of load capacity for damage would not allow the existing structure to meet even the most minimal of current requirements.

Existing Wind and Seismic Load Capacity

The 1997 Phoenix Construction Code designates that these buildings be designed for a wind speed of 70 miles per hour (Exposure C) and for a seismic zone of 2A.

The existing wood roof and floor diaphragms are overstressed for both wind and seismic forces. Existing wood floors and roofs will require additional sheathing for resistance of diaphragm shears. Performance of newly sheathed diaphragms may be marginal or inadequate without the addition of blocking at the joints of the new sheathing.

Anchorage of the existing unreinforced masonry walls to the wood floor and roof diaphragms would need to be increased with drilled-in adhesive anchors and steel strap ties.

Analysis of the existing unreinforced masonry walls for in-plane shear forces indicates that stresses are moderate, but most likely acceptable per the 1997 UBC.

PROGRAM AND ALTERNATIVES

SPACE AND FUNCTIONAL REQUIREMENTS

The University of Arizona College of Medicine, in cooperation with Arizona State University will expand its present operations in Phoenix, to include a four year program, utilizing the remaining historic Phoenix

Union High School buildings. An initial class of 24 students, classrooms and administrative spaces will be housed in the buildings. The student body is expected to grow, as new teaching facilities are implemented on campus.

Building One will be the academic hub of the University of Arizona's expanded Phoenix Medical School. It will contain the Medical Library, Learning Resource Center and Pre-Clinical Training space. The Bookstore, Student Commons and a café will provide retail functions and opportunities for social interaction on campus. Administrative space, Student Affairs and outreach program offices will complement the instructional program components, and fill out the remaining space in the building.

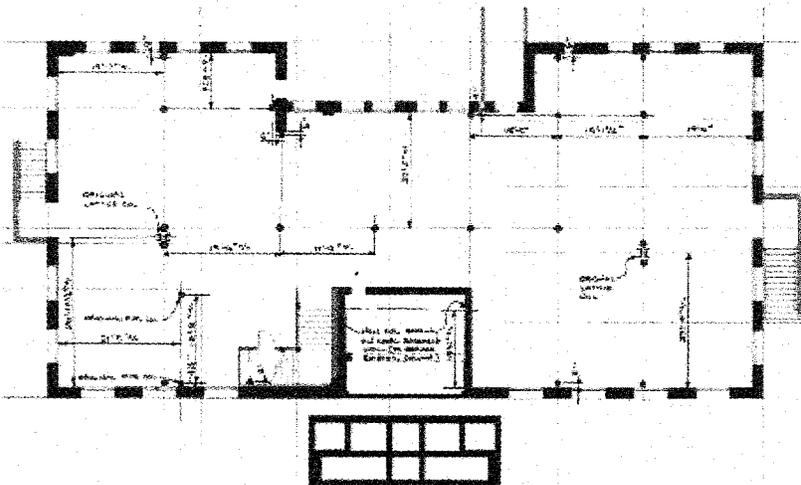
In addition to its basic space needs, the College of Medicine program also contains specific technical requirements. Its educational spaces must meet or exceed current code requirements, be environmentally sound, and properly lit with natural and artificial light. The Medical School is committed to an active tele-medicine program that works with rural counties in Arizona, and the historic buildings must be retrofitted to provide the digital infrastructure required to support this activity. In order to meet accreditation criteria for medical school facilities, the buildings must be of equal quality to the facilities at the University of Arizona College of Medicine in Tucson.

Because of the level of growth and change expected in the early years of the Medical School's development, the buildings must be designed now to accommodate change gracefully and allow for internal programmatic evolution.

Schedule is also a crucial part of the program for this development. The university is committed to beginning the first class in July of 2006. If the renovation project cannot meet this schedule requirement, the project will be relocated.

Alternate Planning Options:

A space plan has been developed with the University of Arizona end user's group, in compliance with the Arizona Board of Regents facility standards. The plan has been analyzed under two separate structural scenarios. The first assumed that the wooden floor structure would be retained, repaired, and reinforced. To begin this process, a new column grid layout was developed, based on a structural analysis of the existing structure.



This first floor plan illustrates a conceptual column grid layout as required for retaining the horizontal wood structure.

The red dots indicate the location of new pipe columns. Existing columns that would remain in the new layout are shown in blue.

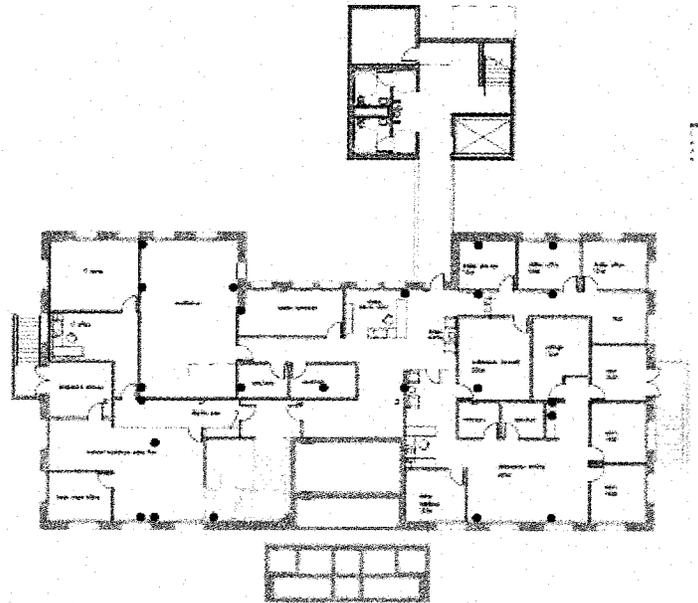
The existing lattice columns would remain, but must be strengthened with pipe columns on either side.

Superimposing the space plan and the structural plan for the first floor indicates that with revisions, the two could be made to work together. However, even with the structural upgrades included in the retrofit project, the load carrying capacity of the structure would only be at the bare minimum required by code. This may not be adequate for some of the programmed spaces, such as the library. Future changes would also be more difficult, as the number of columns would be substantial, and certain uses, such as high-volume records storage, would be precluded. Finally, two columns would be placed in front of windows at the south façade.

Matching the proposed space plan and the column grid shown at right indicates that they could be made to work together, with revisions to the plan.

Load capacity would be at the code required minimum, and future re-use severely restricted.

Two columns would be located in front of windows at the south façade.



The second option assumed that the existing structure would be replaced with a new structure consisting of steel columns with concrete and steel composite floor decks. This option has a number of advantages including:

- Load capacity could be increased to accommodate required program spaces such as the library.
- Fewer columns would be required, and their locations could be better controlled
- The building would be easier to re-configure in the future.

SCHEDULE AND COST ANALYSIS

SCHEDULE

Schedule is a driving factor in this project. The University of Arizona is committed expanding its Phoenix Medical School in July of 2006. The University will not participate in any project that cannot meet this start date. DPR construction has prepared alternative schedules illustrating the impact of salvaging and retrofitting the existing construction. By their estimates, the retrofit option will cause the project to be unable to meet the July deadline, postponing completion until at least early November. A

November opening date is unacceptable to the University, and will result in the building continuing to stand vacant while a new use is found.

COST ESTIMATES

DPR Construction has developed an analysis comparing the costs involved with replacing the existing structure, and those involved with retrofitting it. Because design is in the earliest stages, costs can only be provided as a range. The best estimates are that between \$300,000 and \$500,000 would be added to the total cost of the project if the retrofit option were pursued. Total costs without retrofitting the structure are estimated to be six million dollars.

COMPARISON OF OPTIONS

STRUCTURE

There are three options to be considered for the structure of Building One:

- Retaining the structure in place
- Replacing and upgrading portions of the structure to bring it into compliance with current codes
- Replacement of the structure.

The Ryden Report ^(page 2) indicates that preliminary investigations have determined that there would be "no appreciable cost advantage to removing and replacing the historic internal structure compared with retaining and reinforcing it". However, it also calls ^(pages 75,77,79) for a more detailed study of framing systems for the specific adaptive reuse eventually decided upon for the building, and acknowledges ^(page 165) that further structural study may determine that the "1911 wood structural system of the building and the 1949 remodeled interior finishes cannot be retained for code-compliance or economic reasons".

Its recommendation in this case is that "it will be most important to retain the layout, size and proportion of the public spaces of the building in the new design. For it is the feeling of volume of the historic corridors more than the finishes of the walls and doors that impart a sense of pre-1948 historical character."

Evaluation of the structural options for Building One reveals that:

1. Retaining the original structure in place with no changes.

This cannot be considered a viable option. As it stands, the structure is extensively damaged, and does not meet floor or lateral loading requirements. Because of continued modification over the years, there are numerous conditions that do not meet code.

2. Modifying the original structure to meet current requirements.

Preservation of the existing wood floor structure at the second and third floors of Historic Building One will require extensive modification of the existing structure. The following is a description of the process that would be necessary to preserve the wood floor structures while simultaneously repairing damage and upgrading vertical and lateral load capacities to that required by the proposed adaptive re-use program:

- Cut holes in second floor structure at approximately 8 feet on center each way. Install custom post shores from basement to underside of third floor through those holes. Walers will be located between the post shores to support the wood joists at the third floor.
- Install post shores at approximately 8 feet on center each way from the basement to the underside of the second floor structure. Post shores supporting the second floor structure will be offset by 4 feet from the post shores supporting the third floor structure.

- Remove all interior load bearing walls below the third floor structure.
- Remove all interior load bearing walls below the second floor structure.
- Remove all existing steel beams and steel columns with the exception of the original steel latticed columns.
- Remove all existing 1x board sheathing at the second and third floor structures.
- Evaluate all remaining wood joists at the second and third floor structures for termite and water damage. All joists having termite or water damage will be removed and replaced with new wood joists. It is anticipated that the majority of the wood joists at the second floor structure will require removal and replacement.
- Erect new steel girders and columns to support the wood floor structures. The new steel beams and columns would be located generally along the same lines as the bearing walls that were removed. However, the number of columns could be reduced, and their locations better controlled for coordination with space planning. The installation of these new steel elements is expected to be particularly problematic. A means for maneuvering these new steel elements between the post shores as well as a means for hoisting them into place has not been devised.
- Install anchor bolts and steel strap ties at perimeter of the second floor and third floor structures to increase anchorage of the floor diaphragms to the unreinforced masonry walls.
- Install wood blocking at 4 feet on center between the wood joists at the second and third floor structures for nailing the new wood diaphragm.
- Install new plywood sheathing at the second and third floor structures. Plywood sheathing will be nailed at all four edges to provide sufficient strength for resisting wind and seismic forces.

The end result of this work will be an "existing" structure with a very high percentage of new material. The original floors, which are the portion of the assembly identified as the character defining feature, would be removed and replaced by new sheathing. What original structure remains would be interlaced with new blocking at all plywood seams, and reinforcing at joists and beams. Because the existing bearing walls have been removed, the resulting structure would not function in the same manner as the existing. It would depend on columns, rather than bearing walls.

3. Replacing the existing structure.

If the existing floor and interior vertical load structures were removed, the replacement structure would be steel and concrete floors with steel columns. The new structure would maintain existing floor heights. The roof and roof structure would be retained under this approach, although the roof structure would require some reinforcement in order to meet current codes. The new structure would allow the building to meet floor and lateral loading requirements, as well as any additional loading requirements imposed by the new program.

WINDOWS

According to the Ryden report ^(page 93), no original window sashes or frames are currently in place in the building. The report recommends installing new wood windows that recreate the original layout and pattern of the windows. Double glazing with untinted or low-E glass is recommended. The report does not

require that the windows be operable, although it does require that a by-pass offset be incorporated into the new frames.

The documentation available for the windows consists of photos of the building exteriors. These provide a good sense of overall window configuration, but not of frame details. The evidence for window size and shape is more definitive. The existing window openings still exist, although they have been filled.

No 1911 wood double hung windows exist on the campus today, and no 1911 window details have been found. The recommended approach in the Secretary of the Interior's Standards for Rehabilitation when replacing missing windows provides for two acceptable approaches:

- The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation.
- The replacement windows may be a new design that is compatible with the window openings and the historic character of the building.

There are then two options for the replacement windows; wood or metal frames.

1. Wood Frames

Without an existing window, or evidence of original frame conditions, it will not be possible to recreate the frames exactly. The use of insulated glass will increase the width of the glazing panels from one-quarter inch to a full inch, and increase their weight. The change in the glazing assures that even if the original frame details were found, the new wood frames could not recreate them. The frames will need to accommodate the wider glass, support the additional weight, and meet new wind loading requirements. The modifications to the frames would be substantial.

2. Metal Frames

Metal windows with extruded aluminum frames are available from specialty manufacturers. These can provide thin frame profiles, and true double hung window configuration. Frames would be painted, and no raw metal would be exposed. Because no historic wooden trim remains at the interior of the building, there is no need to match existing wood features. The metal windows can recreate the size, shape and patterns of the originals. A smaller profile, more similar to the original, could be achieved because of the greater strength of the frame.

PROPOSED APPROACH

PROPOSED STRUCTURAL SYSTEMS

The existing second and third floor structures would be removed, as would the existing columns. These would be replaced with a new structure consisting of concrete and steel floors, and steel columns. The existing roof and roof structure would be retained, although the structure would require reinforcement and modification to meet current code requirements. The benefits of this option include:

- Reconfiguration of the existing closely-spaced columns and interior bearing walls would result in greater flexibility in space planning for the new occupancy, and any future occupancies.
- An estimated 12 weeks of construction time could be saved, as opposed to the retrofit of the existing floors.
- The new construction would be resistant to future termite and water damage.

- The new construction will be fire-resistant, improving the fire and life safety for the building.
- The new construction will be able to be designed for the required floor, wind and seismic loads.
- The new steel structure will be better able to meet program requirements related to acoustics, vibration and flatness.

PROPOSED EXTERIOR RESTORATION APPROACH

Addition

A new addition will be created north of the building. It will be attached to the building with narrow bridges, to minimize its impact upon the existing structure, and ensure reversibility. The purpose of the addition will be to provide those new features required to allow the building to meet current code and accessibility requirements. The addition will contain an elevator, a second exit stair, and ADA compliant restrooms.

Windows

Masonry infill panels at all facades will be removed, and new windows will be installed. The new windows will recreate the fenestration patterns visible in historic photographs.

Window frames will be painted, extruded aluminum. They will be double glazed with low-E, untinted glass. The windows will recreate the size, shape and pattern of the originals. Frames will be clearly marked with the year of installation. Based on the results of a more detailed mechanical system analysis, some or all of the windows will be operable. Windows that are not operable will have a double hung offset.

Stairs

The stairs at the east side of the first floor will be retained. Stairs at the west side of the first floor will be recreated.

No ADA accessibility additions will be placed at the south façade. The elevation change from grade to the second (main) floor is over six feet. This would require a ramp at least 72 feet long. Every 30 feet of ramp will require a 5 foot landing, bringing the overall length to at least 82 feet. This would be a very large construction at the most significant façade of the building. ADA accessibility to the building and between floors will be provided in a new addition north of the building.

Stucco

The approach will be to repair the stucco as required, and repaint it. A paint analysis will be performed to determine original colors. Sandblasting will not be used to clean the exterior.

PROPOSED ABATEMENT APPROACH

Because of the proposed approach to the interiors in Building One, most of the preservation related abatement issues will occur at the exterior of the building. The south entry doors are original, and will be retained. If lead paint removal is required, paint removal will be accomplished with chemical strippers, as opposed to mechanical abrasion. Lead paint has also been found on the exterior. When possible, simple encapsulation will be the preferred method of abatement. Where the paint has failed, and must be removed, sandblasting will not be permitted. Chemical removal of lead based paint may be the preferred method of removal for lead based paint.

PROPOSED INTERIOR APPROACH

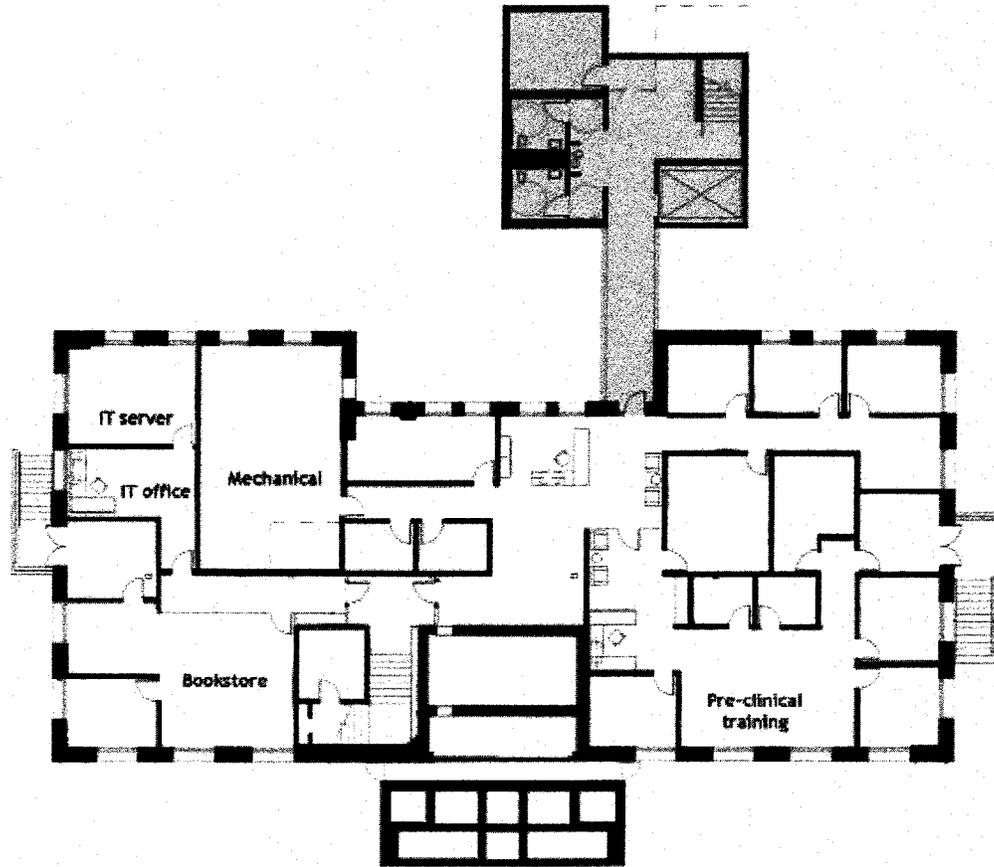
Neither the 1911, nor the current floor plan provide the types of spaces, or the spatial organization required by the Medical School. A new floor layout will be developed. However, the basic organizational features of the building will be retained, including:

- A lobby space directly behind the main floor entrance doors, in the same space and approximately the same size as the original.
- The 1949 stair will remain in place, and continue to function as one of two exit stairs.
- The new addition at the rear will be connected at a door that connected to the original fire escape, continuing that doors function as a secondary exit.
- Spaces have been laid out to respect the existing windows. No openings will be divided by walls or covered with spandrel panels.
- Ceiling heights at perimeter spaces will be set so that windows can be unobstructed for their entire height. To accommodate this, spaces at the center of the building will be lower, to allow for mechanical duct routing.

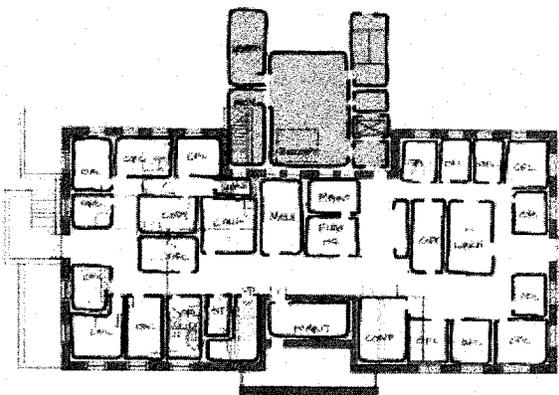
There are no surviving 1911 finishes in the building, with the exception of some trim in the third floor mechanical room. Detailing in the building will be modern, but will respect the proportions and patterns of the original.

PROPOSED FLOOR PLANS

BUILDING ONE FIRST FLOOR PLAN:

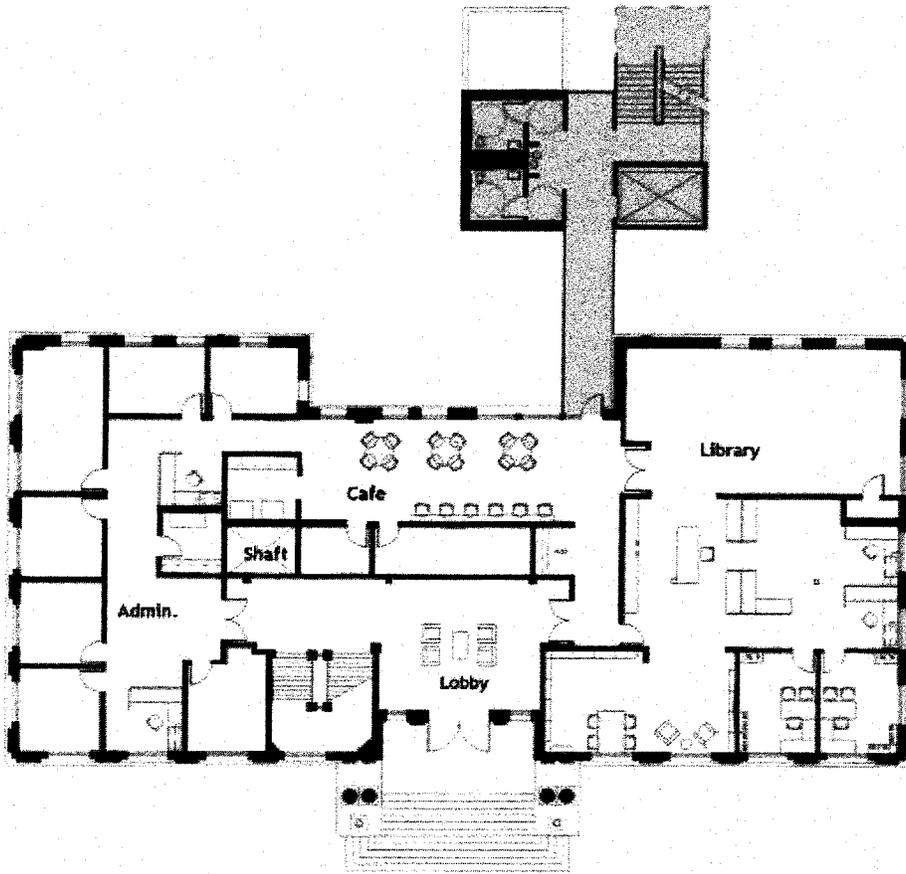


The east side of the first floor will contain a mix of exam and office rooms, for use in the pre-clinical training program. The west side will contain the bookstore, and some support functions.

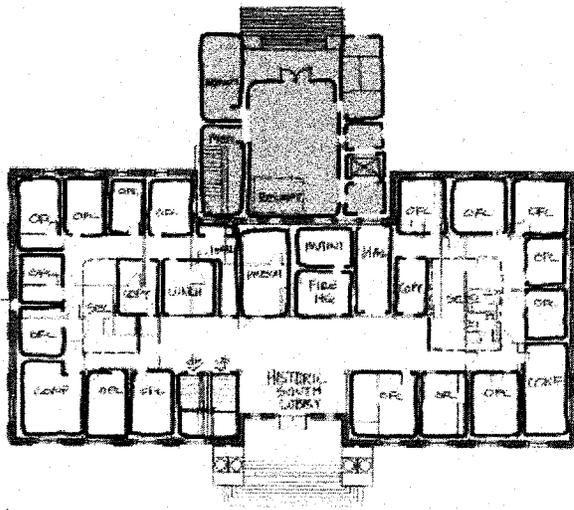


The Ryden report recommends private offices at the perimeter of the existing building. Support spaces are located at the center. An addition at the north provides stairs, restrooms, an elevator and a reception space.

BUILDING ONE SECOND FLOOR PLAN:

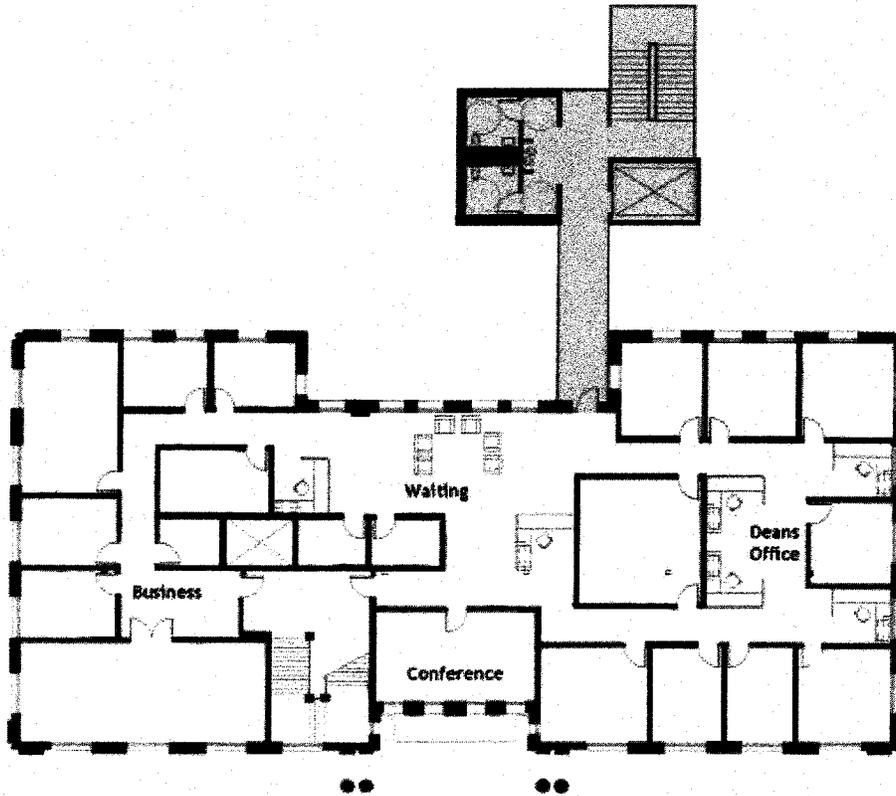


The second floor will house the library on the east side, and administrative offices on the west side. The historic Lobby space will retain its function. The 1949 stair will be retained, and open to the floors above and below.

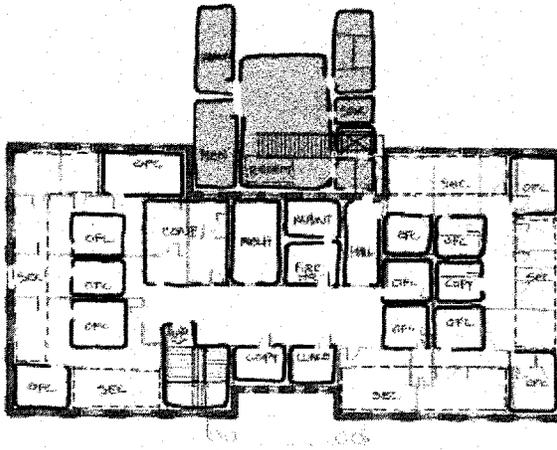


The Ryden report recommends a perimeter lined with private offices, with core spaces including administrative and support functions. The addition to the north contains stairs, restrooms, the elevator and a reception area. The historic lobby function is retained behind the main entry doors.

BUILDING ONE THIRD FLOOR PLAN:



The third floor will contain the Dean's Office, and Business Office functions. There will be large conference room at the south side.



The Ryden report proposes a ring of administrative spaces, surrounding a core of private offices. The addition at the north contains stairs, restrooms the elevator and reception spaces.

APPENDIX A:

The Secretary of the Interior's Standards for Rehabilitation

The following Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site or environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of the deterioration required replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures if appropriate shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

APPENDIX B: Bibliography and Data Sources

Literature

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, U.S. Department of the Interior, National Park Service, Preservation Assistance Division, Washington D.C.

Ryden Architects Inc. A Historic Structures Report for Buildings One, Two and Three, Phoenix Union High School Historic District, Final Report, March 15 2004

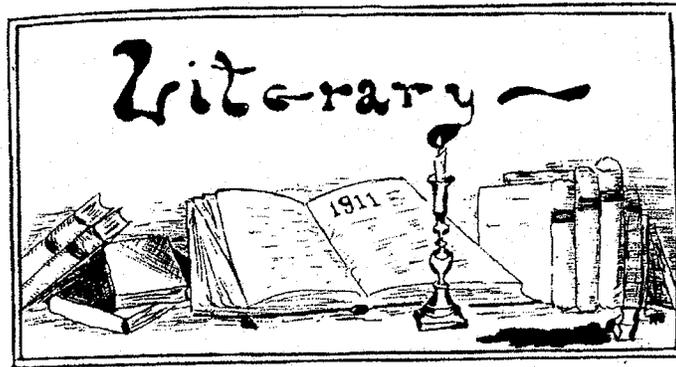
The Phoenician, Phoenix Union High School yearbook, various years, 1911 to 1959

Drawings

Fred M. Guirey AIA, Architectural Remodeling on the Administration Building, Phoenix Union High School, Partial set, 5 sheets of drawings, December 31, 1952

Leshner & Mahoney Architects and Engineers, Remodeling Stairs Buildings 1 & 3, Phoenix Union High School, Partial set, 4 sheets of drawings, December 31, 1945

APPENDIX C:
Historic Account
1911 "Phoenician" Yearbook



The New High School

With next year the High School will enter upon a new and broader era of its existence. The need of additional facilities has been felt for a long time. The capacity of the present building was outgrown more than three years ago. Since that time the number of pupils in the school has increased fifty per cent., but by the construction of temporary buildings and the reduction of the school's courses to the barest necessities, it has been possible to get along in a way. But with the growth of the school in numbers and the desire to supply the educational needs of the patrons of the school it became positively necessary to have additional facilities. The conditions being presented to the public, a \$150,000.00 bond issue was authorized. After some delay the bonds were sold and active measures taken toward the erection and equipment of new buildings.

When the new buildings are completed our High School will be one of the most modern, best equipped and unique high schools in the country.

The buildings to be erected are the Domestic Arts and Science building, the Physical and Biological Science building, the Auditorium, Heating Plant and Manual Training, and a Gymnasium.

The plan of building separate buildings for specific purposes, grouping them in a harmonious manner, is new to high school construction. It is, in a way, bringing the college and university idea over into the high school. That the plan is a desirable one is shown by the fact that nearly every high school in Southern California that has been built within the past five years has been constructed according to this scheme.

It is doubtful if this plan would be found desirable in the states where weather conditions are different from those of California and Arizona. But in these states where the weather is ideal for out-door exercise every day the erection of several smaller buildings for high school purposes instead of one large building forms an ideal condition. It allows the pupils to walk in the open air, from class to class, at the end of every forty-five minutes during

The scheme also avoids the congestion of pupils that is unavoidable in a single building. It also allows that each building may be constructed specifically for the purpose for which it is to be used; no compromises having to be made to make one phase of the work adapt itself to some other phase.

The new High School, in both its construction and courses of study, is planned to perform in the best possible way its two-fold work; that of preparing for college and that of preparing directly for life. The interests of the ninety per cent. of pupils who enter high school, but who do not go on to college, are given as much and as faithful consideration as are the interests of the ten per cent. or less who may wish to enter institutions of higher learning.

In the Domestic Arts and Science building will be taught all those things which are fundamental to successful and beautiful homemaking. In the basement of this building will be a lunch room and cafeteria, which will be operated under the direct supervision of the school for the purpose of serving pupils with a wholesome mid-day lunch at actual cost. In the lunch room will also be given the school banquets. In another part of the basement will be installed a modern and scientific laundry, where young ladies will be instructed in the principles of laundering, so that that phase of home life, which is a nightmare to most housekeepers, may be performed in a way that will demand the least amount of labor and in a way that will be least destructive of clothing.

On the main floor of this building will be rooms in which will be taught cooking, sewing and millinery. Here also will be located the administration offices; and in the southwest corner will be built in a model five-room cottage, consisting of dining room, living room, bed room, kitchen and bath room. This cottage will be furnished as is the ordinary home, and all girls taking the domestic science course and domestic arts will be required to spend a given number of days in practical housework. That is to say, in this cottage they will be obliged to demonstrate what they have learned in theory. Each girl must arrange and decorate each room, and be graded upon the work.

The upper floor will be devoted to domestic art, such as drawing, leather carving, clay modeling, metal hammering and probably some kinds of weaving. Taken all in all, this building will be one of the most valuable of the entire group.

The Physical Science building will be devoted to botany, zoology, physiology, physics, chemistry, astronomy, physical geography and agriculture. The laboratories will be constructed after the most modern ideas. The science lecture rooms will be equipped with elevated seats and all apparatus necessary to the successful prosecution of the work.

The Shop building, when completed, will consist of a forge room and machine shop, a pattern shop and a wood-working shop. At the present time, however, only a part of this building will be erected, namely, that

which is used for working in wood. Later, it is expected to add iron work, but conditions at the present time do not seem to demand work in iron.

The Auditorium consists of a main body and two wings. One of the wings, for the present, will be used as a study hall; the other will be devoted to oratory and music. The stage equipment and conveniences will be equal to any stage in the Southwest, and it will be large enough for staging all plays that can be undertaken by high school pupils. The main auditorium room will be seated with opera chairs, as will also the gallery, and when all parts of the building are thrown together the total seating capacity will be about twelve hundred. In the Auditorium are located the main locker rooms of the school, although lockers are scattered throughout all the buildings. Each pupil attending the school will be assigned a locker, to which he and he alone will be given the key. In this locker he is supposed to keep his books and all other belongings that he may need for the prosecution of his school work.

The Gymnasium will not be unlike well appointed gymnasiums everywhere. It will contain all apparatus usually found in first-class gymnasiums, and will be of a size that will accommodate all ordinary inside physical drills and games.

The city of Phoenix and the entire Salt River valley is to be congratulated upon having a high school plant such as this. Its adaptability to the needs of present day education is all that can be asked. The entire plant has been carefully planned with a view of responding to the educational needs of high school pupils for the present and for years to come.

The unit system of buildings is an elastic one, and can be enlarged from time to time as future needs may demand.

The courses of study that will be offered under the new regime will be rich and liberal. Opportunity will be given to prepare for any college or university in the land, and those who do not wish to prepare for college will have the opportunity of equipping themselves for the tasks of everyday life.

It is the aim of the management of the school to make it as practical as possible, and it is hoped that the day is not far distant when conditions will warrant the holding of night classes for those who are obliged to work during the day. In fact, it is the aim of the school to furnish an opportunity for every young man and woman who wishes to learn and thus better qualify themselves for the duties of life—it is the aim of the school to give them the very best educational opportunities possible.

ALVIN K. STABLER



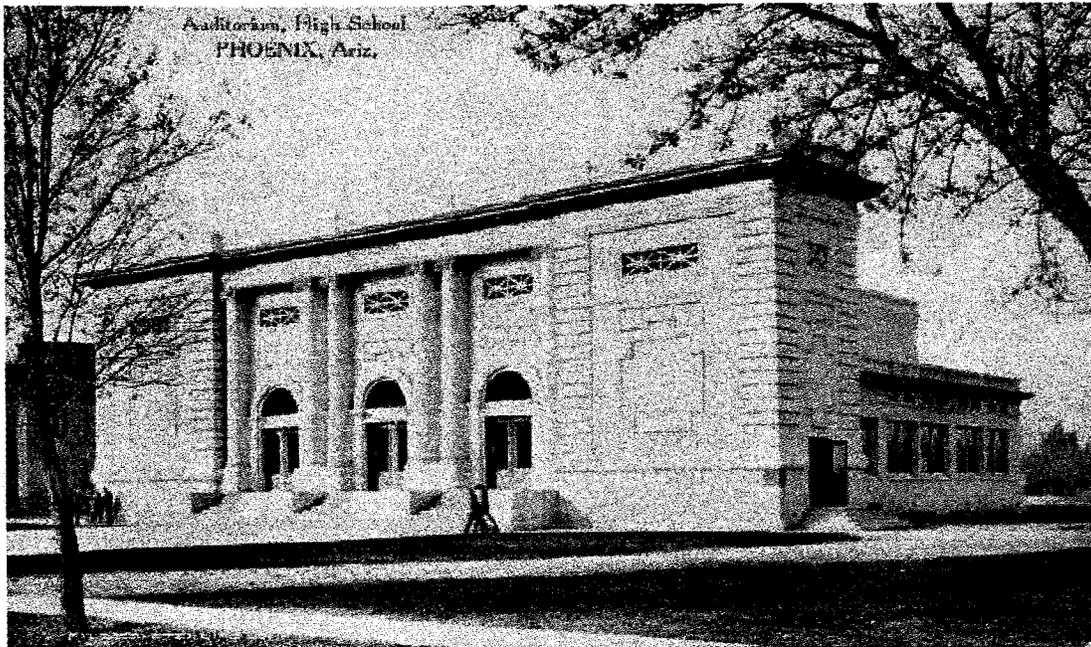
Preservation Plan for:

Building Two Auditorium

Phoenix Union High School
Historic District

512 East Van Buren Street
Phoenix, Arizona

January, 2005



SMITHGROUP
architecture engineering interiors planning



METROPOLIS
Design Group LLC

Preservation Plan
for:

PHOENIX UNION HIGH SCHOOL
Building Two
Auditorium
Phoenix, Arizona

Prepared for:

SmithGroup
Phoenix, Arizona

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Robert G. Graham, AIA - Historical Architect
Anne F. Bilsbarrow, AIA - Historical Architect

Project No. 1239
January, 2005



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Executive Summary

This report presents the conceptual preservation approach for Building Two (also known as the Auditorium) on the Phoenix Union High School campus; as part of the overall adaptive re-use plan of the campus for the University of Arizona's expansion of its Phoenix Medical School.

Its rehabilitation will be part of a larger project that will adapt the three remaining historic buildings on the campus. Building Two will contain the mediated classrooms, meeting spaces, and conference center for the Medical School.

The first medical school class of 24 students is scheduled to begin in July of 2006. This schedule requirement is absolute, and provides the main driver for the project.

Building Two was originally constructed in 1911. By 1929 it was clear that a much larger auditorium was needed, and project was undertaken to replace the main house and stage. The original lobby and façade were to be retained and renovated. Unfortunately, the lobby was not properly braced during construction, and collapsed during a wind storm. It was reconstructed according to the 1911 plans.

The building was further modified in the 1950s. A curved plaster ceiling was installed in the main house, and the windows removed and replaced with masonry infill panels. Further modifications occurred in the 1990s when the building served as a live music venue. Seats were removed from the main house, part of the main floor was modified to provide a level area, and lighting towers were added.

Despite the modifications, the exterior does retain its historic character. The main entry porch to the south remains with most of its details intact.

As part of this project, the building facades will be returned to their 1929 character. Masonry infill panels will be removed, and windows reinstalled.

Accessibility requirements will be addressed by providing ramped entrances at the north doors on either side of the stagehouse. An interior elevator core will be constructed to the north of the lobby to allow circulation between the floors.

The interior of the building will be modified to provide new spaces as required by the program. The balcony will be removed. The mediated classrooms will be constructed at the main floor level, with meeting rooms placed one floor above. At the first floor, a new area will be excavated between the existing restrooms, to provide an elevator lobby.

The main auditorium area will be modified to serve as a conference center. The floor will be removed and reconstructed in a level condition.

The architectural detailing in the auditorium will be retained and restored. The 1950s ceiling will be removed to expose the original coffered ceiling.

The lobby and its flanking stairs will be restored to their original appearance.

Methodology

This report integrates known historical data with the inspection of existing building conditions to make adaptive re-use recommendations in conformance with the Secretary of the Interior's Standards for Rehabilitation.

The Historic Structures Report for Phoenix Union High School Historic District prepared in March of 2004 by Ryden Architects for the City of Phoenix was the starting point for this plan. This information was augmented with inspection and analysis of the buildings, reviews of historic drawings, and specific programmatic information developed for the University of Arizona Medical School.

Architectural and structural teams visited the site on numerous occasions between October and December of 2004. Because original drawings were not available, buildings were field measured to the extent needed to prepare dimensioned floor plans representing existing conditions.

Original 1911 drawings for the buildings have not been located. The University of California

in Santa Barbara maintains a collection of Norman F. Marsh drawings, but does not have any information on this campus. The Arizona Historical Society Lescher & Mahoney Archive was also searched for drawings, because Lescher & Mahoney had done some renovation work on the campus. The 1949 stair remodel plans for Buildings One and Three were located, but no other drawings could be found.

Most of the historic photographic information was obtained from old yearbooks in the alumni association's archive. Yearbooks from 1911 through 1959 were reviewed.

A NOTE ON TERMINOLOGY:

The three buildings all have three habitable floors. The lowest floor is partially below grade. It has been referred to as both a "basement" and "first floor" in various documents. Because this floor does meet the current code's definition of a story, it will be referred to in this report as the first floor. The main floor will be referred to as the second floor.

Project Team

Tenants/End Users:

University of Arizona, College of Medicine

David H. Harris, Senior Project Manager

University of Arizona Facilities Management

Ann Libecap, Director

Developer:

DESCO Southwest

Bruce Gillespie, Principal

Contractor

DPR Construction

Dave Elrod, Project Manager

Principal Architect

SmithGroup, Inc.

A. Bradley Woodman AIA, Project Director

Art Lara AIA, Project Manager

G. Craig Randock AIA LEED, Design/Programming

John H. Abed, Project Architect

Adam Denmark, Architect

Linda Salzmann, IIDA LEED, Interior Design

Eric Kirkland PE, Mechanical Engineer

Gerry Lopez PE, Electrical Engineer

Historic Preservation Consultants:

Metropolis Design Group LLC

Robert Graham AIA, Historical Architect

Anne Bilsbarrow AIA, Historical Architect

Structural Engineer:

Paragon Structural Design, Inc.

Bryan Salt PE, Principal

Landscape Design

Floor and Associates

Christopher Joy , Project Manager

Civil Engineering

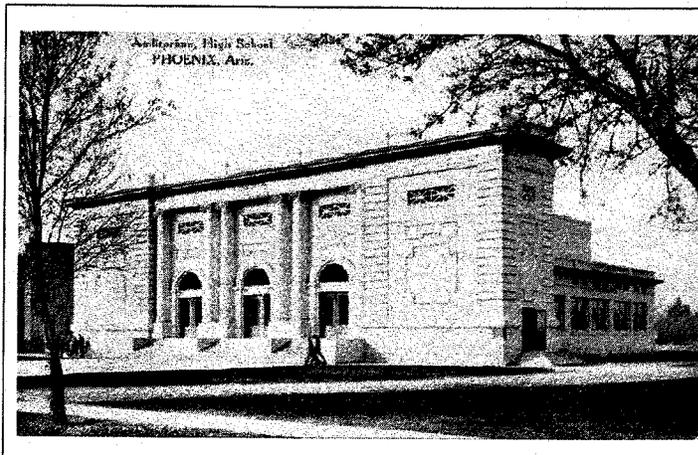
Dibble and Associates

Jeff McBride PE, Project Manager

Historical Overview

Building Two

YEAR	EVENT
1897	Phoenix Union High School begins operation at the Van Buren Street site
1911	Buildings One, Two and Three, and central plant constructed
1929	Building Two completely renovated. Lobby portion collapses during construction and is rebuilt.
1949	Cast-in-place concrete stairs added at Buildings One and Three. "Modernization" of campus site plan. International style addition built at west end of Building One (addition demolished in late 1980's).
1950's	Building Two windows removed. Building Two ceiling revised
1952	Major Building One remodel, to create additional administration space.
1964	Major Building Three remodel, including replacement of structure. Windows removed in Buildings One and Three
1984	Classes end, campus closes and is sold for private development.
1990's	Remodeling of Building Three for use as a charter "arts" high school. Remodeling of Building Two for use as a live music venue. New paving for surface parking.
2003	Campus purchased by City of Phoenix Central Plant and Building Five demolished.



Phoenix Union High School
 Preservation Plan
 Building Analysis
Building Two

Year Constructed	1911
Reconstructed	1929
Minor Renovation	1990's

SIGNIFICANCE AND INTEGRITY REVIEW

Character Defining Features

The primary character defining elements of Building Two, as determined by the Ryden report *(pages 192-194)*:

<i>Exterior facades</i>	Especially the front and side facades.
<i>1929 massing</i>	Particularly the fly tower, which creates a distinctive shape.
<i>PUHS clock</i>	The clock on the north façade of the fly tower.
<i>Architectural details</i>	Carved cornerstone, colonnaded entablature, porches and stairs, cornice and parapet, quoined corners, spandrel panels, water table, window openings, main entrances and side entrances at the lobby, cast plaster moldings and cartouches, fluted steel lamp posts, sconce light fixtures, ventilator grilles, wood windows, doors and transoms, "Auditorium" signs.
<i>Lobby space & details</i>	Vaulted ceiling, wood floors, plaster walls and ceilings, running wood trim, crown moldings, baseboards, door and window casings, leather covered doors, staircases and balusters, wrought iron guardrails, historic light fixtures and exit signs, trophy cases.
<i>House space & details</i>	Coffered ceiling (above curved ceiling), wood floor, plaster walls, arched colonnade at aisles and front, wood stairs with wrought iron handrails, decorative balconies, plaster cartouches high on side walls, proscenium and stage apron, window opening locations.
<i>Balcony space & fixtures</i>	Stage and fly gallery spaces, fixtures and finishes. Wood floor, painted brick walls, ropes and curtains (especially the installers sign), and electrical dimmer control console.

Lobby first floor Stairs, and wood windows at first floor

Sequence Of Construction

SEQUENCE OF ADDITIONS AND ALTERATIONS

Building Two was originally built in 1911, but almost completely reconstructed in 1929. The original house, stage and classroom wings were replaced. The 1911 lobby and main façade were slated to be retained for renovation in the 1929 project. Unfortunately, they collapsed during construction, due to the combination of poor bracing and a violent windstorm, and had to be reconstructed. The lobby of the Auditorium is the only space on campus that retains its 1911 character, although in the form of a 1929 copy.

LEVEL OF CHANGE TO FLOOR PLANS

If the 1929 plan is accepted as the original, then few changes have been made. The house, stage and fly gallery date to the 1929 project. At an unknown date, the balcony was extended. The windows were removed and filled in with concrete block in the 1950s. Probably at the same time, a curved-plaster ceiling was installed below the original coffered ceiling, which remains in place.

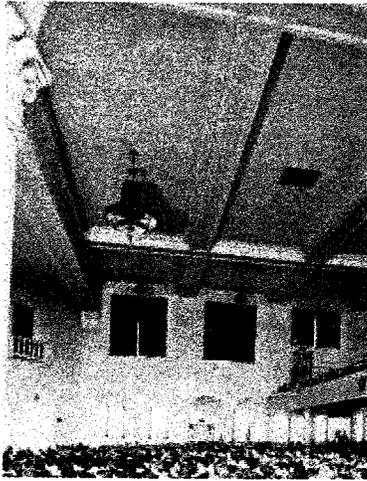
Most recently, numerous changes were made to Building Two in the 1990s, when it was used as a live music and pay-per-view theater. All of the seats were removed from the main floor. The south quarter of the sloping main floor was built-up flush with the lobby to provide a level area for bars and tables. A hole was cut into the wood floor to provide a control space for sound and light systems.

Seats remain in the balcony. Two spotlight platforms have been added at the edge of the balcony, and supported with pipe columns bolted to the main floor. The original projection booth remains at the balcony.

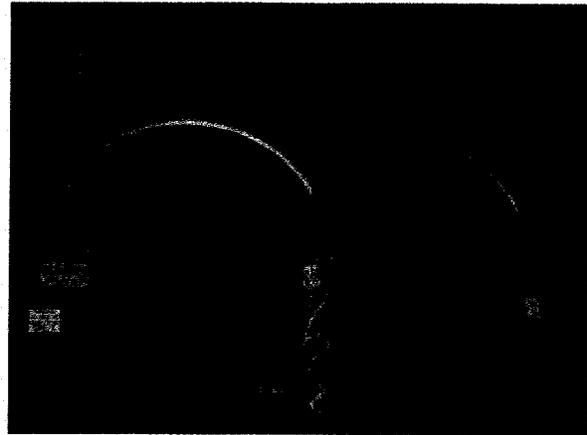
Two ADA uni-sex restrooms have been added at the lobby. The original restrooms remain in the first floor below the lobby. They are not ADA accessible, as there is no elevator in the building.

IMPACT TO INTEGRITY OF FLOOR PLAN

The floor plan remains largely intact. Although the main house floor has been modified, and the seats have been removed, the general sizes and distributions of spaces remain intact.



A 1934 picture of the auditorium shows the original coffered ceiling, and the windows with black-out shades in place.



The dark paint and lack of light make it difficult to take a current photo of the entire interior. Even in this close-up however, it is clear that the architectural details of the interior remain largely intact, despite the inappropriate paint.

IMPACT TO INTEGRITY OF INTERIORS

The interiors in Building Two are the most intact of the three remaining buildings. Most of the modifications date to the use of the building as a live music venue in the 1990s. The most immediately apparent change is an unfortunate paint scheme. Most of the main house interior has been painted dark purple, with gold highlights, and faux purple marbling on the columns. The 1950s curved plaster ceiling remains in place, also painted. Under the paint, however, the architectural detailing remains largely intact.

REPORT ON CONDITIONS

EXISTING STRUCTURAL SYSTEMS

The existing construction consists of unreinforced masonry bearing walls at the building exterior. The roof consists of wood joists supported by steel trusses. The steel trusses are supported by steel columns that are embedded within the masonry walls on each side of the house.

The balcony floor structure consists of a wood sleeper floor system bearing on wood joists supported by steel girders. The steel girders bear on a combination of unreinforced masonry walls and steel columns.

The majority of the existing construction dates to the 1929 expansion, with the exception of portions of the lobby which retain some original 1911 construction. Miscellaneous structural modifications were made related to the audio/visual and food/beverage upgrades made in the 1990s.

EXISTING STRUCTURAL CONDITIONS

Termite damage and warping have been observed at the sloping wood floor in the main house. This is a wood sleeper floor system bearing on wood posts on concrete footings. No concrete slab exists below the sleeper floor system, and the soil is exposed. As the result of the removal of the seats at the main floor, an overloaded condition was created by the standing-room-only conditions during live performances. Cracked joists are visible under the main floor.

Existing Floor Load Capacity

Minimum live load capacities for fixed-seating assembly areas are 50 pounds per square foot, with 100 pounds per square foot at stairs and exitways.

Analysis of the existing structure reveals that the majority of the main floor area and the balcony floor have live load capacities of approximately 40 to 50 pounds per square foot. While a few areas are in marginal compliance with the minimum code-required live loads, the existing capacity is generally below that recommended for fixed-seating, or office areas. The wood joist structure has not been designed for exitway loading.

Existing Wind and Seismic Load Capacity

The 1997 Phoenix Construction Code designates that these buildings be designed for a wind speed of 70 miles per hour (Exposure C) and for a seismic zone of 2A.

The existing wood roof and floor diaphragms are overstressed for both wind and seismic forces. Existing wood floors and roofs will require additional sheathing for resistance of diaphragm shears. Performance of newly sheathed diaphragms may be marginal or inadequate without the addition of blocking at the joints of the new sheathing.

Anchorage of the existing unreinforced masonry walls to the wood floor and roof diaphragms would need to be increased with drilled-in adhesive anchors and steel strap ties.

Analysis of the existing unreinforced masonry walls for in-plane shear forces indicates that stresses are moderate, but most likely acceptable per the 1997 UBC.

The house and fly tower unreinforced masonry walls are tall, with inadequate lateral support by flexible wood diaphragms for out-of-plane loads. Supplemental horizontal bracing will be required at these walls.

There does not appear to be a lateral load resisting system at the balcony floor. The existing structure most likely spans horizontally to the masonry walls at the east and west sides of the house.

The seating areas at both the main floor and balcony sit on sleeper floor systems which do not have adequate lateral bracing at the vertical posts. There does not appear to be any system in place to keep the wood pedestals from toppling in the event of a seismic event.

PROGRAM AND ALTERNATIVES

SPACE AND FUNCTIONAL REQUIREMENTS

The University of Arizona College of Medicine, in cooperation with Arizona State University, will expand its present operations in Phoenix to include a four year program, utilizing the remaining historic Phoenix Union High School buildings. An initial class of 24 students, classrooms and administrative spaces will be housed in the buildings. The student body is expected to grow, as new teaching facilities are implemented on campus.

Building Two is being considered as the location for the "mediated classrooms" required as part of the Medical School's program. These require a minimum of 12 feet clear ceiling heights for digital projection capabilities, and a raised floor for optimal connectivity between student and instructor workstations.

In addition to its basic space needs, the College of Medicine program also contains specific technical requirements. Its educational spaces must meet or exceed current code requirements, be environmentally sound, and properly lit with natural and artificial light. The Medical School is committed to an active tele-medicine program that works with rural counties in Arizona, and the historic buildings must be retrofitted to provide the digital infrastructure required to support this activity. In order to meet accreditation criteria for medical school facilities, the buildings must be of equal quality to the facilities at the University of Arizona College of Medicine in Tucson.

Because of the level of growth and change expected in the early years of the Medical School's development, the buildings must be designed now to accommodate change gracefully and allow for internal programmatic evolution.

Schedule is also a crucial part of the program for this development. The university is committed to beginning the first class in July of 2006. If the renovation project cannot meet this schedule requirement, the project will be relocated.

SCHEDULE AND COST ANALYSIS

SCHEDULE

Schedule for Building Two is the same as for the other two buildings in this project. Classes are scheduled to start in July 2006. The mediated classrooms to be developed on the main floor are crucial to the operation of the Medical School. The Conference Center is not a vital part of the initial Medical School program, and could be completed later.

COST ESTIMATES

Cost estimates have been developed comparing the renovation of Building Two to provide instructional spaces, with the option of developing these spaces as the first phase of a new building on campus. Although the university supports the idea of developing Building Two as the campus hub, the renovation costs may require that this project be re-evaluated. Preliminary estimates indicate that renovation costs, at five and one-half million dollars, may be almost twice those involved in new construction.

COMPARISON OF OPTIONS

STRUCTURE

1. Retaining the existing structure with no changes:

Retaining the original structure with no modifications is not an option. It cannot meet current lateral loading requirements, and does not meet vertical load requirements in selected areas. Damage has been noted to the wood structure under the main auditorium floor.

2. Modification of the existing structure:

Analysis of the masonry walls indicates that except for the fly tower walls, they can remain as they are. The fly tower walls must be braced, because of their height. An interior bracing system will allow these walls to meet lateral loading requirements.

The horizontal structural elements will require more modification, both to meet current codes and the new loads imposed by the adaptive reuse plan. As is the case in the other two buildings, the wood floor and roof diaphragms do not provide adequate lateral loading capacity. The roof structure can be retained, but will require additional reinforcing, and anchorage to the walls.

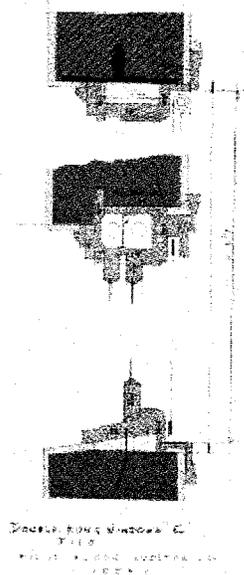
The adaptive re-use plan essentially involves inserting a new building inside the existing. This new construction will include the mediated classrooms at the main floor, the meeting rooms above, a new elevator core to the north of the lobby, and a new first floor lobby excavated between the existing restrooms. As might be expected, this scale of modification will entail the introduction of new structure. The existing balcony and its structure will be removed. A new steel and concrete structure will support the classrooms and meeting rooms.

In order for the main auditorium to be used as a conference center, the floor cannot remain sloped. A new flat floor will be constructed.

WINDOWS

The Ryden report ^(page 229) notes that the historic wood hopper windows in the first floor restrooms are still in place. The report recommends retaining and repairing these. All other windows have been removed, and the openings filled with masonry. Given the expected reuse of the building as an auditorium, the report suggested that window panels in the main house remain infilled, and that replica steel grilles be placed in front of the masonry.

The adaptive re-use of Building Two in this plan will convert the auditorium space to a conference center. While its use as a theater would have supported retaining the masonry infill panels, a conference center would benefit from actual windows. As currently envisioned, the infill panels would be removed, and new windows installed in the original openings.



1929 wood window details have been found. They show a frame approximately eight and one-half inches thick in section, and frames about four inches wide at the head and jamb, and three inches wide at the inside face of the sill. Mullions are shown at three and three-quarters inches wide.

The recommended approach in the Secretary of the Interior's Standards for Rehabilitation when replacing missing windows provides for two acceptable approaches:

- The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation.
- The replacement windows may be a new design that is compatible with the window openings and the historic character of the building.

There are then two options for the replacement windows; wood or metal frames.

1. Wood Frames

Original 1929 window details have been found. However, new windows will be required to meet energy efficiency, wind and rain infiltration requirements that were not in existence in 1929. The use of insulated glass will increase the width of the glazing panels from one-quarter inch to a full inch, and increase their weight. New wood frames designed to accommodate insulated glazing panels would have a significantly different profile from the originals. If exact recreations of the historic windows were to be installed, energy efficiency could be achieved with the installation of new interior storm windows.

2. Metal Frames

Metal windows with extruded aluminum frames are available from specialty manufacturers. These can provide thin frame profiles, and true double hung window configuration. Frames would be painted, and no raw metal would be exposed. The metal windows can recreate the size, shape and patterns of the originals. A smaller profile, more similar to the original, could be achieved because of the greater strength of the frame.

PROPOSED OPTIONS

PROPOSED STRUCTURAL SYSTEMS

The structural system will be modified as detailed in the previous section. New structure will be inserted as required, and existing structural components will be retained and reinforced when possible.

PROPOSED EXTERIOR RESTORATION APPROACH

Windows

Masonry infill panels at all facades will be removed, and new windows will be installed. The new windows will recreate the fenestration patterns visible in historic photographs.

Window frames will be painted, extruded aluminum. They will be double glazed with low-E, untinted glass. The windows will recreate the size, shape and pattern of the originals. Frames will be clearly marked with the year of installation. Based on the results of a more detailed mechanical system analysis, some or all of the windows will be operable. Windows that are not operable will have a double hung offset.

Accessibility

ADA accessibility between floors will be provided by a new elevator, interior to the building, to the north of the existing lobby. Accessibility into the building will be provided by ramps at the east and west sides.

The entrance to the ramps will be from the north side of the building. Although not historically the main entrance, the north side will actually be the main entrance from the new campus and on-site parking.

At the south façade the change in grade from ground level to the second (main) floor is over six feet. Under current ADA requirements making this accessible would require a ramp at least 72 feet long. Every 30 feet of ramp will require a 5 foot landing, bringing the overall length to at least 82 feet. In accordance with the recommendations of the Ryden report ^(page 314), no ramping structure will be constructed at the south façade.

Stucco

The approach will be to repair the stucco as required, and repaint it. A paint analysis will be performed to determine original colors. No sandblasting will be used in exterior cleaning.

PROPOSED ABATEMENT APPROACH

Asbestos has been found in Building Two, in the form of floor tiles and mastics, sealants, pipe insulation, sealants and roofing. In addition, the fire curtain at the stage is 80 to 90 percent asbestos. Lead based paint has been found on both interior and exterior surfaces. Where lead paint removal is required on historic doors or windows, chemical removal would be the preferred method. At the exterior walls, encapsulation would be preferred where the existing paint coat is sound. Where paint has failed and must be removed, chemical stripping would be preferred.

PROPOSED INTERIOR APPROACH

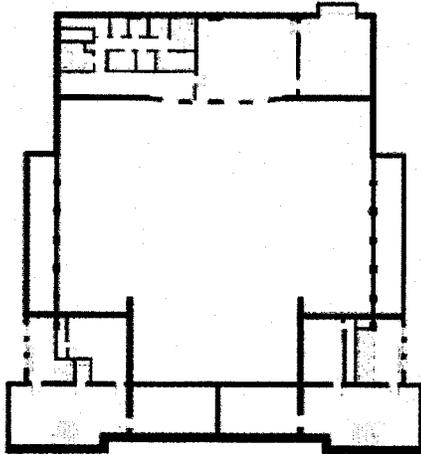
The interior adaptive reuse plan is inspired by the plans suggested in the Ryden report. The new plan will adapt the interior to provide mediated classrooms and a conference center for the Medical School. The lobby space and its connecting stairs will be restored to their original appearance. The balcony and main house will be modified, to provide a variety of smaller meeting spaces, as opposed to one large hall. An elevator core will be constructed at the center and just north of the existing lobby.

The existing balcony will be removed and replaced with new construction to permit the insertion of the elevator core, classrooms and meeting spaces.

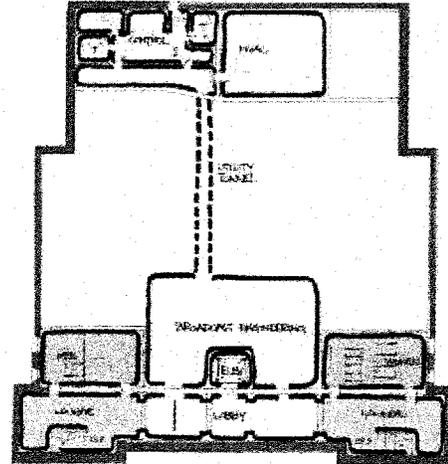
The following pages provide a comparison of the original plans and sections, the plans and sections proposed in the Ryden report, and the proposed plans and sections for this project. New construction is shaded yellow, restored areas are shaded green, and modified areas are shaded orange.

BUILDING TWO:

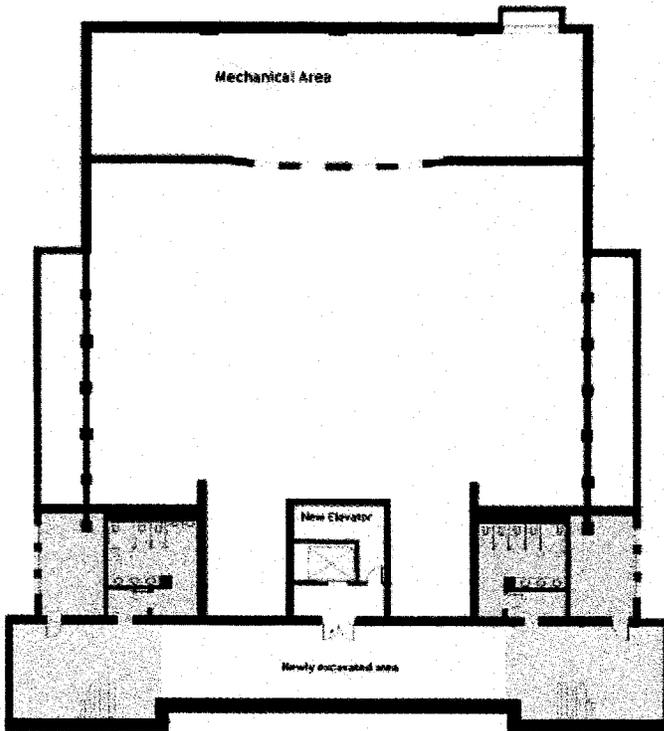
Existing First Floor Plan



Proposed First Floor Plan: Ryden Report



PROPOSED FIRST FLOOR PLAN:



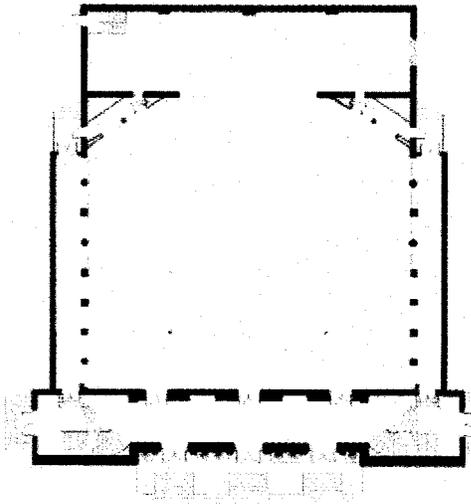
The first floor contains restrooms below the lobby, and performer dressing spaces below the stage. The restrooms are not connected to one another at this level, nor are the connected to the areas below the stage.

Both the Ryden report and the current plan propose connecting the restrooms with a newly excavated area, and placing mechanical spaces below the stage. Both also proposed constructing a new elevator to the north of, and centered on the lobby.

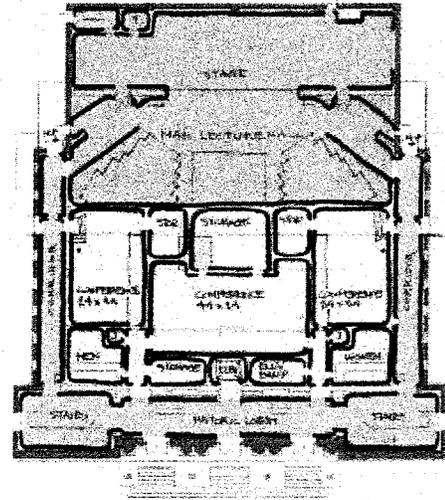
The stairs connecting the lobby to the restrooms will be restored. The restrooms will require modernization and renovation in order to meet current accessibility codes.

BUILDING TWO:

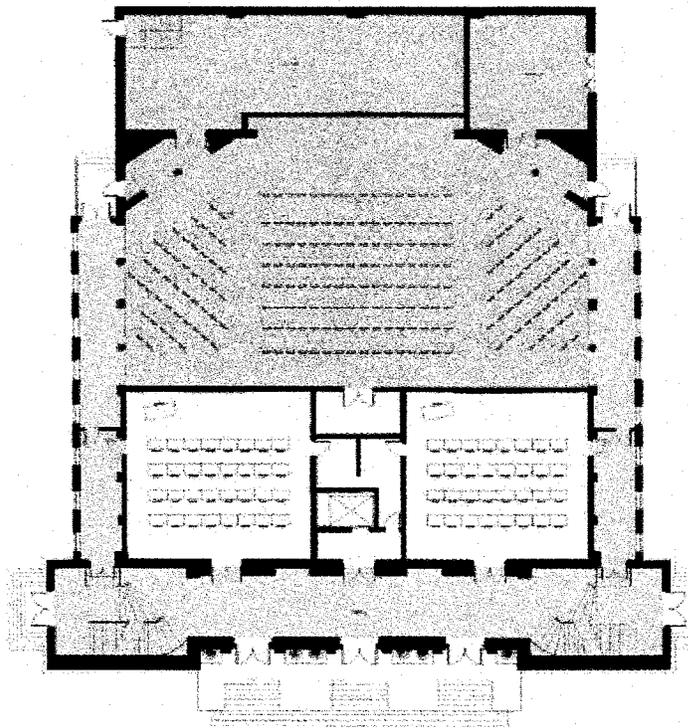
Existing Second Floor Plan



Proposed Second Floor Plan: Ryden Report



PROPOSED SECOND FLOOR PLAN:

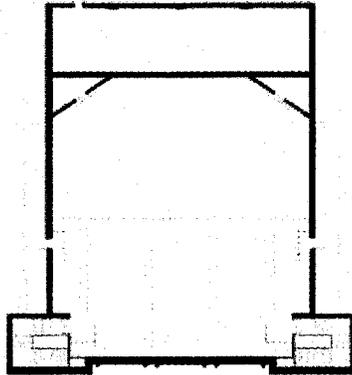


The second floor is the main level of the auditorium. The lobby at this level is the last remaining interior with intact 1911 features, although they are 1929 copies of those features.

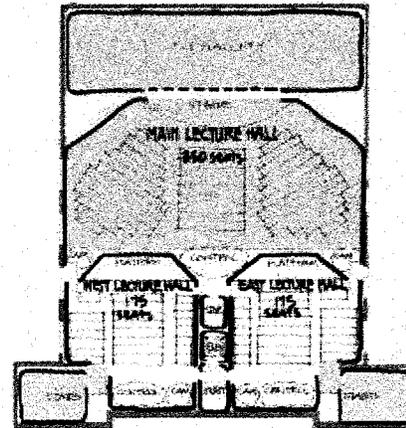
In both the Ryden plan and the proposed plan, the area below the balcony is converted to smaller meeting spaces. In the new plan, these spaces will be mediated classrooms, separated by control rooms.

BUILDING TWO:

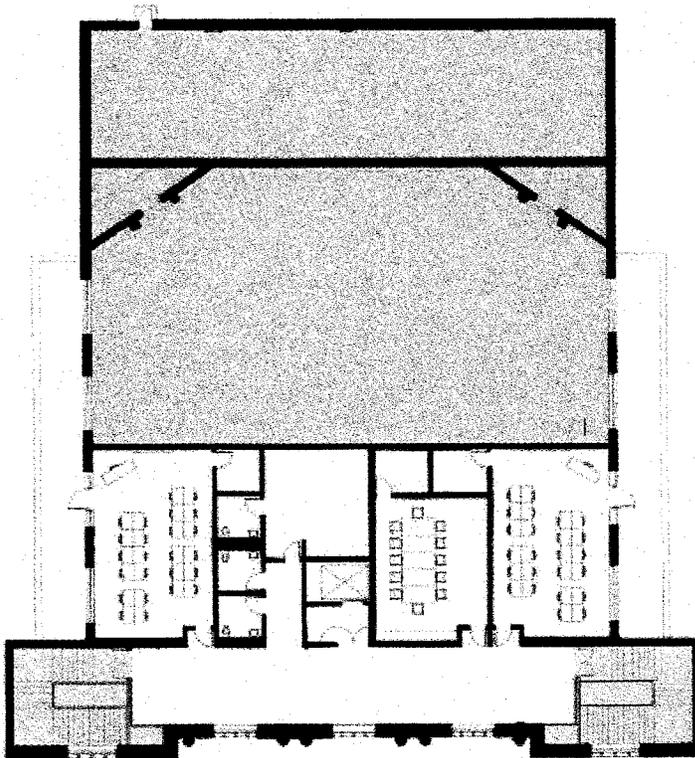
Existing Third Floor Plan



Proposed Third Floor Plan: Ryden Report



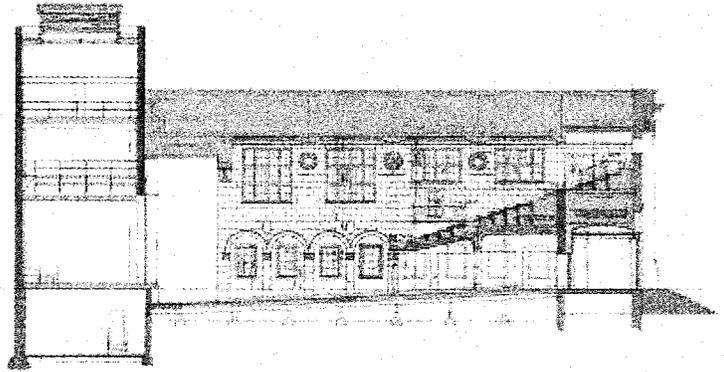
PROPOSED THIRD FLOOR PLAN:



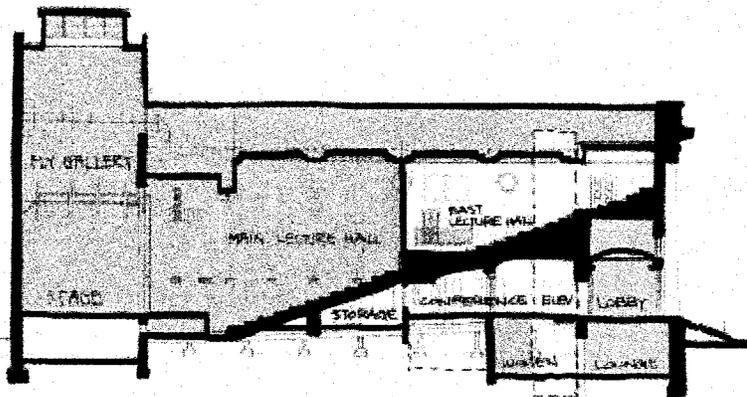
At the third floor, the balcony will be replaced with conference rooms and their support spaces. The stairs leading from the main lobby to the upper level will remain in place, and be restored. The upper level floor will be leveled.

**BUILDING TWO:
Building Sections**

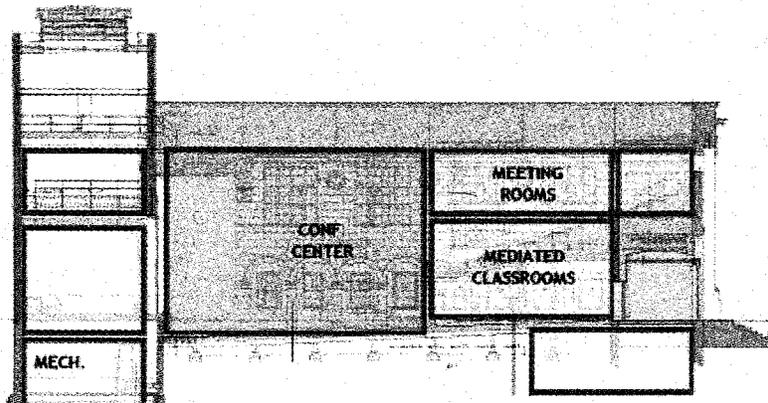
Original (1929) Building Section:



Proposed Section: Ryden Report



PROPOSED SECTION



APPENDIX A:

The Secretary of the Interior's Standards for Rehabilitation

The following Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site or environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of the deterioration required replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures if appropriate shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

APPENDIX B:
Bibliography and
Data Sources

Literature

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, U.S. Department of the Interior, National Park Service, Preservation Assistance Division, Washington D.C.

Ryden Architects Inc. A Historic Structures Report for Buildings One, Two and Three, Phoenix Union High School Historic District, Final Report, March 15 2004

The Phoenician, Phoenix Union High School yearbook, various years, 1911 to 1959

Drawings

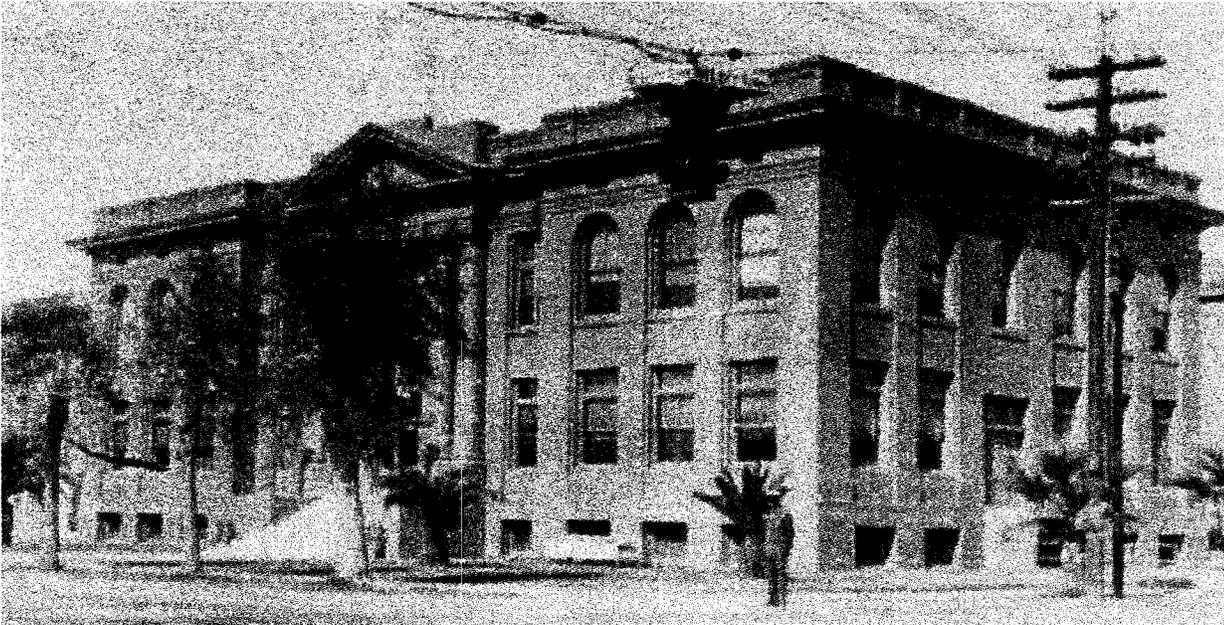
H. H. Green & Henry W Hall, Alterations and Additions, Phoenix Union High School Auditorium , Complete set, 20 sheets of drawings, No date shown, late 1920's assumed

Preservation Plan for:
**Building Three
Science Building**

**Phoenix Union High School
Historic District**

**512 East Van Buren Street
Phoenix, Arizona**

January, 2005



SMITHGROUP
architecture engineering interiors planning



METROPOLIS
Design Group LLC

Preservation Plan
for:

PHOENIX UNION HIGH SCHOOL
Building Three
Science Building
Phoenix, Arizona

Prepared for:

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Project No. 1239
January, 2005



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Executive Summary

This report presents the conceptual preservation approach for Building Three (also known as the Science Building) on the Phoenix Union High School campus; as part of the overall adaptive re-use plan of the campus for the University of Arizona's expansion of its Phoenix Medical School.

Its rehabilitation will be part of a larger project that will adapt the three remaining historic buildings on the campus. Building Three will provide student and faculty offices. To encourage student/faculty interaction, the spaces will be arranged in a "pod" plan with faculty offices surrounding centralized student work spaces.

The first medical school class of 24 students is scheduled to begin in July of 2006. This schedule requirement is absolute, and provides the main driver for the project.

Of the three historic buildings remaining on campus, Building Three has been the most heavily modified. In 1964 an extensive remodeling project removed the entire interior, including the structure. Only the exterior walls, roof, interior concrete stairs, and basement slab were retained. All of the windows were removed, and replaced with masonry infill panels of pierced concrete masonry units. An addition was placed to the north of the building, containing a new exit stair and mechanical room. The west portico and stairs were demolished.

Despite the modifications, the exterior does retain its historic character. The main entry porch to the south remains with most of its details intact.

As part of this project, the building facades will be returned to their 1911 character. Masonry infill panels will be removed, and windows reinstalled. The west portico will be rebuilt. The 1964 addition will be removed, and a new addition constructed. The new addition will contain an elevator, an exit stair, and ADA accessible restrooms. It will be connected to the building with open air bridges.

The existing 1964 structure does not meet current loading requirements, and will require reinforcement.

The interior of the building will be modified to meet the needs of the Medical School program. The 1949 cast-in-place concrete stairs will be retained, and the original lobby function will be retained and enhanced at the Main entry on the second floor. New floor plans will be developed for the administrative and teaching spaces. The plans will respect the historic features of the buildings. Walls are positioned so that all windows remain unobstructed. Ceiling heights at the perimeter will be set to allow windows to extend the full height of the historic openings.

Methodology

This report integrates known historical data with the inspection of existing building conditions to make adaptive re-use recommendations in conformance with the Secretary of the Interior's Standards for Rehabilitation.

The Historic Structures Report for Phoenix Union High School Historic District prepared in March of 2004 by Ryden Architects for the City of Phoenix was the starting point for this plan. This information was augmented with inspection and analysis of the buildings, reviews of historic drawings, and specific programmatic information developed for the University of Arizona Medical School.

Architectural and structural teams visited the site on numerous occasions between October and December of 2004. Because original drawings were not available, buildings were field measured to the extent needed to prepare dimensioned floor plans representing existing conditions.

Original 1911 drawings for the buildings have not been located. The University of California

in Santa Barbara maintains a collection of Norman F. Marsh drawings, but does not have any information on this campus. The Arizona Historical Society Lescher & Mahoney Archive was also searched for drawings, because Lescher & Mahoney had done some renovation work on the campus. The 1949 stair remodel plans for Buildings One and Three were located, but no other drawings could be found.

Most of the historic photographic information was obtained from old yearbooks in the alumni association's archive. Yearbooks from 1911 through 1959 were reviewed.

A NOTE ON TERMINOLOGY:

The three buildings all have three habitable floors. The lowest floor is partially below grade. It has been referred to as both a "basement" and "first floor" in various documents. Because this floor does meet the current code's definition of a story, it will be referred to in this report as the first floor. The main floor will be referred to as the second floor.

Project Team

Tenants/End Users:

University of Arizona, College of Medicine

David H. Harris, Senior Project Manager

University of Arizona Facilities Management

Ann Libecap, Director

Developer:

DESCO Southwest

Bruce Gillespie, Principal

Contractor

DPR Construction

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G. Craig Randock AIA LEED, Design/Programming

John H. Abed, Project Architect

Adam Denmark, Architect

Linda Salzmman, IIDA LEED, Interior Design

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Bryan Salt PE, Principal

Landscape Design

Floor and Associates

Christopher Joy , Project Manager

Civil Engineering

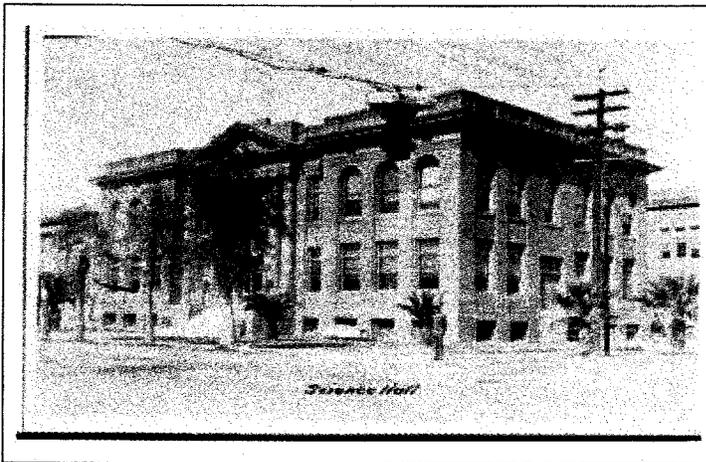
Dibble and Associates

Jeff McBride PE, Project Manager

Historical Overview

Building Three

YEAR	EVENT
1897	Phoenix Union High School begins operation at the Van Buren Street site
1911	Buildings One, Two and Three, and central plant constructed
1929	Building Two completely renovated. Lobby portion collapses during construction and is rebuilt.
1949	Cast-in-place concrete stairs added at Buildings One and Three. “Modernization” of campus site plan. International style addition built at west end of Building One (addition demolished in late 1980’s).
1950’s	Building Two windows removed. Building Two ceiling revised
1952	Major Building One remodel, to create additional administration space.
1964	Major Building Three remodel, including replacement of structure. Windows removed in Buildings One and Three
1984	Classes end, campus closes and is sold for private development.
1990’s	Remodeling of Building Three for use as a charter “arts” high school. Remodeling of Building Two for use as a live music venue. New paving for surface parking.
2003	Campus purchased by City of Phoenix Central Plant and Building Five demolished.



Phoenix Union High School
 Preservation Plan
Building Analysis
Building Three

Year Constructed	1911
Stairs Added	1949
Major Renovation	1964
Minor Renovation	1990s

SIGNIFICANCE AND INTEGRITY REVIEW

Character Defining Features

The primary character defining elements of Building Three, as determined by the Ryden report ^(page 337) :

- Exterior facades* The facades were heavily modified during the 1964 renovation. The original windows were removed and replaced with masonry infill panels. The west portico was removed. However, most of the other details remain, and the original widow openings are easily identified.
- Exterior details* The colonnaded portico and stairs at the front façade, the cornice and parapet, pilasters, spandrel panels, water table, window openings, main entrance, cast plaster moldings and cartouches, fluted steel lamp posts, ventilator grilles, wood windows and doors.
- Cast-in-place stairs* The stairs are not original to the building, although they were installed in 1949.

Sequence Of Construction

SEQUENCE OF ADDITIONS AND ALTERATIONS

The building retains much of its original exterior character, but none of the historic interior remains. In 1964, the building was completely remodeled according to plans developed by John Sing Tang. All walls, ceilings, floors and internal structure were removed and replaced. A new internal structure with steel columns and concrete floors was inserted. An addition with a new exit stair and mechanical room was placed on the north façade.

In the 1990s additional changes were made to the building to allow ADA access for a charter high school. A wheelchair lift was installed at the rear stairs to allow access from grade, and an elevator was installed near the center of the building.

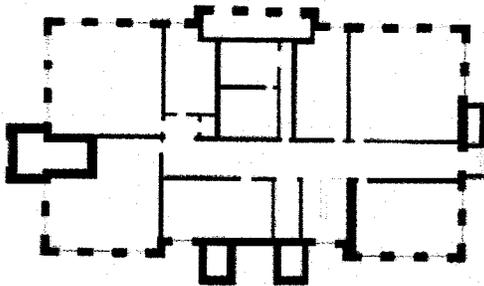
The only remaining original elements are the exterior walls, roof, and basement slab. The cast-in-place interior concrete stairs were also retained, but these are not original, and date from the 1949 remodel.

LEVEL OF CHANGE TO FLOOR PLANS

Although original drawings have not been found, the demolition drawings in the 1964 John Sing Tang set appear to have been prepared over copies of the originals that were modified to reflect existing early 1960's conditions. Pre-1964 floor plans can be approximated from these drawings. A comparison of these and current plans indicates that they bear very little resemblance each other.

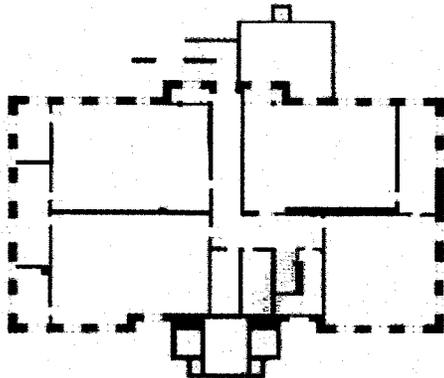
Building Three: First Floor Plan

Pre-1964 First Floor Plan



The first floor in the original plans contained mechanical rooms, stock and storage rooms, a special laboratory and a soil room. Student toilet rooms were also on this floor.

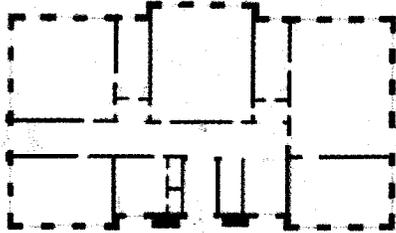
Existing First Floor Plan:



The 1964 remodel removed the exterior basement stairs, relocating the exit to the north, as part of the new stair tower. A renovation in the 1990's added an elevator to the middle of the building. The Seventh Street right-of-way to the east of the building has been widened to the point where the original basement stairs cannot be recreated, as they would extend into the right-of-way.

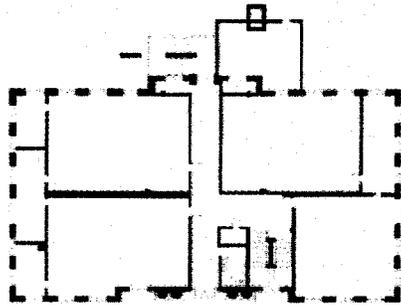
Building Three: Second Floor Plans

Pre-1964 Second Floor Plan:



The original floor plan provided recitation rooms at the south corners, and laboratories for botany and agriculture in the northern corners. A large lecture room with a sloped floor was located at the center of the building to the north of the lobby. A major east/west corridor connected the front door to the west portico entrance.

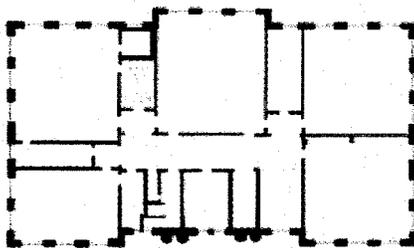
Existing Second Floor Plan:



The 1964 plan re-oriented the corridor system from east/west to north/south. The secondary exit was moved to the north façade, where it connected with the new stair tower. A new mechanical room was added as part of the new addition. The west portico and exit were removed.

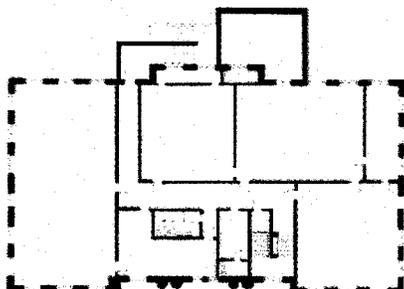
Building Three: Third Floor Plans

Pre-1964 Third Floor Plan:



The original third floor plan contained chemistry, zoology, physics and physical geography laboratories at its corners. A large lecture room with a sloped floor was located north of the lobby. A skylight provided ventilation to the chemical storage room.

Existing Third Floor Plan:



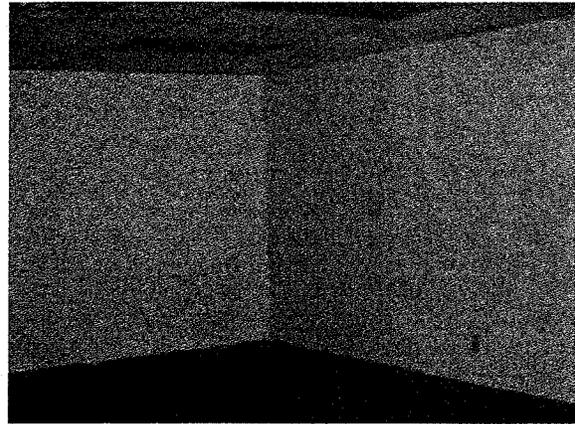
The 1964 plan relocated the physics lab to the west side of the building, and the chemistry rooms to the east. The corridor system was reconfigured, to exit to the new stair tower.

IMPACT TO INTEGRITY OF FLOOR PLAN

As a result of the 1964 and subsequent remodels, the floor plans in Building Three are substantially different than they were in 1911. The original plans had large lecture rooms with sloped floors north of the lobbies on the second and third floors. The general circulation system on the floors was along an east/west lobby or corridor space. This has been modified to a north/south orientation. The volumetric as well as the spatial layout of the spaces has been altered. Ceilings have been lowered, creating spaces with a completely different character.



A 1914 picture of the agriculture lab



A modern photo of the same space.

IMPACT TO INTEGRITY OF INTERIORS

The interior of Building Three retains almost no original fabric. Although the 1964 remodel left the roof structure as it was, it had already been heavily modified by then. The steel trusses are not original, and roof joists have been modified.

The only remaining original elements are the exterior walls, roof, basement slab, and some of the roof joists. The cast-in-place interior concrete stair has been retained, but these date from the 1949 remodel.

A comparison of historic and modern interior photos above indicates the level of change.

REPORT ON CONDITIONS

EXISTING STRUCTURAL SYSTEMS

The existing construction consists of unreinforced masonry bearing walls at the building exterior with steel-framed floors. The roof consists of the original wood joists supported by early, but not original, steel trusses bearing on the unreinforced masonry walls. Two steel columns extend to the underside of two of the trusses to provide additional vertical support.

The second and third story floor structures are concrete on steel deck, supported by steel bar joists and wide-flange steel girders. Where steel joists bear on the north and south unreinforced masonry walls, bearing seats were cut and grouted into the masonry walls.

An attempt to retrofit the existing wood roof diaphragm appears to have been made, most likely as part of the renovations that occurred in the 1990s. Sheet metal anchors were added at wood members, steel bolts at some of the wood joists, and wood diagonal bracing at the wood posts bearing on the steel trusses. No modifications were made to increase the diaphragm shear capacity or stiffness, or to increase the anchorage of the diaphragm to the masonry walls.

The cast-in-place stair generally referred to as "the 1949 stair", but designed in 1945, has been retained.

EXISTING STRUCTURAL CONDITIONS

Existing Floor Load Capacity:

Minimum recommended live load capacities from the 1997 UBC (Uniform Building Code) are as follows: 40 pounds per square foot for classrooms, 50 pounds per square foot for offices, 80 pounds per square foot for third floor corridors, and 100 pounds per square foot at second floor corridors and stairs.

In addition to the live loads noted above, the 1997 UBC recommends a minimum addition of 20 pounds per square foot of loading, for the weight of interior partitions in occupancies where the locations of partitions are subject to change over the life of the building.

The existing steel joist structure was analyzed using Steel Joist Institute historical load tables from the early 1960's. Results indicate that the majority of the floor area has a live load capacity of approximately 40 to 50 pounds per square foot in combination with a 20 pounds per square foot partition load. This capacity meets the minimum requirements for classroom space, but not for offices. It does not appear that the steel joist floor structure has been designed for corridor loading to the explicit requirements of the 1997 UBC. The current structure will not meet these higher requirements.

Existing Wind and Seismic Load Capacity

The 1997 Phoenix Construction Code designates that these buildings be designed for a wind speed of 70 miles per hour (Exposure C) and for a seismic zone of 2A.

The existing wood roof diaphragm is overstressed for both wind and seismic forces. The existing wood roof will require additional sheathing or horizontal bracing for resistance of diaphragm shears. Preliminary analysis indicates that the performance of the newly sheathed diaphragms will be marginal or perhaps inadequate without the addition of blocking at the joints of the new sheathing.

The concrete on steel diaphragms at the second and third floors have a significantly higher capacity for wind and seismic forces compared to the original wood structure. However, adequate anchorage of the unreinforced masonry walls to diaphragms will require upgrading.

Analysis of the existing unreinforced masonry walls for in-plane shear forces indicates that stresses are moderate, but most likely acceptable per the 1997 UBC.

PROGRAM AND ALTERNATIVES

SPACE AND FUNCTIONAL REQUIREMENTS

The University of Arizona College of Medicine, in cooperation with Arizona State University, will expand its present operations in downtown Phoenix to include a four year program, utilizing the remaining historic Phoenix Union High School buildings. An initial class of 24 students, classrooms and administrative spaces will be housed in the buildings. The student body is expected to grow, as new teaching facilities are implemented on campus.

The curriculum will be focused on a series of student-faculty "pods" developed in Building Three. Student and faculty work spaces will be interspersed to encourage a collaborative educational experience.

In addition to its basic space needs, the College of Medicine program also contains specific technical requirements. Its educational spaces must meet or exceed current code requirements, be environmentally sound, and properly lit with natural and artificial light. The Medical School is committed to an active tele-medicine program that works with rural counties in Arizona, and the historic buildings must be retrofitted to provide the digital infrastructure required to support this activity. In order to meet accreditation criteria for medical school facilities, the buildings must be of equal quality to the facilities at the University of Arizona College of Medicine in Tucson.

Because of the level of growth and change expected in the early years of the Medical School's development, the buildings must be designed now to accommodate change gracefully and allow for internal programmatic evolution.

Schedule is also a crucial part of the program for this development. The university is committed to beginning the first class in July of 2006. If the renovation project cannot meet this schedule requirement, the project will be relocated.

SCHEDULE AND COST ANALYSIS

SCHEDULE

Schedule requirements for Building Three are the same as those for the rest of the Medical School. Classes must begin in July of 2006. The schedule is particularly important for Building Three, as it will house the student work areas, and will be needed immediately.

COST ESTIMATES

Preliminary cost estimates developed for Building Three indicate that the proposed renovation program will entail construction costs of approximately 5.4 million dollars.

COMPARISON OF OPTIONS

STRUCTURE

The Ryden report ^(page 349) recommends further analysis of the masonry walls for lateral load requirements. For the floor framing system, it recommends a live load study for the specific proposed use ^(pages 351,353), and modifications as required to tie the floor diaphragm to the walls. For the roof structure ^(page 355) further analysis, lateral reinforcement, and positive attachment of the wood joists to the steel trusses is recommended.

Retaining the structure with no modification is not a viable option. Lateral reinforcement will be required throughout, and vertical load capacity will need to be increased in selected areas. Structural analysis reveals that the masonry walls can remain as they are.

WINDOWS

According to the Ryden report ^(page 369), no original window sashes or frames are currently in place in the building. The report recommends installing new wood windows that recreate the original layout and pattern of the windows. Double glazing with untinted or low-E glass is recommended. The report does not require that the windows be operable, although it does require that a by-pass offset be incorporated into the new frames.

The documentation available for the windows consists of photos of the building exteriors. These provide a good sense of overall window configuration, but not of frame details. The evidence for window size and shape is more definitive. The existing window openings still exist, although they have been filled in.

No 1911 wood double hung windows exist on the campus today, and no 1911 window details have been found. The recommended approach in the Secretary of the Interior's Standards for Rehabilitation when replacing missing windows provides for two acceptable approaches:

- The replacement windows may be an accurate restoration using historical, pictorial, and physical documentation.
- The replacement windows may be a new design that is compatible with the window openings and the historic character of the building.

There are then two options for the replacement windows; wood or metal frames.

1. Wood Frames

Without an existing window, or evidence of original frame conditions, it will not be possible to recreate the frames exactly. The use of insulated glass will increase the width of the glazing panels from one-quarter inch to a full inch, and increase their weight. The change in the glazing assures that even if the original frame details were found, the new wood frames could not recreate them. The frames will need to accommodate the wider glass, support the additional weight, and meet new wind loading requirements. The modifications to the frames would be substantial.

2. Metal Frames

Metal windows with extruded aluminum frames are available from specialty manufacturers. These can provide thin frame profiles, and true double hung window configuration. Frames would be painted, and no raw metal would be exposed. Because no historic wooden trim remains at the interior of the building, there is no need to match existing wood features. The metal windows can recreate the size, shape and patterns of the originals. A smaller profile, more similar to the original, could be achieved because of the greater strength of the frame.

PROPOSED APPROACH

PROPOSED STRUCTURAL SYSTEMS

The existing structural system in Building Three will be retained, with modifications. Lateral reinforcement will be necessary at the floors and roof to meet current codes. Reinforcement will be required at the corridors on the second and third floor, and at selected office areas.

PROPOSED EXTERIOR RESTORATION APPROACH

Addition

A new addition will be created north of the building. It will be attached to the building with narrow bridges, to minimize its impact upon the existing structure, and ensure reversibility. The purpose of the addition will be to provide those new features required to allow the buildings to meet current code and accessibility requirements. The addition will contain an elevator, a second exit stair, and ADA compliant restrooms. The 1964 addition will be removed.

Windows

Masonry infill panels at all facades will be removed, and new windows will be installed. The new windows will recreate the fenestration patterns visible in historic photographs. One window at the south façade was blocked in when the 1949 stairs were constructed. The landing between the second and third floors crosses the window. As this stair will be retained, this one opening may have to be glazed with spandrel glass, with a solid wall behind.

Window frames will be painted, extruded aluminum. They will be double glazed with low-e, untinted glass. The windows will recreate the size, shape and pattern of the originals. Frames will be clearly marked with the year of installation. Based on the results of a more detailed mechanical system analysis, some or all of the windows will be operable. Windows that are not operable will have a double hung offset.

Stairs

The portico and stairs at the west façade will be reconstructed. Photographic evidence is available for the recreation, and limited drawing information can be gleaned from the demolition drawings in the 1964 remodel set.

The stairs to the first floor at the east side cannot be recreated. The right-of-way at Seventh Street has been widened to the extent that if the stairs were reconstructed, they would extend into it. The main front stairs will be repaired and restored.

No ADA accessibility additions will be placed at the south façade. The change in grade from ground level to the second (main) floor is over six feet. This would require a ramp 72 feet long. Every 30 feet of ramp will require a 5 foot landing, bringing the overall length of the ramp to at least 82 feet. This would be a very large construction at the most significant façade. ADA accessibility to the building and between floors will be provided in a new addition at the north of the building.

Stucco

The building appears to have been recoated with a sand-finish texture coat. The coating is in fair condition, and removing it is likely to cause more damage. The approach will be to repair the stucco as required, and repaint it. A paint analysis will be performed to determine original colors. Sandblasting will not be used for exterior cleaning.

PROPOSED ABATEMENT APPROACH

Because of the proposed approach to the interiors in Building Three, most of the preservation related abatement issues will be at the exterior of the building. Lead paint has been found on the exterior. When possible, simple encapsulation will be the preferred method of abatement. Where the paint has failed, and must be removed, sandblasting will not be permitted. Chemical paint stripping will likely be the preferred option.

PROPOSED INTERIOR APPROACH

The existing interior of this building dates to the 1964 remodel, with some 1990s modifications. It has not been identified as a character-defining feature. The existing interior partitions and finishes will be removed.

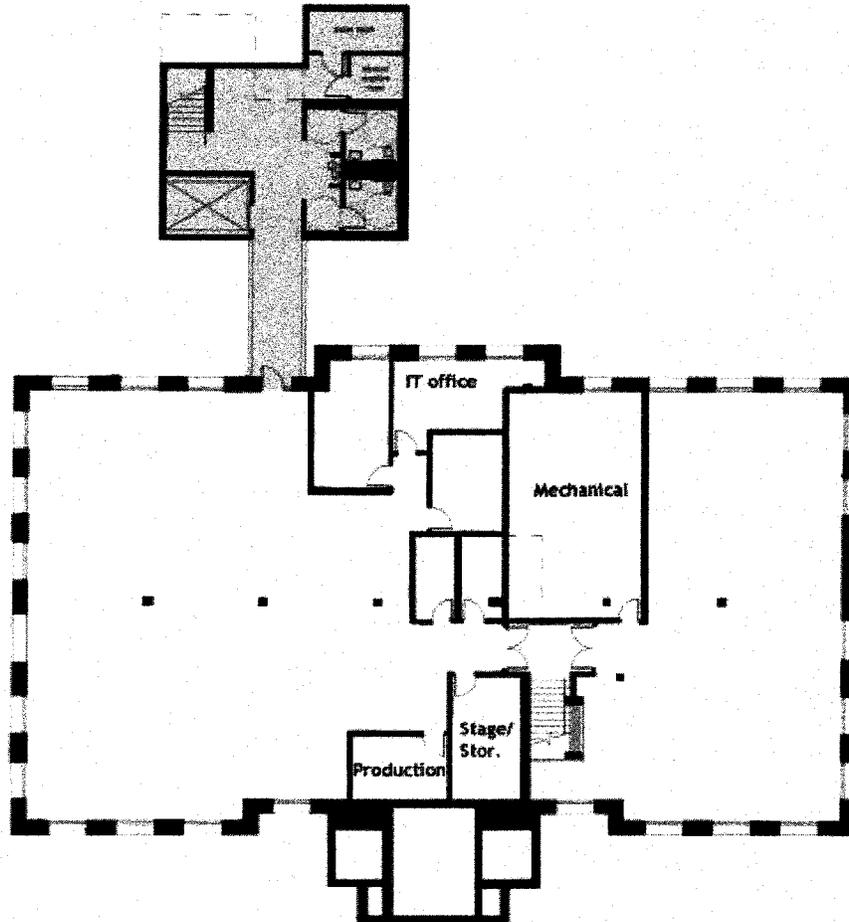
Neither the 1911, nor the current floor plan provide the types of spaces, or the spatial organization required by the Medical School. A new floor layout will be developed. However, the basic organizational features of the building will be retained, including:

- A lobby space directly behind the main floor entrance doors. The 1911 lobby in this building was quite small, formed by a short corridor connecting the doors to the main east/west corridor. The new lobby space will be larger, but will perform the same function.
- The 1949 stair will remain in place, and continue to function as one of two exit stairs.
- The new addition at the rear will be connected at a door that connected to the original fire escape, continuing that doors function as a secondary exit.
- Spaces have been laid out to respect the existing windows. No openings will be divided by walls. At the existing 1949 stair, one window will need to be installed with spandrel panels. All other windows will have clear glazing.
- Ceiling heights at perimeter spaces will be set so that windows can be unobstructed for their entire height. To accommodate this, spaces at the center of the building will be lower, for mechanical duct routing.

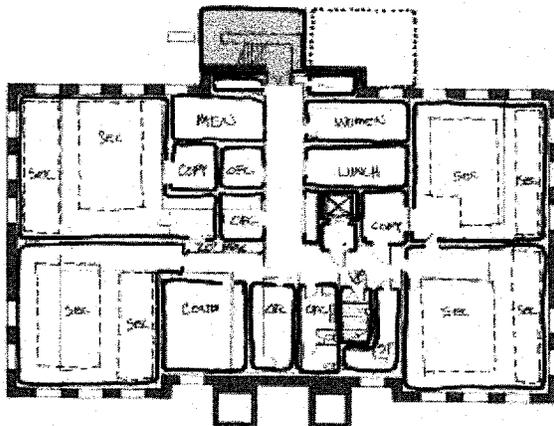
There are no surviving 1911 finishes in the building. Detailing in the building will be modern, but will respect the proportions and patterns of the original.

PROPOSED FLOOR PLANS:

BUILDING THREE FIRST FLOOR PLAN:

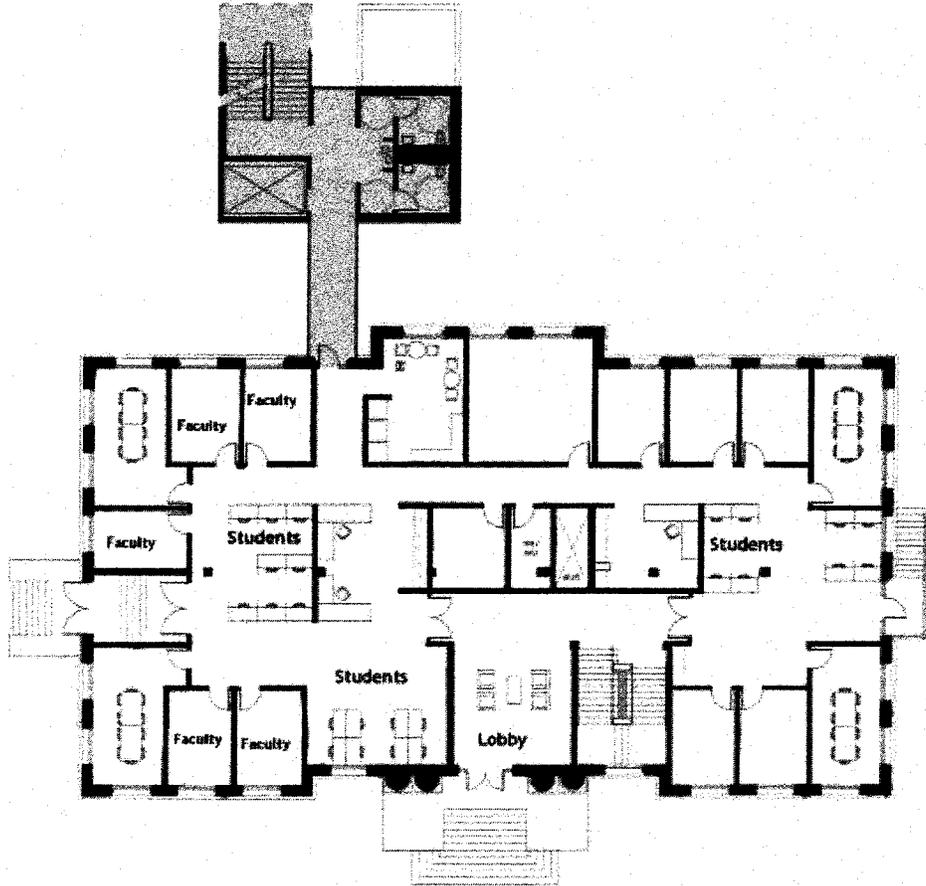


The first floor of this building provides mechanical and support spaces. The unlabeled areas are as yet unprogrammed.

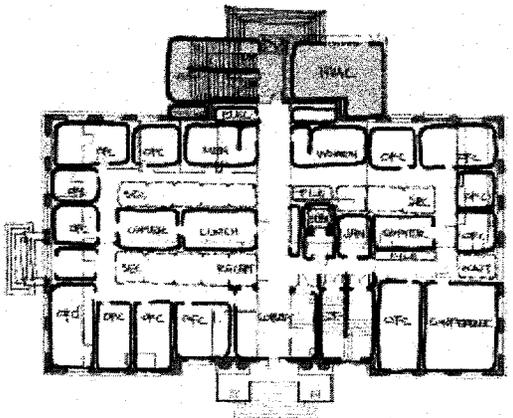


The proposed adaptive reuse plan in the Ryden report rings support spaces at the center of the building with administrative spaces around the perimeter. An addition to the north provides a new exit stair.

BUILDING THREE SECOND FLOOR PLAN:

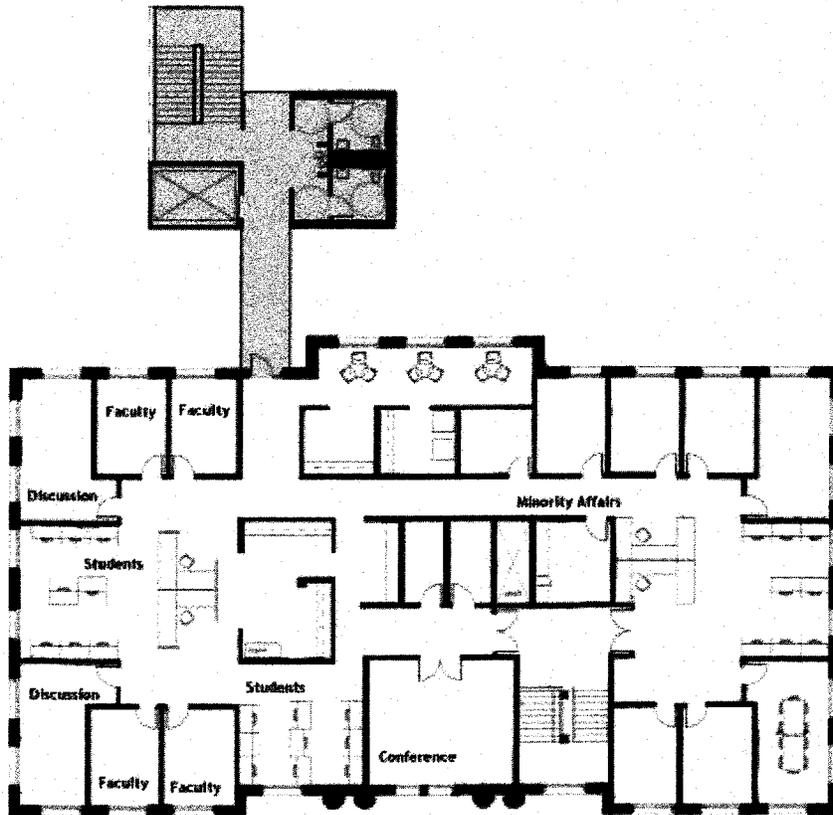


The Medical School will be organized according to a collaborative learning philosophy. Students and faculty will be organized into “pods”. In each pod, faculty offices ring the perimeter, with student work stations and administrative areas in the center. The recreated west entrance is seen in this plan, with the internal stairs as required to match the existing floor levels at the interior and portico. This feature was also present in the original plans.

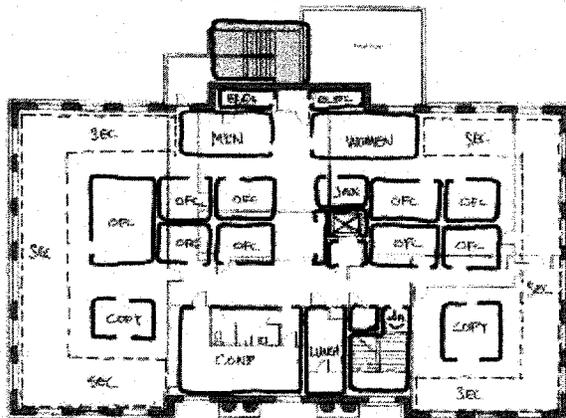


The proposed Ryden report plan places private offices around the perimeter of the building, with administrative and support spaces at the center. The addition to the north contains the exit stair and mechanical spaces.

BUILDING THREE THIRD FLOOR PLAN:



The third floor plan repeats the concept from below, creating student and faculty work “pods”. A large conference room is shown at the south side of this floor, and a small vending and break room at the north.



The Ryden report proposed plan shows administrative spaces at the perimeter; surround a core of support spaces and private offices.

APPENDIX A:
**The Secretary of the
Interior's Standards
for Rehabilitation**

The following Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site or environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of the deterioration required replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

APPENDIX B:
Bibliography and
Data Sources

Literature

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, U.S. Department of the Interior, National Park Service, Preservation Assistance Division, Washington D.C.

Ryden Architects Inc. A Historic Structures Report for Buildings One, Two and Three, Phoenix Union High School Historic District, Final Report, March 15 2004

The Phoenician, Phoenix Union High School yearbook, various years, 1911 to 1959

Drawings

John Sing Tang AIA, Remodeling of Building #3 at Phoenix Union High School, Complete set, 32 sheets of drawings, May 16, 1961

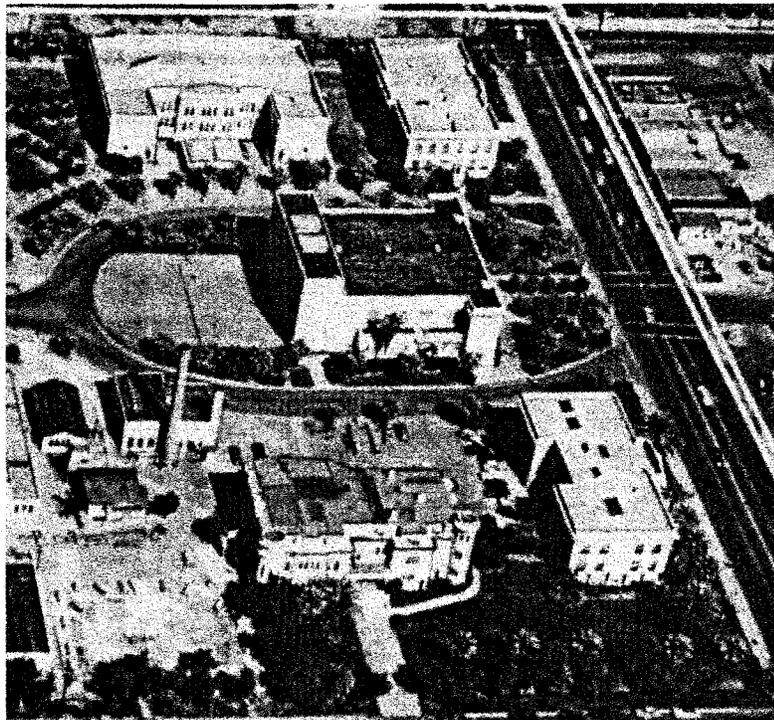
Preservation Plan for:

Site Plan and Landscape

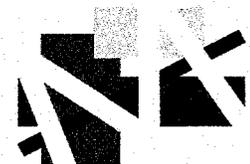
Phoenix Union High School Historic District

512 East Van Buren Street
Phoenix, Arizona

January, 2005



SMITHGROUP
architecture engineering interiors planning


METROPOLIS
Design Group LLC

Preservation Plan
for:

PHOENIX UNION HIGH SCHOOL Site Plan and Landscape

Phoenix, Arizona

Prepared for:

SmithGroup
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Project No. 1239
January, 2005

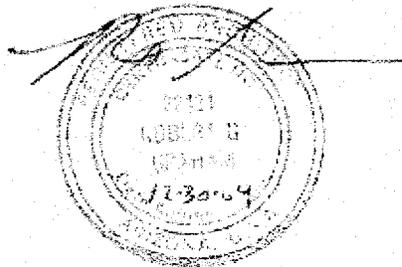


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Executive Summary

This report presents a preservation plan for the site surrounding the remaining historic buildings at the Phoenix Union High School campus. It is one of a series that develops the overall adaptive re-use plan of the campus for the expansion of the University of Arizona's Phoenix Medical School.

The three historic buildings will provide classroom and office space for the initial Medical School classes. As the school grows, the historic buildings will be augmented with new buildings to be developed on the same campus. A medical school class of 24 students is scheduled to commence in July of 2006.

The exteriors of all three buildings will be restored to their 1911 appearance. Exterior stucco and details will be repaired and repainted. Masonry infill panels will be removed, and new windows installed. New additions will be constructed to the north of Buildings One and Three to provide the upgrades required to meet current codes; including elevators, ADA toilet rooms and a second exit stair. In Building Two, these needs will be met with a new internal core.

Because the right-of-ways around the campus have been widened over the years, the site cannot be restored exactly. However, it will be redeveloped in keeping with its original Classical Revival style. The "horseshoe" drive flanking either side of Building Two will be recreated. Historic features including the

graduation plaza, entry pillars and memorial sundial will be restored.

Plantings will reflect the historic landscaping, with palm trees at the "horseshoe" and lawn areas surrounding the buildings. Originally, the buildings were surrounded with flood irrigated lawn areas. Although flood irrigation can no longer be used, the new lawns will serve as retention areas, and will be landscaped with the berms that would have appeared at the flood irrigated features.

As the campus developed, numerous significant site features were created to commemorate individuals or classes. Features that remain today include ceramic tile mosaic class year panels on the plaza in front of Building Two, the 1913 and 1914 commemorative entry pillars, the 1911 flagpole, and a memorial sundial. All of these are currently damaged, or missing pieces. As part of the site development these features will be restored. Ample photo documentation exists to allow for accurate restoration. The sundial has been moved, and will be relocated to its original place.

Inappropriate additions to the site will be removed. The security fences around the site and the ticket booth constructed in front of Building Two will be demolished.

Methodology

This report integrates known historical data with the inspection of existing building conditions to make adaptive re-use recommendations in conformance with the Secretary of the Interior's Standards for Rehabilitation.

The Historic Structures Report for Phoenix Union High School Historic District prepared in March of 2004 by Ryden Architects for the City of Phoenix was the starting point for this plan. This information was augmented with inspection and analysis of the buildings, reviews of historic drawings, and specific programmatic information developed for the University of Arizona Medical School.

Architectural and structural teams visited the site on numerous occasions between October and December of 2004. Because original drawings were not available, buildings were field measured to the extent needed to prepare dimensioned floor plans representing existing conditions.

Original 1911 drawings for the buildings have not been located. The University of California

in Santa Barbara maintains a collection of Norman F. Marsh drawings, but does not have any information on this campus. The Arizona Historical Society Lescher & Mahoney Archive was also searched for drawings, because Lescher & Mahoney had done some renovation work on the campus. The 1949 stair remodel plans for Buildings One and Three were located, but no other drawings could be found.

Most of the historic photographic information was obtained from old yearbooks in the alumni association's archive. Yearbooks from 1911 through 1959 were reviewed.

A NOTE ON TERMINOLOGY:

The three buildings all have three habitable floors. The lowest floor is partially below grade. It has been referred to as both a "basement" and "first floor" in various documents. Because this floor does meet the current code's definition of a story, it will be referred to in this report as the first floor. The main floor will be referred to as the second floor.

Project Team

Tenants/End Users:

University of Arizona, College of Medicine

David H. Harris, Senior Project Manager

University of Arizona Facilities Management

Ann Libecap, Director

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DESCO Southwest

Bruce Gillespie, Principal

Contractor

DPR Construction

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Bryan Salt PE, Principal

Landscape Design

Floor and Associates

Christopher Joy , Project Manager

Civil Engineering

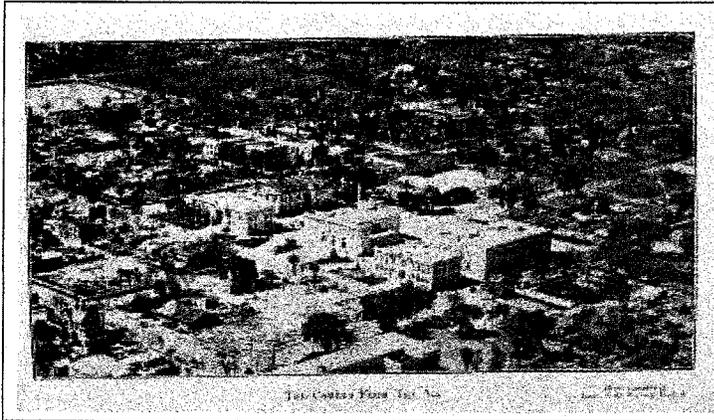
Dibble and Associates

Jeff McBride PE, Project Manager

Historical Overview

Site

YEAR	EVENT
1897	Phoenix Union High School begins operation at the Van Buren Street site
1911	Buildings One, Two, Three and central plant constructed
1929	Building Two completely renovated. Lobby portion collapses during construction and is rebuilt.
1949	Cast-in-place concrete stairs added at Buildings One and Three. “Modernization” of campus site plan. International style addition built at west end of Building One (addition demolished, late 1980’s).
1950’s	Building Two windows removed. Building Two ceiling revised
1952	Major Building One remodel, to create additional administration space.
1964	Major Building Three remodel, including replacement of structure. Windows removed in Buildings One and Three
1984	Classes end, campus closes and is sold for private development.
1990’s	Remodeling of Building Three for use as a charter “arts” high school. Remodeling of Building Two for use as a live music venue. New paving for surface parking.
2003	Campus purchased by City of Phoenix Central Plant and Building Five demolished.



Site & Landscape

SIGNIFICANCE AND INTEGRITY REVIEW

Character Defining Features

The primary character defining elements of the site, as determined by the Ryden report ^(pages 27-29):

<i>“Horseshoe” Drive</i>	This drive flanked either side of Building Two. It was in place from 1911 through the 1960s. It is no longer in place, but well documented in photographs.
<i>Auditorium Plaza</i>	This concrete plaza is inlaid with ceramic tile mosaics commemorating graduating class years.
<i>Entrance Pillars</i>	These pillars at the front of the Building Two plaza commemorate the 1912 and 1913 graduating classes. They are still in place.
<i>Frank Luke Sundial</i>	The sundial was placed in 1918. It is still present on the campus.
<i>1911 Flagpole</i>	The flagpole is still in its original position.
<i>Palm trees</i>	Originally, palm trees were planted at the “horseshoe” drive. Very few survive, but their original locations are well documented in photographs, and by openings in the existing paving pattern.
<i>Site Plan</i>	<p>Symmetry and placement of buildings relative to the street.</p> <p>Sense of space around the three free-standing buildings.</p> <p>Open space in front of the three buildings</p> <p>Open space to the west of Building One</p> <p>Central ceremonial open space</p> <p>Alignment of the “horseshoe” drive</p> <p>Alignment of east-west sidewalks intersecting center of Auditorium</p>

Sequence Of Construction

SEQUENCE OF ADDITIONS AND ALTERATIONS

Phoenix Union High School was established at this site in 1897. The three buildings discussed here were originally built in 1911. A small boiler plant near the center of the property provided hot water for the radiators in the buildings. The face of Building Two was aligned with the rear facades of Buildings One and Three to create a formal central plaza that served as the ceremonial entrance to the campus. The importance of the plaza was reinforced by the "horseshoe" drives that surrounded the Auditorium and converged behind it at the Sixth Street alignment. Concrete sidewalks with tree lawns and concrete curbs and gutters bordered the campus.

The entire campus was watered by flood irrigation from the Salt River Canal. Palm trees were the signature plants on campus. These were supplemented with deciduous shade trees and evergreen shrubs.

LEVEL OF CHANGE TO SITE PLANS

Beginning in 1921, the campus plan began to evolve, as new buildings were built. Between 1921 and 1941, the total number of major buildings on campus had grown to nine. In 1949, "modernization" became the new approach to campus development. Flood irrigation was abandoned, and large concrete plazas replaced green spaces. Right-of-way widening projects erased perimeter tree lawns.

Changes continued after 1984, when classes ended and the property was transferred to private ownership. Buildings were demolished, and almost all of the remaining green spaces were paved for surface parking.

IMPACT TO INTEGRITY OF SITE PLAN

The original landscape design concept has been lost. The three buildings retain their orientation to one another, but their relationship to the surrounding streets has been altered by street widening projects. One palm tree remains to the west Building Two. A security fence surrounds the site, and a ticket booth has been built at the front of Building Two.

REPORT ON CONDITIONS

LANDSCAPE

Almost nothing remains of the original landscaping. There is one palm tree to the west of Building Two, but it is not clear if it is one of the original trees. The original lawn areas have been paved over for parking, plazas and walkways.

HARDSCAPE AND SITE FEATURES

Despite the changes to the site, many significant features survive. The central plaza, flagpole, and entry pillars are still in their original locations, although all of them display significant damage, and will require repair. The sundial is still on campus, but has been relocated, and is missing its gnomon.

The original "horseshoe" drive has been largely obliterated.

PROGRAM AND ALTERNATIVES

SPACE AND FUNCTIONAL REQUIREMENTS

The primary function of the site around the three historic buildings will be to provide a coherent campus for the Medical School. Because the functions of the school will be divided between three buildings, students and faculty will use the campus throughout the day, as they move from one building to another. The campus must feel safe. Plantings and site amenities must be arranged to allow for a shaded, pleasant passage between buildings, even in the summer.

SCHEDULE REQUIREMENTS

The first class of the University of Arizona's Phoenix Medical School is scheduled to begin on this campus in July of 2006. Although the site does not need to be completely finished by then, it must be completed to the point where students and faculty can use the campus safely and conveniently.

SCHEDULE AND COST ANALYSIS

SCHEDULE

DPR Construction has developed schedules for the entire Phoenix Union High School restoration project, including the site work. According to these schedules, it will be possible to complete the project on time, provided that the permitting process can be conducted in a phased, streamlined manner.

COST ESTIMATES

DPR Construction's latest estimates place the cost of redeveloping the site at approximately 1.8 million dollars.

PROPOSED APPROACH

PROPOSED PLANTINGS

The intent of the proposed approach is to recreate the planting concept that was commonly found prior to 1950. Using the Ryden Report and old photos, the campus can be restored to its original character as an "oasis in the desert" by re-introducing some of the plants commonly found in that era.

Flood irrigation was a very significant characteristic of community development in Phoenix. Turf retention basins around the buildings will work as grading and drainage solutions while matching the character of flood irrigated lots. The original citrus grove can be restored at Building One and Two depending on space. The horseshoe drive will be reintroduced as a pedestrian link and will be flanked by evenly spaced California Palms. The introduction of Canary Island and Date Palms, which were originally found in the front yards of all three buildings, will be considered. Tree planting schemes will maintain visibility of the facades along Van Buren while providing shade and pedestrian scale.

The rest of the plant palette might include:

- Arizona Ash
- Olive (fruitless)

- Chinese Pistache
- Arizona Sycamore
- Barbara Karst Bougainvillea
- Natal Plum
- Cape Plumbago
- Lady Bank's Rose
- Rosemary
- Bush Lantana
- Trailing Lantana
- True Myrtle
- Peruviana Verbena
- Privet
- Xylosma
- Bermuda Grass

As the site transitions north to the Phoenix Biomedical Campus of the Arizona University System, the intent is to further develop the campus identity set forth with the TGEN project. Shaded pedestrian links and plazas will connect the historical facilities with new construction and the TGEN parcel. The goal is to provide elements within the landscape that will tie the various facilities of the campus together, while providing pedestrian plazas and planting schemes that are unique to each individual user.

The planting will transition from the historical palette to a more regional palette providing shade, color and texture. Turf areas will be used in moderation and will provide a visual tie to the historical site.

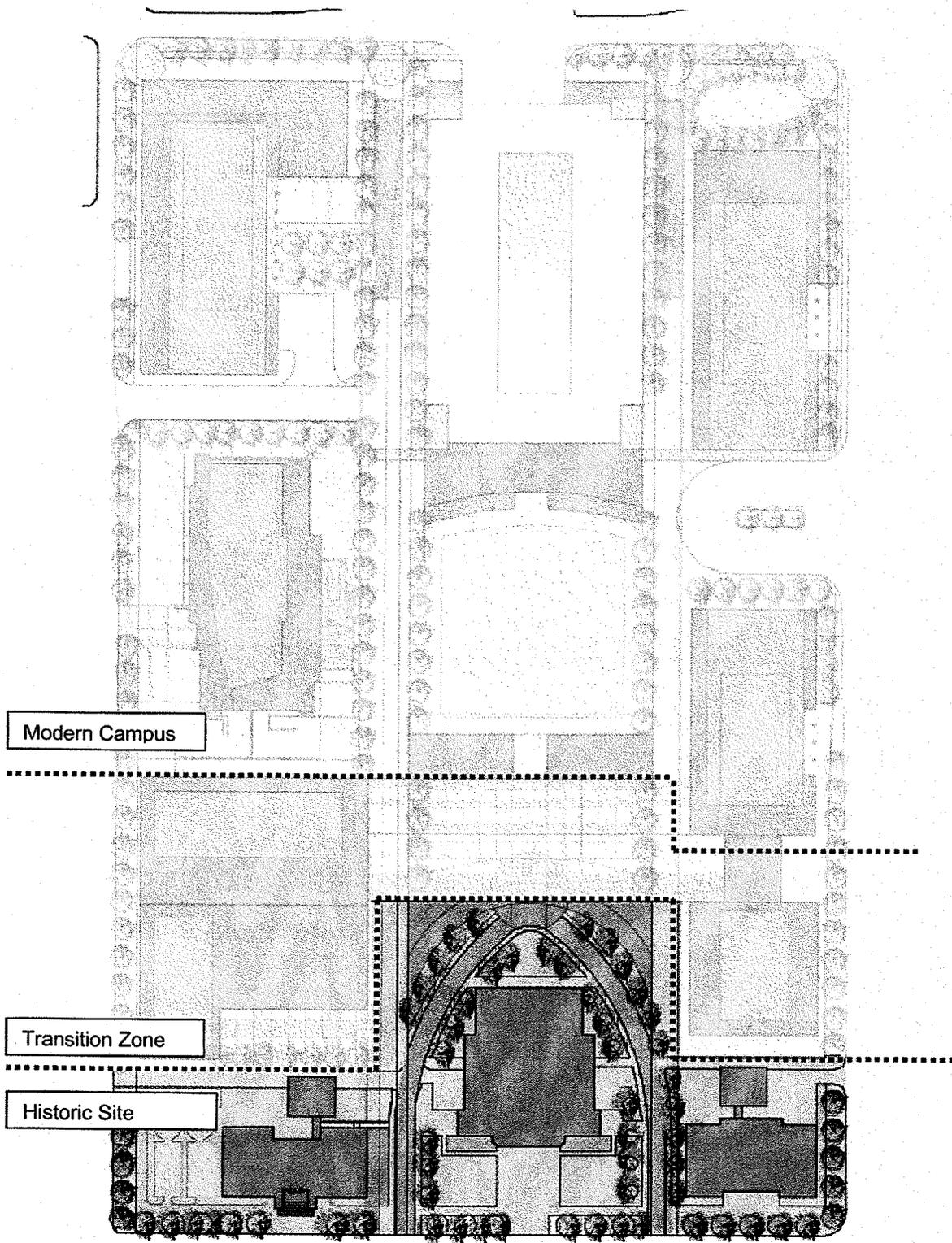
PROPOSED TREATMENT OF SITE FEATURES

Following the recommendations of the Ryden Report ^(page 31), the portion of the campus surrounding the three historic buildings will be redeveloped in keeping with the original Classical Revivalist image. The "horseshoe" drive will be recreated, along with its flanking rows of palm trees. Lawn areas will be developed between the buildings and the existing right-of-ways. The existing security fence and ticket booth will be removed. Site features identified as significant will be repaired. The sundial will be relocated to its original location and repaired.

PROPOSED CAMPUS PLAN

Landscape at the historic buildings will reflect the original design concept. Landscape at the rest of the campus will reflect current design philosophies, with an accent on low-water use plantings and designs.

A transitional zone will be created around the historic area, where the two design concepts will interact.



APPENDIX A:

The Secretary of the Interior's Standards for Rehabilitation

The following Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site or environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of the deterioration required replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures if appropriate shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

APPENDIX B:
Bibliography and
Data Sources

Literature

The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, U.S. Department of the Interior, National Park Service, Preservation Assistance Division, Washington D.C.

Ryden Architects Inc. A Historic Structures Report for Buildings One, Two and Three, Phoenix Union High School Historic District, Final Report, March 15 2004

The Phoenician, Phoenix Union High School yearbook, various years, 1911 to 1959