

FACILITY AUDIT REPORT
HITCHCOCK HALL
#274

JUNE 30, 1992

Prepared by:
Richard D. Lighthiser, P.E.
Division of Resource Management
Department of Physical Facilities
The Ohio State University

Table of Contents

<u>GENERAL BUILDING INFORMATION</u>	3
<u>BUILDING SYSTEMS INFORMATION</u>	4
HITCHCOCK HALL NARRATIVE.....	5
PROPOSED MAINTENANCE PROJECTS.....	9
MAINTENANCE PROJECTS.....	10
BUILDING EVALUATION SUMMARY.....	11
FOUNDATIONS.....	12
COLUMNS AND BEAMS.....	13
EXTERIOR WALLS.....	14
EXTERIOR WINDOWS & DOORS.....	15
ROOFING.....	16
PARTITIONS & DOORS.....	17
WALL FINISHES.....	18
FLOOR FINISHES.....	19
CEILINGS AND FINISHES.....	20
CONVEYING.....	21
MECHANICAL/PLUMBING.....	22
MECHANICAL/HEATING.....	23
COOLING & VENTILATING.....	24
ELECTRICAL/SERVICE & DISTRIBUTION.....	25
ELECTRICAL/LIGHTING & POWER.....	26
SAFETY STANDARDS.....	27
BUILDING PERIMETER EVALUATION.....	28
BUILDING AUDIT METHODOLOGY.....	29
ABBREVIATIONS.....	31
APPENDIX.....	32
Building Floor Plans.....	32
C-1 Building Space Assignments.....	32

GENERAL BUILDING INFORMATION

HITCHCOCK HALL #274

BUILDING ADDRESS: 2070 NEIL AVENUE

GROSS SQ. FT.: 119,135

NET ASSIGNABLE SQ. FT.: 75,581

MECHANICAL/CUSTODIAL AREA SQ. FT.: 9,412

YEAR OF CONSTRUCTION: 1967

YEAR OF LAST RENOVATION: N/A

NUMBER OF STORIES/BASEMENT: FOUR (4) STORIES PLUS A BASEMENT

AIR CONDITIONING (Percentage): 90 %

CURRENT USE: COLLEGE OF ENGINEERING - OFFICES, CLASSROOMS & LABORATORIES

TYPE OF CONSTRUCTION: REINFORCED CONCRETE WITH MASONRY EXTERIOR

ESTIMATED REPLACEMENT COST: \$ 15,280,000 *

BUILDING APPEARANCE: THE BUILDING EXTERIOR IS DIRTY, PLAIN, FEW WINDOWS, SHRUBBERY OVERGROWN. THE LOBBY ENTRANCE IS VERY DARK AND CONFUSING, SIGNAGE IS POOR.

HANDICAPPED ACCESSIBILITY: EAST ENTRANCE DOOR LOCATED NEXT TO DRIVEWAY THAT RUNS BETWEEN BOLZ HALL & WELDING ENG. BLDG. ELEVATOR IS LOCATED IN LOBBY ACROSS FROM EAST ENTRANCE. ACCESS ALSO AVAILABLE FROM EACH FLOOR OF BOLZ HALL.

OVERALL BUILDING CONDITION: SATISFACTORY **

NUMBER OF EXIT STAIRWAYS: FOUR (4)

* Replacement Cost assigned September, 1991 by The Office of Campus Planning and Space Utilization.

** Office of Campus Planning and Space Utilization C-1 Report Condition Code.

BUILDING SYSTEMS INFORMATION

HITCHCOCK HALL #274

HEATING:

Source POWER PLANT

Type Heating System HOT WATER

Steam (Line size, valve location) 4" STEAM SUPPLY, 2" SR, RM #002M

Building Htg Water (line size, valve location) 8" HWS, 8"HWR, RM #002M

VENTILATION SYSTEM:

2 DDHV (MODIFIED) SYSTEMS, 1 MULTI-ZONE SYSTEM, 1 TERMINAL REHEAT SYSTEM

COOLING:

Bldg % 90 % Chillers 1 MCQUAY CENTRIFUGAL & 1 TRANE ABSORPTION

Window Units N/A Thru-the-wall N/A Direct exp. units 10

HVAC CONTROL SYSTEM:

JC-80, PNEUMATIC CONTROLS

ELECTRIC: Source Size(KVA) Primary/Secondary Switchgear & Main Disc. (Rm)

1. G.E. MOD. #163112 1000 13,200 277/480V OUTSIDE SOUTH OF WING

PLUMBING:

Water (size, valve location) 6", RM #026A

Gas (size, valve location) 2", RM #002M

Domestic Hot Water (size, valve location) 2", RM #002M

Compressed Air (size, location) 1 1/4" SUPPLY, RM #002

SEWERS: Storm 1 @ 12" Sanitary 2 @ 6", 1 @ 4", 1 @ 8"

METERS:

Gas (size, location) NONE

Water (size, location) 6" METER, RM 026A

Electric (location) WITH MAIN SWITCHGEAR IN RM 029M

ALARM SYSTEMS:

Fire Alarm YES Panel Location RM #0029M

Fire Pump NO Pump Location N/A

Sprinklers YES Panel Location RM # 003M

Other Alarms REAR EXIT DOOR AT SE CORNER OF AUDITORIUM HAS SECURITY ALARM

ELEVATORS:

Number TWO (2) Type (passenger, freight) 1 PASSENGER & 1 FREIGHT

Manufacturer OTIS Size 2,000 LBS. & 4,000 LBS.

EMERGENCY GENERATOR:

Size KOHLER 113 AMPS, 75 KV Location ROOM 39M, BASEMENT

KEY BOX LOCATION:

STAIRWELL BETWEEN BOLZ AND HITCHCOCK, AT THE ENTRANCE TO BASEMENT

ASBESTOS SURVEY (1986):

ASBESTOS CONTAINING MATERIALS WERE IDENTIFIED IN RMS 002M, 029M, AND 231M IN THE PIPE INSULATION AND DUCT INSULATION.

HITCHCOCK HALL NARRATIVE

GENERAL

This Building Audit was conducted by Physical Facilities for the purpose of evaluating the present condition of those aspects of the building for which Physical Facilities has a budgetary responsibility. This audit describes the current physical condition of those aspects of the facility and identifies existing corrective maintenance repairs and building component system replacement requirements. It has been assumed that the program needs of the tenant departments are being met by the facility.

Audit goals and methodology are described in greater detail in the "Building Audit Methodology" section of this report.

HISTORY

Hitchcock Hall was completed for occupancy in 1967. The building was originally identified as an addition to Bolz Hall (Engineering Classroom Building). The 4-story structure contains offices, classrooms, laboratories, auditorium, and computer facility. The College of Engineering placement office and administrative offices have been located in Hitchcock since construction was completed.

In 1984 one of the original steam absorption chillers was replaced with a new centrifugal chiller and a new cooling tower was installed. The third floor has also had a few of the classrooms remodeled and converted to computer laboratories. Several of the corridors have been painted in the last year. A new four-ply felt with bitumen and gravel roof was installed in 1986.

Hitchcock Hall has an auditorium plus two lecture halls. These facilities are used for several conferences and meetings in addition to the regular scheduled classes. The current building use is as follows: Classroom 18%; Administrative Offices 19%; Faculty Offices 15%; Laboratories 36%; and Mechanical 12%.

PRIMARY SYSTEMS

The foundation, basement floor slab, and columns & beams all appear to be in good condition. The second floor mechanical room (RM 231) has had some deterioration of the concrete slab and curb around the absorption chiller. A project has been proposed but never funded to repair this concrete damage.

The exterior of the building is constructed of brick veneer, limestone and exposed concrete. The exterior does not show any signs of movement or shifting of the building. Some of the exposed concrete above the entrance canopy on the west side of the building has broken loose from the re-bar and is lying on top of the canopy. This area needs to be repaired and sealed to stop further deterioration. The structural components of the building are in good condition.

The windows are single pane, non-operable and only represent approximately 4.6% of the total exterior wall area. There were no signs of seals leaking or glass breakage. There is a problem with water leaking between the window sills and the aluminum window frames. We have proposed a project to replace the caulking around the windows and to seal the window sills. The entry doors at the east and the west entrances are aluminum and in fair condition. The hardware is worn and

a couple of the doors have a tendency to stick open or close to fast. We have listed a maintenance project to check the operation of these doors and make the necessary hardware repairs.

The roof on Hitchcock Hall was replaced in 1986 with a four-ply felt with bitumen and gravel. There was a 10-year warranty provided with the replacement roof that will expire in 1997. The inspection of the roof showed areas around the condenser to the south that had been patched with mastic. The expansion joints have galvanized metal that has begun to rust that should be protected from further oxidation. The felt base flashing has several areas that appear to be vulnerable to cracking or splitting.

SECONDARY SYSTEMS

The partitions, doors, walls, and ceilings are very consistent in their condition throughout the building. The original classroom partitions are constructed of concrete block. Partitions that have been built to sub-divide offices are built with metal studs and drywall. These partitions are in good condition.

The ceilings in the corridors, offices, and classrooms are constructed with 2' x 4' acoustical suspended ceilings. These ceilings are over 25 years old and are dirty or discolored in many areas. The light fixtures that suspend from the ceiling are also discolored and need to be cleaned. We have proposed a project to clean the ceiling grid, fixtures, and tile.

The stairwells are constructed of brick veneer and exposed concrete. The stairwells are very dark because of the materials used and the limited lighting. The metal doors to the stairwells have been scratched and the paint worn off from backpacks rubbing. We have proposed a project to paint these doors and frames. The stairwells on the east side of the building have incandescent light fixtures with the globes missing. We have proposed that these fixtures be replaced with fluorescent fixtures.

The restrooms are constructed with ceramic tile on the walls and plaster board ceilings. The floors in the restrooms are also a ceramic tile finish. The toilet partitions are painted metal.

SERVICE SYSTEMS

The major service systems at Hitchcock Hall are over 25 years old. The elevators continue to perform adequately. The handicapped access to the elevator is limited to the building entrance on the east side of the building. There is also access to each floor of Hitchcock from Bolz Hall.

The plumbing for the domestic water system is operating adequately. A few of the faucets in the restrooms are difficult to operate, but the water pressure and supply was adequate at all locations. The domestic hot water temperature at the restrooms was lukewarm.

The building is heated and cooled by two main air handling systems and a multi-zone system for the auditorium area. There are 10 single-zone systems that serve rooms on the third floor that have extensive computer equipment. There are an abnormal number of too hot and too cold work orders for Hitchcock Hall. In 1986 modifications were made to the air distribution system to eliminate open plenums and installed ducts and diffusers in certain sections of the building. A project

is proposed to complete these modifications to the remaining areas of the building.

It appears that the control system is very slow to respond to changes in outdoor air temperature. We are proposing a project to install DDC (Direct Digital Controls) in Hitchcock to improve the control of temperature in the building and to provide better energy management.

The McQuay centrifugal chiller and Marley cooling tower that provides chilled water to Hitchcock was installed in 1984. There is a Trane absorption unit that is to serve as a back-up to the centrifugal chiller, but it is currently out of service. There is a proposed project on the department's R&R list to replace the tubes in the absorber, but it has not been funded. There has also been discussion about using the chillers in Bolz Hall as the back-up for Hitchcock by connecting the chilled water systems together. We are proposing a project to provide for the connection of the chilled water systems between these buildings.

ELECTRICITY

The 1000 KVA transformer for the building is located outside next to the east entrance. There are two 1600 amp main disconnects. There are a couple of spare disconnects located in the building distribution panel. The peak load recorded by the utility group was about 75% of the capacity.

The stairwells and lobby of Hitchcock Hall are very dark. The floors are black and the walls are the brick veneer. The light fixtures produce less than 5 footcandles of lighting. The main lobby has recessed incandescent downlights. The south stairwell has 2 foot fluorescent fixtures. These areas need to have new fixtures installed that are more energy efficient and increase the lighting levels to about 20 footcandles. The classrooms and offices have recessed fluorescent fixtures that need to be cleaned.

BUILDING PERIMETER

The area to the west and north of Hitchcock Hall is landscaped to provide for pedestrian traffic and some outside seating areas. The trees and shrubs are overgrown and need to be trimmed. The concrete walks are in good condition, but the steps into Hitchcock and from Neil Avenue have been patched several times. It will be necessary to replace some of the concrete steps in the next 5 to 10 years.

There has been some erosion of the hill that is adjacent to the steps from Neil Avenue. The steep slope in this area is hard on the plantings and the maintenance difficult. The landscaping next to the building on the south side of the building needs to be trimmed and dead trees removed.

SAFETY STANDARDS

Hitchcock Hall is equipped with a manual fire alarm system. Portable fire extinguishers and hose cabinets are located in the corridors of each floor. There are lighted exit signs at each exit and emergency lighting that is powered with an emergency generator.

The Ohio Board of Regents Facilities Asbestos Inspection and Risk Assessment Program's report: Inventory of Friable Asbestos-Containing Materials in Buildings

of the Ohio State University (Main and Branch Campuses) and Recommendations for Corrective Action by PEI Associates, September 1986, identifies asbestos containing materials in the pipe insulation and heat exchanger insulation in Room 002M, 029M, and 231M.

CONCLUSION

Hitchcock Hall is 25 years old. There have been modifications made to the HVAC system to conserve energy and a new chiller was installed in 1984. The roof was replaced in 1986. The remaining building systems are original. The decor of the building has changed very little from the original construction. The painted areas have been re-painted, but the floors, ceiling tiles, and wall finishes have not been changed.

The building is heavily used. The engineering placement office and administrative offices, auditorium, and lecture halls that are part of the classroom pool all attract visitors. Several of the engineering faculty have offices in Hitchcock Hall. These mixed uses make it one of the busier buildings on campus.

PROPOSED MAINTENANCE PROJECTS

HITCHCOCK HALL

#274

A. Corrective Maintenance Projects:

- 1. Replace cushions and upholstery of auditorium seats in RM 131.....\$ 45,000
 - 2. Repair back-up absorption chiller or install chilled water connection with Bolz Hall chiller..... 30,000 *
 - 3. Repair concrete floor and curbing in mechanical room 231 under absorption chiller..... 10,000 *
 - 4. Replace remaining paper plenums in HVAC system to eliminate air leakage..... 200,000
 - 5. Add Firefighters service to elevator..... 30,000
- Sub Total \$315,000

B. Building Improvement/Addition Projects:

- 1. Install DDC controls to the two air handlers and multi-zone system..... \$ 25,000

C. Projected (over the next 10 yrs) Component Replacement Projects:

- 1. Replace steps and landing areas at the west entrance to eliminated damaged and patched concrete....\$ 5,500
 - 2. Clean and seal exterior brick and concrete enclosure to keep moisture from penetrating..... 70,000
- Sub Total \$ 75,500

Total cost for all estimated projects = \$ 415,500

* These projects are currently on our departmental project list as a unfunded projects.

MAINTENANCE PROJECTS

(Less than \$5,000)

HITCHCOCK HALL #274

1. Trim trees and shrubs around the building.
2. Inspect, adjust, and replace entrance door hardware for both entrances. Sixteen doors are installed.
3. Repair exposed concrete above canopy on the west entrance. The re-bar is exposed and rusted.
4. Install additional fluorescent lighting in south stairwell and replace incandescent lighting with fluorescent fixtures in the east stairwells.
5. Repair stairway hand railing in east stairwells where the rubber cover has come loose and the metal frame is exposed.
6. Paint metal stair risers and metal doors in stairwells.
7. Replace the entrance floor mats with the proper recessed in-laid mats that were originally installed.
8. Replace caulking around the aluminum window frames and seal exterior concrete window sills.
9. Clean acoustic ceiling tiles, grids, and light fixtures in corridors & stairwells.
10. Install an emergency telephone in the passenger elevator.

BUILDING EVALUATION SUMMARY

I. BUILDING INFORMATION

FAC # 274 FACILITY NAME: HITCHCOCK HALL
 DATE: 6-09-92 INSPECTOR: RDL
 YEAR CONSTRUCTED: 1967
 GROSS SQ FT: 119,135 NET SQ FT: 84,993
 REPLACEMENT COST \$ 15,280,000 X 0.90 = \$13,752,000 *

II. COMPONENT RATING

COMPONENT	BUILDING COMPONENT PERCENTAGE OF TOTAL COST **	BUILDING COMPONENT REPLACEMENT COST	CONDITION VALUE MULTIPLIER FOR BLDG. COMPONENT	BUILDING COMPONENT CURRENT VALUE
Foundation	12.39	1,703,873	0.92	1,567,563
Columns and Beams	16.97	2,333,714	0.92	2,147,017
Exterior Walls	6.56	902,131	0.82	739,747
Windows & Doors	3.21	441,439	0.76	335,494
Roofing	2.12	291,542	0.91	265,303
Partitions & Drs.	6.87	944,762	0.82	774,705
Wall Finishes	2.09	287,417	0.53	152,331
Floor Finishes	3.97	545,954	0.79	431,304
Ceilings & Finish	5.66	778,363	0.56	435,883
Conveying	2.94	404,309	0.63	254,715
Plumbing	6.53	898,006	0.79	709,425
Heating	6.91	950,263	0.77	731,703
Cooling & Vent.	7.93	1,090,534	0.64	697,942
Elec. Ser. & Dist	1.37	188,402	0.80	150,722
Lighting & Power	9.20	1,265,184	0.70	885,629
Safety Standards	5.28	726,106	0.63	457,447
TOTALS	100.00	13,752,000	0.78	10,736,930

III. BUILDING RATING SUMMARY

Overall Building Rating = 78.0 %

* Replacement Cost assigned September, 1991 by The Office of Campus Planning and Space Utilization without the furnishings and fixed equipment allocation.

** Percent allocation of each building component is calculated from The Means Standard Construction Cost data for College Classroom Buildings.

EXTERIOR WALLS

FAC # 274 DATE: 06/11/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Walls:	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
Concrete <u>POURED-IN-PLACE BELOW GRADE & STRUCTURAL SYSTEM</u>	[]	[]	[X]
Masonry <u>CONCRETE BLOCK BEHIND BRICK VENEER</u>	[]	[X]	[]
Metal Siding _____	[X]	[]	[]
Wood Siding _____	[X]	[]	[]
Other <u>A FEW LIMESTONE PANELS WERE USED</u>	[]	[X]	[]
b. Finishes:			
Stucco <u>UNDERSIDE OF CANTILEVER FOR THE SECOND FLOOR</u>	[]	[X]	[]
Paint _____	[X]	[]	[]
Other _____	[X]	[]	[]

B. COMMENTS:

1. THE SECOND FLOOR STRUCTURAL CANTILEVER THAT SUPPORTS THE BRICK VENEER HAS BEEN DAMAGED ABOVE THE FRONT ENTRANCE CANOPY. IT APPEARS THAT THE MOISTURE FROM RAIN ON THE CANOPY HAS PENETRATED THE CONCRETE AND RUSTED THE RE-BAR AND CAUSED THE CONCRETE TO BREAK LOOSE. THREE LARGE CHUNKS OF CONCRETE ARE LYING ON THE TOP OF THE CANOPY.

C. COMPONENT RATING: $\frac{(\$902,131)}{\text{Possible Value}} \times \frac{(0.82)}{\text{Condition Value Multiplier}} = \frac{\$739,747}{\text{Component Value}}$

EXTERIOR WINDOWS & DOORS

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
a. Windows type & number:			
Wood _____	[X]	[]	[]
Steel _____	[X]	[]	[]
Alum <u>NON-TINTED, NONOPERABLE, ALUMINUM FRAMES</u>	[]	[X]	[]
Other _____	[X]	[]	[]
b. Window glazing			
Single pane <u>SINGLE PANE (26,900 SF OF TOTAL GLASS AREA)</u>	[]	[]	[X]
Double pane _____	[X]	[]	[]
Other _____	[X]	[]	[]
c. Doors type & number:			
Wood _____	[X]	[]	[]
Steel _____	[X]	[]	[]
Alum <u>ALUMINUM FRAMES WITH FULL GLASS PANELS</u>	[]	[]	[X]
Other _____	[X]	[]	[]
d. Shading Devices:			
Types <u>BLINDS AND DRAPERIES USED AT SOME WINDOWS</u>	[X]	[]	[]

B. COMMENTS:

1. ENTRANCE DOOR ON THE EAST HAS A TENDENCY TO STICK OPEN.
2. SINGLE GLAZED WINDOWS WITH ALUMINUM FRAMES ARE ENERGY INEFFICIENT.

C. COMPONENT RATING: $\left(\frac{\$441,439}{\text{Possible Value}} \right) \times \left(\frac{0.76}{\text{Condition Value Multiplier}} \right) = \frac{\$335,494}{\text{Component Value}}$

ROOFING

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Roof Covering:	N/A	Sat	Att
Built-up <u>WITHOUT GRAVEL OVER THE AUDITORIUM</u>	[]	[X]	[]
Built-up w/gravel <u>ALL AREAS EXCEPT THE AUDITORIUM</u>	[]	[X]	[]
Asphalt Shingle _____	[X]	[]	[]
Copper _____	[X]	[]	[]
Glass (Skylight) _____	[X]	[]	[]
Slate _____	[X]	[]	[]
Spanish Tile _____	[X]	[]	[]
Metal _____	[X]	[]	[]
Other _____	[X]	[]	[]

b. Flashing:

Base & Counter <u>BASE FLASHING IS FELT & CAP IS COUNTER</u>	[]	[X]	[]
Cap <u>ALUMINUM CAP OVER EXTERIOR WALLS</u>	[]	[X]	[]
Through Wall _____	[X]	[]	[]
Valley & Ridge _____	[X]	[]	[]

c. Gravel Stop & Edge Strips:

Type _____	[X]	[]	[]
------------	-----	-----	-----

e. Drainage:

Gutters _____	[X]	[]	[]
Drains <u>CENTRALLY LOCATED ON THE ROOF</u>	[]	[X]	[]
Scuppers _____	[X]	[]	[]
Downspouts _____	[X]	[]	[]

f. Parapets:

Concrete <u>CAST-IN-PLACE CONCRETE</u>	[]	[X]	[]
Brick _____	[X]	[]	[]
Block _____	[X]	[]	[]
Precast _____	[X]	[]	[]
Other _____	[X]	[]	[]

g. Insulation:

Type <u>1 1/2" RIGID INSULATION OVER LIGHT WEIGHT CONCRETE</u>	[]	[X]	[]
--	-----	-----	-----

B. COMMENTS

1. THE EXPANSION JOINTS IN THE ROOF HAVE A GALVANIZED METAL CAP THAT IS RUSTING IN SEVERAL PLACES.

C. COMPONENT RATING: $\frac{(\$291,542)}{\text{Possible Value}} \times \frac{(0.91)}{\text{Condition Value Multiplier}} = \frac{\$265,303}{\text{Component Value}}$

WALL FINISHES

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
a. Paint <u>CLASSROOMS, CORRIDORS, RESTROOMS</u>	[]	[X]	[]
b. Wall Coating _____	[X]	[]	[]
c. Wall Coverings _____	[X]	[]	[]
d. Paneling			
Prefinished <u>LOCATED IN LECTURE HALLS RM 31, 35, & 131</u>	[]	[X]	[]
Plank _____	[X]	[]	[]
e. Cork _____	[X]	[]	[]
f. Wallpaper _____	[X]	[]	[]
g. Ceramic Tile <u>USED FOR WALLS IN RESTROOMS</u>	[]	[X]	[]
h. Trim & Wainscot _____	[X]	[]	[]
i. Decoration _____	[X]	[]	[]
j. Glass _____	[X]	[]	[]
k. Other <u>EXPOSED BRICK IN STAIRWELL & LOBBY</u>	[]	[X]	[]

B. COMMENTS

1. CORRIDORS HAVE RECENTLY BEEN PAINTED. THE METAL DOORS AND FRAMES ARE IN NEED OF PAINT.

C. COMPONENT RATING: $\frac{(\$287,417)}{\text{Possible Value}} \times \frac{(0.53)}{\text{Condition Value Multiplier}} = \frac{\$152,331}{\text{Component Value}}$

FLOOR FINISHES

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
a. Carpet:			
Rolled <u>CARPET LOCATED IN SOME DEPARTMENTAL OFFICES</u>	[]	[X]	[]
Tile _____	[X]	[]	[]
b. Composition:			
Epoxy _____	[X]	[]	[]
Synthetic _____	[X]	[]	[]
Other _____	[X]	[]	[]
c. Concrete Topping:			
Clear Sealant <u>MECHANICAL ROOMS ARE CONCRETE WITH SEALER</u>	[]	[]	[X]
Abrasive _____	[X]	[]	[]
Epoxy _____	[X]	[]	[]
Aggregate _____	[X]	[]	[]
d. Resilient:			
Vinyl Tile <u>LOCATED IN THE CORRIDORS, CLASSROOMS, OFFICES</u>	[]	[X]	[]
Linoleum _____	[X]	[]	[]
Vinyl _____	[X]	[]	[]
Rubber _____	[X]	[]	[]
Cork _____	[X]	[]	[]
e. Ceramic Tile <u>USED FOR RESTROOM FLOORS</u>	[]	[X]	[]
f. Masonry _____	[X]	[]	[]
g. Terrazzo _____	[X]	[]	[]
h. Wood _____	[X]	[]	[]
i. Metal _____	[X]	[]	[]

B. COMMENTS

1. CORRIDOR COVE BASE IS MARBLE.
2. MECHANICAL ROOM FLOOR LEAKS TO LOBBY ON FIRST FLOOR. A PROJECT HAS BEEN PROPOSED TO REPAIR AND SEAL (WATERPROOF) THIS FLOOR.

C. COMPONENT RATING: (\$545,954) X (0.79) = \$431,304

Possible	Condition	Component
Value	Value Multiplier	Value

CEILING AND FINISHES

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. System Type:	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
Exposed _____	[X]	[]	[]
Applied to Structure <u>12" X 12" TILES IN LECTURE HALLS</u>	[]	[X]	[]
Suspended <u>2' X 4' ACOUSTIC TILE, METAL GRID SUSPENSION</u>	[]	[X]	[]
 b. Materials:			
Drywall _____	[X]	[]	[]
Plaster _____	[X]	[]	[]
Mineral Fiber Board <u>USED FOR SUSPENDEED CEILING PANELS</u>	[]	[X]	[]
Metal Pan _____	[X]	[]	[]
Luminous Panels _____	[X]	[]	[]
Other <u>12"x 12" ACOUSTICAL TILE USED IN LECTURE HALLS</u>	[]	[]	[X]
 c. Finishes:			
Paint _____	[X]	[]	[]
Mineral Fiber <u>SUSPENDEED CEILING PANELS</u>	[]	[]	[X]
Fabric _____	[X]	[]	[]
Prefinished _____	[X]	[]	[]
Other _____	[X]	[]	[]
 d. Openings & Inserts:			
Air Distribution <u>RECESSED IN CEILING PANELS</u>	[]	[]	[X]
Lighting Fixtures <u>RECESSED IN CEILING PANELS</u>	[]	[]	[X]
Access Panels _____	[X]	[]	[]
Skylights _____	[X]	[]	[]
Fire Protection _____	[X]	[]	[]
Other _____	[X]	[]	[]

B. COMMENTS:

1. SUSPENDEED CEILING PANELS, METAL GRID, LIGHT FIXTURES, AND REGISTERS ARE DIRTY.
2. 12" X 12" ACOUSTICAL TILE IN STAIRWELLS TO LECTURE HALLS 035 & 031 ARE WATER STAINED AND A FEW OF THE TILES ARE MISSING. REPLACEMENT TILES ARE STORED IN MECHANICAL RM 039M.

C. COMPONENT RATING: $(\underline{\$778,363}) \times (\underline{0.56}) = \underline{\$435,883}$

Possible	Condition	Component
Value	Value Multiplier	Value

COOLING & VENTILATING

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
a. System:			
Type <u>DUAL DUCT HIGH VELOCITY & MULTI-ZONE SYSTEM REHEAT</u>	[]	[]	[X]
Capacity <u>141,175 CFM (1.18 CFM PER SF)</u>	[]	[X]	[]
b. Chillers:			
Centrifugal <u>MCQUAY, 225 TON, INSTALLED 1984</u>	[]	[X]	[]
Reciprocating _____	[X]	[]	[]
Absorption <u>TRANE, 233 TON, INSTALLED 1959</u>	[]	[]	[X]
c. Cooling Towers:			
Type <u>MARLEY, MODEL-8911, INSTALLED IN 1984</u>	[]	[X]	[]
Capacity <u>225 TONS, DRAW THROUGH COOLING TOWER</u>	[]	[X]	[]
d. Condensers: <u>10 DIFFERENT AIR COOLED CONDENSERS ON ROOF</u>	[]	[X]	[]
e. Space Equipment:			
Direct Expansion -			
Window units _____	[X]	[]	[]
Thru-the-wall _____	[X]	[]	[]
Single zone <u>COMPUTER ROOMS HAVE 10 SEPARATE SYSTEMS</u>	[]	[X]	[]
Air/Water -			
2-pipe fan coil _____	[X]	[]	[]
Terminal Reheat <u>ARE USED WITH THE MAIN HVAC SYSTEMS</u>	[X]	[]	[]
Variable volume <u>THE THREE MAIN HVAC SYSTEMS</u>	[]	[X]	[]
Dual Duct <u>HAS BEEN MODIFIED TO VAV</u>	[X]	[]	[]
Multi-zone <u>SUPPLIES LECTURE HALLS RM 31, 35, & 131</u>	[]	[X]	[]
f. Special Systems:			
Type <u>LISTED AS DX SYSTEMS FOR COMPUTER LAB.</u>	[X]	[]	[]
Capacity _____	[X]	[]	[]
g. Control Systems:			
Pneu <u>JC-80 SYSTEM (CENTRAL ON/OFF CONTROL)</u>	[]	[]	[X]
Electric _____	[X]	[]	[]
Electronic _____	[X]	[]	[]
h. Fans:			
Exhaust <u>TWELVE (12) EXHAUST SYSTEMS</u>	[]	[X]	[]
Recirculating <u>THIRTEEN (13) SUPPLY FANS</u>	[]	[X]	[]

B. COMMENTS:

1. MODIFICATIONS WERE MADE TO THE AIR DISTRIBUTION SYSTEM IN 1986 FOR THE ENGINEERING PLACEMENT OFFICE AND THE THIRD FLOOR COMPUTER ROOMS. THE REMAINING AREAS OF THE BUILDING SHOULD HAVE THE SAME MODIFICATIONS.
2. THE ABSORPTION CHILLER HAS NOT OPERATED FOR THE LAST FEW YEARS. TESTS RUN LAST YEAR DETERMINED THAT SEVERAL OF THE TUBES NEED TO BE REPLACED OR CLEANED. THE PROJECT TO REPLACE THE BAD TUBES WAS PUT ON HOLD THE EARLY PART OF 1992.

C. COMPONENT RATING: (\$1,090,534) x (0.64) = \$697,942

Possible Condition Component
Value Value Multiplier Value

ELECTRICAL/SERVICE & DISTRIBUTION

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

(a) Service:

Substation CIRCUIT# PGN8/PGS4

Primary Voltage 13,200 VOLTS

Transformer:

Manufacture	Type	KVA	Secondary Voltages
<u>G.E. 163112</u>	<u> </u>	<u>1000</u>	<u>480Y/277</u>

(b) Distribution System:

Panelboard (type) CIRCUIT BREAKER PANELS

Voltage 480Y/277 VOLTS

Amperage TWO 1600 AMP MAIN SWITCH

Conduit N/A

Conductor N/A

Wire (type) N/A

Armored Cable N/A

Other N/A

(c) Emergency System:

General or (type & capacity) CUMMINGS, DIESEL, RM 039

B. COMMENTS:

C. COMPONENT RATING: $(\underline{\$188,402}) \times (\underline{0.80}) = \underline{\$150,722}$
Possible Condition Component
Value Value Multiplier Value

ELECTRICAL/LIGHTING & POWER

FAC # 274 DATE: 06/18/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Lighting (lamp type):	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
Fluor <u>CORRIDORS, CLASSROOMS, & OFFICES</u>	[]	[]	[X]
Incand <u>NORTH & EAST STAIRWELLS, GLOBES ARE MISSING</u>	[]	[]	[X]
HID _____	[X]	[]	[]
Other _____	[X]	[]	[]
b. Receptacles & Switches			
Type & Capacity _____	[X]	[]	[]
c. Special:			
Baseboard Heat _____	[X]	[]	[]
Lightning Protection <u>ROOF HAS LIGHTING ROD SYSTEM</u>	[]	[]	[X]
Communication & Alarm <u>COMPUTER ROOMS HAVE AN ALARM SYSTEM</u>	[]	[X]	[]
Data Systems _____	[X]	[]	[]

B. COMMENTS:

1. THE CORRIDORS ON THE FIRST FLOOR AND THE STAIRWELLS ARE DARK (BETWEEN 2 TO 5 FOOTCANDLES WHEN THEY SHOULD BE ABOUT 20 FOOTCANDLES).
2. SEVERAL OF THE LIGHTNING RODS HAVE COME LOOSE FROM COPING.

C. COMPONENT RATING: (\$1,265,184) X (0.70) = \$885,629

Possible	Condition	Component
Value	Value Multiplier	Value

SAFETY STANDARDS

FAC # 274 DATE: 06/22/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

(a) Exits:

	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
Stair Construction:			
concrete _____	[X]	[]	[]
steel <u>FRAMES WITH CONCRETE TREADS</u>	[]	[]	[X]
wood _____	[X]	[]	[]
Number of exits <u>THREE STAIRWELLS</u>			

(b) Fire Rating:

Construction Type: I X II ___ III ___ IV ___ V ___ VI ___
 Building Height: 48 FEET FOUR STORIES

(c) Extinguishing Systems:

Portable <u>LOCATED IN EACH CORRIDOR</u>	[]	[X]	[]
Standpipe <u>LOCATED IN STAIRWELLS</u>	[]	[X]	[]
Hose Cabinets <u>LOCATED IN CORRIDORS</u>	[]	[X]	[]
Sprinklers <u>LOCATED IN RM N-003 & RM N-011</u>	[]	[X]	[]
Suppression _____	[X]	[]	[]
Other _____	[X]	[]	[]

(d) Detection & Alarm Systems:

Manual Alarm <u>PULL STATIONS LOCATED AT STAIRWELLS</u>	[]	[X]	[]
Annunciator <u>LOCATED IN LOBBY OF HITCHCOCK HALL</u>	[]	[X]	[]
Smoke Detectors <u>LOCATED IN AIR HANDLERS</u>	[]	[X]	[]

(e) Lighting Systems:

Exit Signs <u>LOCATED AT STAIRWELLS AND EXIT DOORS</u>	[]	[X]	[]
Exit Lighting <u>SUPPLIED WITH BACK-UP POWER</u>	[]	[X]	[]
Emergency Lighting <u>POWER BY DIESEL GENERATOR</u>	[]	[X]	[]
Emergency Generator <u>CUMMINGS, DIESEL</u>	[]	[X]	[]

B. COMMENTS:

C. COMPONENT RATING: (\$726,106) X (0.63) = \$457,447
 Possible Condition Component
 Value Value Multiplier Value

BUILDING PERIMETER EVALUATION

FAC # 274 DATE: 06/22/92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
1. Structural Access:			
Driveway <u>OFF W. 19TH AVE., NEXT TO BOLZ HALL</u>	[]	[X]	[]
Loading Dock <u>NONE, ACCESS IS FROM BOLZ HALL LOAD DOCK</u>	[]	[X]	[]
Sidewalks			
Front <u>WEST SIDEWALK HAS A CRACK ON THE SLOPE</u>	[]	[X]	[]
Side <u>NORTH SIDEWALK HAS ACCESS FROM WOODRUFF AVENUE</u>	[]	[X]	[]
Rear <u>EAST SIDEWALK HAS AN ASPHALT WALKWAY</u>	[]	[X]	[]
Steps			
Front <u>STEPS HAVE BEEN PATCHED SEVERAL TIMES</u>	[]	[]	[X]
Side _____	[X]	[]	[]
Rear <u>STEPS DOWN TO ENTRANCE DOORS</u>	[]	[X]	[]
Handicap Ramp <u>OFF DRIVEWAY ON THE EAST SIDE OF BUILDING</u>	[]	[X]	[]
2. Lawn and Landscaping:			
Lawn <u>AREA IS ON THE NORTH SIDE BETWEEN WOODRUFF & BLDG.</u>	[]	[X]	[]
Shrubs <u>OVERGROWN; NEED TO BE TRIMMED</u>	[]	[]	[X]
Trees <u>OVERGROWN; NEED TO BE TRIMMED; RUBBING ROOF AT NE</u>	[]	[]	[X]
Undesirable Insect <u>NONE OBSERVED</u>	[X]	[]	[]
Bedding Material <u>BEDS ARE COVERED WITH IVY</u>	[]	[X]	[]
Watering System <u>NONE</u>	[X]	[]	[]
3. General Site Information:			
Signage <u>LOCATED ON WOODRUFF AVENUE</u>	[]	[X]	[]
Address Identification <u>SIGN ON WOODRUFF HAS NEIL ADDRESS</u>	[]	[]	[X]
Security Lights <u>BUILDING HAS LIGHTS ON EXTERIOR OF BLDG.</u>	[]	[X]	[]
Street Lights <u>LOCATED ON NEIL AND WOODRUFF</u>	[]	[X]	[]
Drainage <u>STEEP SLOPE FROM BUILDING TO NORTH AND WEST</u>	[]	[]	[X]
Storm Drains <u>LOCATED IN NEIL AND WOODRUFF</u>	[]	[X]	[]

B. COMMENTS:

1. SOME EROSION HAS OCCURRED ON THE WEST SIDE STEPS FROM NEIL AVENUE TO THE FRONT OF THE BUILDING.
2. GUTTER AT NE CORNER OF THE AUDITORIUM IS CLOGGED FROM LEAVES AND DEBRIS FROM TREE OVERHANGING THE ROOF AREA.

**The Ohio State University
Department of Physical Facilities
BUILDING AUDIT METHODOLOGY**

1. BUILDING AUDIT PROGRAM OBJECTIVE

To provide a building-by-building inventory, including maintenance deficiencies that currently exist, for the OSU buildings that the Department of Physical Facilities has budgetary responsibility. These audits will be used to establish corrective maintenance projects and budget cost estimates.

2. BUILDING AUDIT APPROACH

A five-step procedure is used to meet the program objectives:

1. Collect Historical and Inventory Data on each building.
2. Interview Building Occupants.
3. Perform a Building Inspection.
4. Complete Building Evaluation Forms.
5. Issue Written Report.

3. DATA ORGANIZATION

The data collected is stored by hard copy with field notes in a building file established for each building. The report data is being stored in a database program that allows retrieval of specific data as it is needed. The "Building Evaluation" forms contain ratings for the condition of each building component and a description of any deficiencies for those components. The "Building Information" sheets provide data on the utilities to the buildings and the type of systems in each building.

4. COST ESTIMATES

Costs are for budgeting purposes only and are based on The Means Standard Construction Cost data, engineer's experience, industry sources and OSU project cost data. Costs are reported current to the year of the audit. The building component values assigned in the "Building Evaluation" forms are not cost estimates. These values are calculated from the replacement cost provided by The Office of Campus Planning and Space Utilization for each OSU building.

5. LIMITATIONS

(1) All inspections are visual and do not include physical tests, instrumentation or metering measurements, sampling, or monitoring.

(2) Only random typical offices or laboratories are entered. Typical spaces are deemed to be representative of average conditions throughout each building.

(3) The scope of the analysis does not include complete OSHA, energy, or physical impaired access study. Buildings and components are inspected for condition and general safety requirements rather than specialized code conformance.

(4) It is assumed that the buildings inspected were approved by the State of Ohio Division of Factory and Building Inspection at the time of construction. The recommendations listed in the reports are not an attempt to bring these existing

buildings up to present day code standards. Rather, the intent is to eliminate obvious problems and to upgrade the buildings in a reasonable manner in regard to occupant safety.

(5) Cost estimates are in current year dollars and include contractor mark-ups, construction administration costs, and architectural/ engineering costs where applicable. Escalation factors must be applied for future work. Combining of projects should serve to decrease costs. These estimates are strictly for purposes of budgeting, and final pricing will be required when the specific scope of work for the project is defined.

(6) The building inspections are defined to include the following:

(a) Includes general repainting and redecorating, wholesale replacement of building and system components. On-going maintenance, replacement and renovation projects are not included.

(b) Includes exterior building walls and attached items.

(c) Includes the entrance steps up at all entries. Ramps outside the buildings are included. Plantings around the building exterior are included.

(d) Movable furniture is not included.

(e) Fixed equipment inside the buildings that is installed and maintained by a specific academic department or using agency is not included.

(f) Utility lines supplying the buildings are not included.

(g) The program needs of the using department are assumed to be satisfied. No consideration has been given to anticipate any changes in current occupant space needs.

ABBREVIATIONS

ATT.....	ATTENTION
BLDG.....	BUILDING
BUR.....	BUILT UP ROOF
COND.....	CONDENSATE WATER
DD.....	DUAL DUCK AIR HANDLING SYSTEM
DDHV.....	DUAL DUCT HIGH VELOCITY
DHWR.....	DOMESTIC HOT WATER RETURN
DHWS.....	DOMESTIC HOT WATER SUPPLY
DX.....	DIRECT EXPANSION AIR CONDITIONER
FPM.....	FEET PER MINUTE
HID.....	HIGH INTENSITY DISCHARGE LIGHT
HPS.....	HIGH PRESSURE STEAM (125 PSI)
HVAC.....	HEATING, VENTILATING AND AIR CONDITIONING SYSTEM
KV.....	KILOVOLTS
KVA.....	KILOVOLTS AMPS
KW.....	KILOWATTS
LC.....	LIQUID COOLED
LPS.....	LOW PRESSURE STEAM (15 PSI)
MPS.....	MEDIUM PRESSURE STEAM (50 PSI)
MZ.....	MULTIZONE AIR HANDLING SYSTEM
N/A.....	NOT APPLICABLE
PSI.....	POUNDS PER SQUARE INCH
RM.....	ROOM
SAT.....	SATISFACTORY
SR.....	STEAM RETURN LINE
SS.....	STEAM SUPPLY LINE
TR.....	TERMINAL REHEAT AIR HANDLING SYSTEM
V.....	VOLTS
VAV.....	VARIABLE AIR VOLUME SYSTEM

APPENDIX

Building Floor Plans
C-1 Building Space Assignments