

FACILITY AUDIT REPORT
AGRICULTURAL ENGINEERING BUILDING
#298
SEPTEMBER 1995

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**EXECUTIVE SUMMARY AND PROJECT LIST FOR
AGRICULTURAL ENGINEERING BUILDING**

It has been 9 years since the Agricultural Engineering Building was built. The building contains classrooms, shops and labs to train students in the multitude of disciplines required in the field of agriculture. The building is in good to fair structural condition. However, it is in need of premature maintenance due to engineering and/or construction oversights when built. Roof leaks over the years can be attributed to a missing roof counter flashing at the perimeter, which was not installed. Several areas of differential settlement in and around the building appear to be attributable to the methods used to compact the soil. Finally, it was reported that most of the heating and air conditioning system has not worked properly since it was installed. The building will also require maintenance items noted below over the next ten years.

PROPOSED MAINTENANCE PROJECTS

A. Corrective Maintenance Projects:	Control No.
1. Repair the courses of brick on two-story area including installation of the drip edge above windows, seal the cracks on walls above the roof, the four corners of the open area, and at door lintels.	\$ 40,000 2986
2. Remove all expansion joint sealant and plastic expansion sleeves on the sidewalk joints and reseal.	\$ 7,700 3020
SUB-TOTAL	\$ 37,700
 B. Building Improvement/Addition Projects:	
1. Install street lighting in the three parking islands on the west side of the building and a wall pack over west door for proper coverage. .	\$ 25,000 3123
SUB-TOTAL	\$ 25,000
 C. Building Component Replacements expected within the next 5 to 10 years:	
1. Replace Chiller in room 125M in 10 years	\$112,500 3021
2. Replace three sets of steel exterior doors.	\$ 30,000 1217
3. Evaluate controls in rooms 156, 158, 164, 166, 145, 137, 135 and 136, repair, correct and air balance.	\$ 25,000 3022
SUB-TOTAL	\$167,500
 Total Cost for all Projects	 \$230,200

GENERAL BUILDING INFORMATION

AGRICULTURAL ENGINEERING #298

BUILDING ADDRESS: 590 WOODY HAYES DRIVE

GROSS SQ. FT.: 105,422

NET ASSIGNABLE SQ. FT.: 85,793

MECHANICAL/CUSTODIAL AREA SQ. FT.: 10,485

YEAR OF CONSTRUCTION: 1986

YEAR OF LAST RENOVATION: 1986

NUMBER OF STORIES/BASEMENT: TWO IN FRONT; BALANCE HIGH BAY LABS AND STORAGE

AIR CONDITIONING (Percentage): 60%

CURRENT USE: LABS, STORAGE, CLASSROOMS, OFFICES AND COMPUTER AREA FOR AG ENGINEERING

TYPE OF CONSTRUCTION: REINFORCED CONCRETE AND STEEL FRAME, LOAD BEARING WALLS AND MASONRY SKIN

ESTIMATED REPLACEMENT COST: \$13,877,000 *

WHEELCHAIR ACCESSIBILITY: ACCESS FROM THE WEST MAIN ENTRANCE AND EAST DOORS, TO ELEVATORS AND SECOND FLOOR

OVERALL BUILDING CONDITION: SATISFACTORY **

NUMBER OF EXIT STAIRWAYS: TWO

AREA SHOP RESPONSIBILITY: MIDWEST AREA

* Replacement Cost assigned June 1995 by The Office of University Resource Planning & Institutional Analysis.

** The Office of University Resource Planning & Institutional Analysis C-1 Report Condition Code.

BUILDING SYSTEMS INFORMATION

AGRICULTURAL ENGINEERING #298

HEATING: Source HPS STEAM LOOP FROM MIDWEST CAMPUS
Type Heating System HOT WATER FROM STEAM HEAT EXCHANGERS
Steam (Line size, valve location) 4" HPS LINE IN RM 125C WITH DESUPERHEATER
Building Htg Water (line size, valve location) 6" IN 125C

VENTILATION SYSTEM: 100% OUTSIDE AIR ON ALL MAIN AIR HANDLING UNITS

COOLING:

Bldg % 60 Chillers ONE TRANE 180 TON, R-11, INSTALLED 1986
Window Units NONE Thru-the-roof ONE 5 TON Direct exp. units 3 UNITS

HVAC CONTROL SYSTEM: VARIES PNEUMATIC AND DDC WITH CENTRAL MONITORING

ELECTRIC: Source Size(KVA) Primary/Secondary Switchgear & Main Disc. (Rm)
1. BUCKEYE 306/201 1000 13,800 / 480/277 EAST SIDE AT
2. BUCKEYE 306/201 500 13,800 / 208/120 LOADING DOCK

PLUMBING:

Water (size, valve location) 8" IN ROOM 125C, 3" TO DOMESTIC COLD WATER
Gas (size, valve location) 3" IN ROOM 125C
Domestic Hot Water (size, valve location) 2" IN ROOM 125C
Compressed Air (size, location) 2" IN ROOM 125C

SEWERS:

Storm 2 @ 6", 2 @ 10", 2 @ 15" ON EAST SIDE Sanitary 3 @ 4", 2 @ 6" EAST

METERS:

Gas (size, location) 3" ON EAST SIDE AT COOLING TOWER
Water (size, location) 3" DCW IN ROOM 125C SOUTH WALL
Electric (size, location) ON SWITCH PANEL IN ROOM 125B

ALARM SYSTEMS:

Fire Alarm MANUAL Panel Location AT ROOM 116
Fire Pump NO Pump Location N/A
Sprinklers YES Panel Location AT ROOM 116
Other Alarms NEW DDC HVAC ALARMS

ELEVATORS:

Number ONE Type (passenger, freight) 1 PASSENGER
Manufacturer MOSELEY Size 55x80 INCHES

EMERGENCY GENERATOR:

Size 30 KW NATURAL GAS Location ROOM 125C

ASBESTOS SURVEY (1986):

NO SURVEY DONE NO ASBESTOS MATERIALS USED IN CONSTRUCTION IN 1986

AGRICULTURAL ENGINEERING NARRATIVE

HISTORY

The Agricultural Engineering Building was constructed in late 1985 through 1986 and partially occupied in December of 1986 with a gross area of 105,422 SF. The building was built for the College of Agriculture for office space, classrooms, laboratory space and shops for welding, woodworking, sheet metal and equipment repair. Since occupied, the occupants have experienced many problems with the new building. Several building components and/or systems have yet to function as intended and have yet to be corrected.

The building shell is functioning as designed, at this time; however, some areas of differential settlement within the building were noted. Settlement cracks need to be documented and monitored over the next five to ten years to determine if corrective measures are needed. Also, leaks around the interior perimeter soffits and windows have brought to light construction deficiencies in the brick work and possibly the roof/fascia installation.

A review of the work orders indicated that there are a normal number of maintenance calls to the building; however, some were pertinent to ongoing problem items plaguing the building since it was constructed. There are general maintenance projects that need to be completed within the next two to ten years to repair normal wear items noted below. These items when completed will protect the structure and exterior from the elements and enhance the building's performance and create a satisfying visual environment for students, faculty, staff and visitors.

Control upgrades and DDC remote readout to meet the present day HVAC needs are being completed at this time. However, some rooms, noted below, are reported to be not functioning as intended.

In an interview with the building coordinators, it was learned that they are generally satisfied with the overall condition and performance of the building systems with exception of the items discussed below.

Occupancy of the building reported by The Office of University Resource Planning & Institutional Analysis in the C-1 Building Space Assignment Report dated December 31, 1994 shows a Net Assignable Area of 76,401 SF and a Net Area of 85,793 SF. A breakdown of the total area is as follows, Administration and Support 12.5%, Teaching Labs and Shops 53.1%, Classrooms 5.8%, Custodial/toilet 2.6 %, Mechanical 7.4 % and Common Areas 18.6 % for a total of 105,422 Gross SF.

PRIMARY SYSTEMS

The south structure consists of reinforced concrete perimeter footers and walls to the second floor, interior and exterior pads with concrete columns, continuous footings with load bearing walls, concrete beams and floors to form the second floor structure. Load bearing masonry walls, steel columns, beams and roof trusses complete the skeletal components of the second floor and roof of this two story section of the building.

The north high bay lab area consists of reinforced concrete perimeter footers and walls to the second floor elevation on the west, some interior pads with steel columns, perimeter footings with reinforced block walls to grade, interior footers with block and load bearing walls which support the equipment room

precast concrete floors and steel roof trusses.

The cast in place concrete floors, walls, columns and beams appear to be in good condition. There are no major signs of settlement or movement in these areas.

The concrete footers, block, load bearing block, precast floors, steel columns and roof trusses are in good to fair condition, however, some minor settlement cracks in block walls and one separated wall were noted in the high bay area at several locations. They all need to be attended to.

A brick veneer was installed on block, load-bearing block, metal studs or hung from roof steel and concrete beams to form the exterior walls. Some walls extend above the roof at the second floor office area and at the mechanical rooms in the high bay area.

Overall the exterior brick is in good to fair condition. However, some spalling of mortar at steel door lintels and an estimated 5,500 LF of cracks at mortar joints due to expansion and contraction are evident at many locations. Some cracks were noted on the first three courses of all overhangs, above and below the windows and in courses between control joints. Damage to the four corners of the open area brick columns has occurred where the steel roof support framing has loosened brick due to differential movement between the two materials. Loose mortar and brick was also noted at several locations on the north wall of the second floor and the mechanical room walls above the roof.

All areas of the brick veneer where water staining, loose mortar, cracking and/or settlement have occurred need to be repaired, sealed and monitored over the next several years.

Moist bricks were observed in the interior soffit on the first course of brick above the window where it appears that a drip flashing was not installed during construction. Also, efflorescence stained steel was noted above the window and below the roof indicating possible roof leaks thru the mortar at the roof's edge, noted below. During hard driving rains moisture appears to be seeping through the brick walls into the space both above and below the windows through the previously mentioned joint cracks.

A project to remove brick and install a drip edge above the window has been completed, but did not include the brick repair in other areas. It is recommended that brick repairs to other areas of this building be completed as soon as possible.

Continuous openings on three sides of the second floor around the perimeter form the openings for the aluminum thermopane awning type windows. Aluminum store front window frames and entrance doors form a vestibule on the first floor in the front of the building, along with a section of store front window framing closing in the lobby. Some of the window glazing is double pane, while some is only single pane. Other openings in the various wall elevations include three steel entrance doors with vestibules, louvered air intakes, overhead garage doors and man doors. Some of the steel doors were not protected during construction and have since rusted through. They have been repaired and repainted but will not reach their expected service life.

The roof areas are of the flat type, consisting of a metal deck with four inches of insulation, a CSPE rubber roof with gravel ballast and an aluminum two-piece perimeter fascia sealed to the roof membrane. It appears that roof and soffit

construction details were not adhered to or changes were made during construction that may be contributing to the problems noted above. During heavy and/or driving rains, leaks appear above the interior soffit of the second floor, several other perimeter locations and below roof/wall flashings. Stains in the soffit above the windows, on perimeter walls and on ceiling tiles below roof/wall flashings would tend to confirm this. Water appears to be seeping in under the gravel stop/fascia assemblies and around the fastener clips that were not counter flashed as shown on the construction drawings. These areas need to be investigated and corrected since some leaks below roof/wall flashings may be due to brick leaks.

Roof ballast is fracturing into wafer type slivers that are sharp and could cut into the roof membrane when stepped on. Also, large areas of unwashed gravel with mud and fines were noted on the roof.

INTERIOR SYSTEMS

The reinforced concrete skeleton and exterior walls are divided with concrete block, metal studs and drywall to form interior walls, stairwells, halls and rooms.

Some fine line cracking in concrete block walls has occurred at control joints as expected, however, some shear cracks in block walls were noted in the north hall in or near load bearing walls. Also, the east north/south exterior wall has bowed and separated from the north east/west wall in room 125C (a load bearing wall), no wall ties could be observed in the opening. It is recommended that the design structural engineering firm be contacted to review these areas of failure and determine corrective actions.

Some door and/or door hardware problems are beginning to show up in maintenance calls. Lock mechanisms and door adjustments are beginning to fail and will require continued maintenance.

Some drywall and wallpaper above and below the second floor windows should be repaired after wall and roof leaks are completed, while minor restroom ceramic tile repairs are required at this time. Epoxy paint is peeling off the walls in several of the north labs. The paint separation is generally confined to the top epoxy painted block on both interior and exterior walls. These walls need to be repainted where peeling is occurring.

Some ceiling tiles need to be repainted and/or replaced where roof and/or duct condensation leaks have occurred. Many tiles have sagged in the center due to high humidity levels in various rooms at some time and need to be replaced. Unaffected tiles are in good condition. Most ceiling tiles in the north corridor have soot staining the edges around openings at sprinkler heads and along the ceiling grids indicating leaks in the ducts and/or room air balance problems. These tiles need to be cleaned or replaced.

The equipment rooms and room 136 mezzanine have concrete floors THAT were not sealed during construction and they have minor cracking. Some floor areas are leaking below since water stains are apparent on first floor ceiling tiles. It is recommended that the floors be cleaned, cracks filled with epoxy and the floor sealed with an epoxy coating.

SERVICE SYSTEMS

The major service systems, domestic cold and hot water, sanitary waste and storm

drainage appeared to be functioning properly. The plumbing drainage system did not appear to have any problems. There was adequate water pressure at the faucets and fixtures on the second floor. A dual domestic water pressure reducing station is located downstream of the water meter. The piping appears to be copper and should hold up well. The Domestic Hot Water System consists of a MPS steam heat exchanger and pump, storage tank, return water circulating pump and controls. All appear to be operating properly. The restroom fixtures were functioning properly and no replacements are needed, however, it is recommended that the push button spring return lavatory faucets be replaced with a lever and spigot type since three of the existing faucets were not working properly.

The elevators were operating properly and meet ADA requirements except for the need to install floor gongs. Maintenance records did not indicate any major problems.

A 4" steam line feeding the building is tapped into the 10" High Pressure Steam loop located in front of the building. Building heating water is pumped through a Medium Pressure Steam (MPS) to hot water heat exchanger located in mechanical room 125C, the Medium Pressure Steam with desuperheater is produced at a pressure reducing station also located in room 125C. The Hot Water Heating system supplies convectors located on the outside walls under windows, fan coil units at entrances, unit heaters and preheat coils in the air handling units. The heating system appears to be operating properly, however, several air relief vents at unit heaters and similar apparatus are leaking and need to be repaired. Also pipe plugs were not installed in drain valves and several of same are leaking.

The cooling system consists of a Trane 180 Ton R-11 chiller cooled by a Marley open type cooling tower. Chilled water pumps supply water to four air handling units 1, 2, 3 & 10 that serve air conditioned zones. AHU 12 with electric duct reheat supplies conditioned air to computer room 120 and room 101 year round via a DX condenser with low ambient controls. This system has had operating and control problems plaguing it since it was placed in service and needs to be reviewed and corrected as necessary. The remainder of the air handling units 4 thru 9 and 11 supply heated air to the various rooms. Three areas requiring special control and/or operating parameters utilize two split systems and one roof top heating and cooling unit.

All together there are twelve air handling units supplying air to various rooms or zones, two are VAV and ten are CAV units. AHU-1 & 3 supply conditioned variable volume air to VAV boxes and diffusers to two different zones in the building. AHU-3 and 4 through 12 supply constant volume air to diffusers in the various zones. Each VAV box, of several from the AHU's, is controlled by a single zone thermostat while the CAV units are controlled by a single thermostat located in the room. It has been reported that some VAV boxes have been replaced to date and a few are plagued with problems, while some single zone units do not deliver the desired control. The cooling and ventilation apparatus appeared to be operating at the time of the site visit.

Exhaust fans located throughout the building remove air from restrooms, common areas, meeting rooms, labs and mechanical rooms.

A dust collection system located in room 156 removes sawdust from stationary power tools, separates the air and dust in a two stage process and returns the air to the space. When this system was operating it was noted that the room had a positive pressure, releasing entrapped dust to adjacent spaces, which could have a bearing on the soot on the ceiling tiles noted above. A large negative

pressure was noted in room 125C, again indicating an improper air balance in that system while similar problems were noted and reported with several other systems. It is recommended that all the AHUs and respective zones be checked for proper control and operation and air balanced as necessary. All these units appear to be in good condition, operating and well maintained.

ELECTRICAL

The electrical power to the building is provided by one 1000 KVA 480/277 volt transformer and one 500 KVA 208/120 volt transformer feed from the buckeye substation circuits number 306 & 201. The 1000 KVA and 500 KVA transformers and disconnects are located on the east side of the building outside room 125C. Fused switches from the 500K transformers feed some lighting and power panels located throughout the building. Fused switches from the 1000 KVA transformers feed three emergency panels with automatic switching, 277 volt fluorescent lighting and the motor control center (MCC) distribution panel in room 125B. The emergency panels have a internal 15 KVA transformer with circuit breakers which feed emergency lighting, exit lights and critical areas. The MCC panels located in equipment rooms contain fused switches which distribute 480 volt 3 phase power to mechanical equipment in or near the mechanical room.

Panel sizes and number vary throughout the building depending on the load. At about 14.2 watts per square foot the building appears to have an adequate power supply and convenience outlets are adequately located throughout the building.

The building has 40W fluorescent light fixtures throughout while using 12 volt and fluorescent recessed can lighting for accent lighting in some areas. Incandescent accent lighting is still used in other areas. All areas are having the newer 32 watt electronic ballast and bulbs installed as the 40 watt units expire.

SAFETY STANDARDS

The building safety systems consist of a sprinkler system throughout the whole building and a CO2 hood suppression system on the second floor. Smoke detectors in elevator lobbies and manual pull stations at exits provide local fire annunciation to all floors.

The emergency generator circuit supplies power to lighted exit signs and emergency lights in the hallways and stairwells.

Automatic door openers have been installed at the south main entrances. The elevators provide access to all floors of the building.

ASBESTOS

The Ohio Board of Regents Facilities Asbestos Inspection and Risk Assessment Program's report: Inventory of Friable Asbestos Containing Material in Buildings of the Ohio State University (Main and Branch Campuses) and the Recommendations for Corrective Action by PEI Associates, Sept. 1986 does not list this building since it was built after 1986. Asbestos containing materials were not commonly used in construction materials manufactured after 1982; however, asbestos could be found in small quantities in some mastics, caulking, gaskets and seals manufactured after 1982.

BUILDING PERIMETER

The sidewalk system on the south side of the building is in good to fair condition. The sidewalks have several sections that have heaved at control joints, curbs which have settled away from the walks and have cracked through concrete panels. Joint sealant has shrunk or separated in most all expansion and control joints. All these joints need to be repaired.

The concrete dock area on the east side is in good condition, however, minor repairs and sealing are required on concrete sections around the steel guard rail inserts which have rusted and popped surrounding concrete. The concrete aprons in front of docks, garage doors and man doors are in good condition, however, minor cracks need to be repaired by filling them with a sealant to prevent further damage. Cracks and seams in the asphalt on the east and front of the building need to be filled and sealed.

Entrances to the building are well lighted. Area and flood lighting appear to be distributed properly on the north, south and east sides, however, wall lighting over the west garage and lighting on the east portion of the west extended parking lot appears to be inadequate and should be upgraded. One storm drain in the rear of the building was completely plugged and several others were partially plugged. All of the storm drains around the building need to be cleaned.

Minor Maintenance Projects (LESS THAN \$5000)

INTERIOR

1. Fill cracks in concrete block walls in the north hall with epoxy where wall has sheared outside the control joint.
Workorder #01-5063-018142-51
2. Fill cracks in concrete floors in mechanical rooms 135 mez, 144M & 147M with epoxy and seal all floors with epoxy coating.
Workorder #01-5064-211451-64
3. Replace insulation on chilled water piping in equipment room 125M and patch or seal all chilled water, heating and domestic hot water and steam pipe insulation.
Workorder #01-5064-211460-64
4. Replace or clean the stained ceiling tiles in the north hall. Replace water stained ceiling tiles where rooms are not scheduled for replacement.
Workorder #01-5064-211463-64
5. Repair the loose floor tiles in front of the door of room 148.
Workorder #01-5064-211464-64
6. Repair and/or replace all weather stripping on all entrance, man and garage doors.
Workorder #01-5064-211498-72
7. Adjust entrance and interior doors to close properly, found several sticking.
Workorder #01-5064-211470-72
8. Install a new vent through the roof from the condensate tank in Rm 125M.
Workorder #01-5064-025411-83
9. Check cooling tower performance.
Workorder #01-5064-025417-83
- 10 Repair cracks between the wall and outside air intake plenums in room 136 west wall and clean wall.
Workorder #01-5064-018146-51
- 11 Repair all automatic air vents in the heating and cooling system and install plugs in all drain valves.
Workorder #01-5064-211502-64

- 1 Repair and support the east exterior wall to the north interior wall in room 125C. (see engineers recommendations)
- 2 Replace the push button spring faucets in all restrooms with hand lever type units.
- 3 Repair peeling wallpaper and/or drywall around the perimeter of the second floor above and below the windows after the roof and brick repairs are completed.
- 4 Paint the walls where the epoxy paint is peeling in rooms 017 & 018.
Control No.

EXTERIOR

1. Clean all storm drains around perimeter of building.
Workorder #01-5063-018147-51
2. Trim all trees and shrubs around the building, complete landscaping.
Workorder #01-5063-018148-52
3. Repair metal aluminum soffits at all entrance ways as required.
Workorder #01-5064-211523-73
4. Epoxy seal cracks in the wing walls and the concrete aprons in front of garage and man doors, repair concrete at dock handrails.
Workorder #01-5063-018153-51

5. Reseal or touch-up wing wall expansion joints at the building.
Workorder #01-5063-018157-51
 6. Clean all the outside air intake louvers.
Workorder #01-5064-211528-64
 7. Saw cut control joints at concrete sidewalk sections which have heaved and seal.
Workorder #01-5063-018154-51
 8. Remove old sealant and plastic expansion joint strip between the road curb and the sidewalk and all expansion joints between concrete sections and reseal all joints around the building.
Workorder #01-5063-018155-51
 9. Caulk all open joints in the counter flashing at the brick wall and roof, also check all lighting rod and vent boots and seal as necessary.
Workorder #01-5064-211537-64
 10. Remove fractured rock and excessive mud from roof and spread gravel to cover the fabric from UV sunlight.
Workorder #01-5064-211540-73
-
1. Repair stucco soffit over north gate of open area with new waterproof board and stucco finish when roof repairs are completed.
 2. Remove and reseal the fascia trim and reinstall where leaks are noted.
Control No.

BUILDING EVALUATION SUMMARY

I. BUILDING INFORMATION

FAC # 298 FACILITY NAME: AGRICULTURAL ENGINEERING
 DATE: 09/30/95 INSPECTOR: JAO
 YEAR CONSTRUCTED: 1968
 GROSS SQ FT: 105,422 NET SQ FT: 85,793
 REPLACEMENT COST \$ 13,877,000 *

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	12.88	1,787,358	0.93	1,662,243
Columns and Beams	9.43	1,308,601	0.87	1,138,483
Exterior Walls	6.74	935,310	0.83	776,307
Windows & Doors	3.29	456,553	0.80	365,242
Roofing	3.59	498,184	0.78	388,584
Partitions & Drs.	8.23	1,142,077	0.90	1,027,869
Wall Finishes	2.84	394,107	0.71	279,816
Floor Finishes	5.24	727,155	0.87	632,625
Ceilings & Finish	5.88	815,968	0.73	595,657
Conveying	1.65	228,971	0.87	199,205
Plumbing	9.73	1,350,232	0.90	1,215,209
Heating	7.19	997,756	0.87	868,048
Cooling & Vent.	8.25	1,144,853	0.76	870,088
Elec. Ser. & Dist	1.42	197,053	0.90	177,348
Lighting & Power	9.75	1,353,008	0.90	1,217,707
Safety Standards	3.89	539,815	0.90	485,834
TOTALS	100.00	13,877,000	0.86	11,900,265

III. BUILDING RATING SUMMARY

Overall Building Rating = 86 %

* Replacement Cost assigned June 1995 by The Office of University Resource Planning & Institutional Analysis 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.

FOUNDATIONS

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Footings:	N/A	Sat	Att
Individual Footings & Piers <u>IN CENTER OF BUILDING</u>	[]	[X]	[]
Continuous Footings <u>PERIMETER AND LOAD BEARING WALLS</u>	[]	[X]	[]
Grade Beams _____	[X]	[]	[]
Piles _____	[X]	[]	[]
Caissons _____	[X]	[]	[]
b. Foundation Wall Materials:			
Steel _____	[X]	[]	[]
Concrete Cast-in-place <u>PERIMETER WALLS</u>	[]	[X]	[]
Concrete Block <u>REINFORCED LOAD BEARING</u>	[]	[X]	[]
Other _____	[X]	[]	[]
c. Waterproofing and Underdrain:			
Coating <u>NOT VISIBLE</u>	[]	[X]	[]
Membrane _____	[X]	[]	[]
Board _____	[X]	[]	[]
Drain Tile <u>4" SHOWN ON DRAWINGS</u>	[]	[X]	[]
d. Slab on Grade (floor):			
Plain _____	[X]	[]	[]
Reinforced <u>FIRST FLOOR</u>	[]	[X]	[]
e. Special Substructures:			
<u>REINFORCED CONCRETE WING WALLS/RETAINING WALLS</u>	[]	[]	[X]

B. COMMENTS:

- 1 BASIC STRUCTURAL COMPONENTS APPEAR TO BE IN GOOD CONDITION
- 2 NOTICED SOME SETTLEMENT AND LOCAL CRACKING AT SEVERAL NON LOAD BEARING WALLS IN THE CORRIDOR INDICATING POSSIBLE FOOTER SETTLEMENT ALSO.
- 3 SOME OF THE WING RETAINING WALLS HAVE SETTLED AND SHOW FINELINE CRACKS. RECOMMEND THAT THE CRACKS BE FILLED WITH EPOXY AND OPEN CAULK JOINTS SEALED.

C. COMPONENT RATING: (\$1,787,358) (93 %) = \$ 1,666,243
 Possible Condition Component
 Value Multiplier Value

EXTERIOR WALLS

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Walls:

	N/A	Sat	Att
Concrete <u>REINFORCED TO SECOND FLOOR ON WEST AND SOUTH</u>	[]	[X]	[]
Masonry <u>BRICK VENEER HUNG OFF ROOF STEEL AND CONCRETE</u>	[]	[]	[X]
Metal Siding _____	[]	[X]	[]
Wood Siding _____	[X]	[]	[]
Other _____	[X]	[]	[]

b. Finishes:

Stucco <u>SOFFITS AROUND PERIMETER OF OPEN AREA</u>	[]	[]	[X]
Paint _____	[X]	[]	[]
Other <u>ALUMINUM SOFFITS AT ENTRANCE DOORS</u>	[]	[]	[X]

B. COMMENTS:

- 1 SEVERAL DEFECTS WERE NOTED ON THE FIRST THREE COURSES OF THE BRICK ABOVE THE CONCRETE AND OVER THE OVERHANGS (ALL AT SAME ELEVATION).
- 2 DEFECTS WERE ALSO NOTED ON THE FIRST COURSE BELOW AND ABOVE THE SECOND FLOOR WINDOWS, ALSO THE WINDOW DRIP EDGE SHOWN IN THE BRICK ABOVE THE WINDOW IS MISSING AND WATER IS SEEPING THROUGH FINE LINE CRACKS IN BRICK INTO THE SPACE ABOVE THE WINDOW, IT IS RECOMMENDED THAT THE JOINT BE GROUND OUT, A DRIP FLASHING INSTALLED AND THE JOINT CAULKED.
- 3 SEVERAL DEFECTS IN THE BRICK/MORTAR WERE NOTED ON THE WALLS ABOVE THE LAB ROOFS NEAR EXPANSION JOINTS, AT CORNERS AND BETWEEN CONTROL JOINTS WHERE BRICK AND MORTAR IS DISPLACED OR FINE LINE CRACKS BOTH OPEN AND CLOSED HAVE APPEARED IN MANY OF THE COURSES. SOME DEFECTS CARRIED THROUGH THE CONTROL JOINTS INDICATING A MORE SERIOUS PROBLEM BEGINNING TO EMERGE.
- 4 THE TWO EAST CORNERS OF THE OPEN AREA BRICK COLUMNS AND AT THE CONNECTION TO THE BUILDING ARE DAMAGED FROM EXPANSION OF THE STEEL PERIMETER BEAMS.
- 5 DEFECTS WERE NOTED AT MANY OF THE STEEL LINTELS OVER GARAGE AND MAN DOORS IT IS RECOMMENDED THAT THE MORTAR BE REMOVED AT THE STEEL/BRICK OVERLAP AND CAULKED.
- 6 SOME ALUMINUM SOFFIT TRIM REPAIRS ARE NEEDED AT ENTRANCES.
- 8 REPAIR THE SOFFIT OVER THE NORTH GATE OF THE OPEN AREA AFTER ROOF REPAIRS

C. COMPONENT RATING: (\$ 935,310) (83 %) = \$ 776,307
 Possible Condition Component
 Value Value Multiplier Value

EXTERIOR WINDOWS & DOORS

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Windows type & number:	N/A	Sat	Att
Wood _____	[X]	[]	[]
Steel _____	[X]	[]	[]
Alum <u>AWNING TYPE ON SECOND FLOOR</u>	[]	[X]	[]
Other _____	[X]	[]	[]
 b. Window glazing:			
Single pane <u>ON SOME ENTRANCE VESTIBULES</u>	[]	[X]	[]
Double pane <u>ON ALL ROOM WINDOWS AND SOME ENTRANCE LIGHTS</u>	[]	[X]	[]
Other _____	[X]	[]	[]
 c. Doors type & number:			
Wood _____	[X]	[]	[]
Steel <u>LAB MAN DOORS AND NORTH ENTRANCES EAST & WEST</u>	[]	[]	[X]
Alum <u>TWO ENTRANCE DOOR/VESTIBULES ON THE SOUTH SIDE</u>	[]	[]	[X]
Other <u>STEEL PANEL ROLL-UP GARAGE DOORS AT LAB ENTRANCES</u>	[]	[X]	[]
Other _____	[X]	[]	[]
 d. Shading Devices:			
Types <u>BLINDS</u>	[]	[X]	[]

B. COMMENTS:

- 1 SOME EXIT, GARAGE AND EQUIPMENT DOORS NEED THE WEATHER SEALS REPAIRED OR REPLACED.
- 2 SOME OF THE STEEL DOORS HAVE BEEN REPAIRED AND ALL HAVE BEEN PAINTED, THE REPAIRS APPEAR ADEQUATE AT THIS TIME, HOWEVER, THE EXPECTED LIFE OF THE FRAMES (50 YR) WILL PROBABLY ONLY BE 15 YEARS BEFORE REPLACEMENT. NOTE: THE CAUSE FOR PREMATURE FAILURE ABOVE APPEARS TO HAVE BEEN THE UNITS LEFT UNPROTECTED PRIOR TO INSTALLATION AND THE FRAMES FILLED WITH WATER.
- 3 SOME OF THE STOREFRONT ENTRANCE WINDOWS ARE SINGLE PANE.
- 4 ADJUST EXTERIOR EXIT DOORS TO CLOSE PROPERLY.

C. COMPONENT RATING: (\$ 456,553) (80 %) = \$ 365,242
 Possible Condition Component
 Value Value Multiplier Value

ROOFING

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Roof Covering:	N/A	Sat	Att
Built-up _____	[X]	[]	[]
Built-up w/gravel _____	[X]	[]	[]
Asphalt Shingle _____	[X]	[]	[]
Copper _____	[X]	[]	[]
Glass (Skylight) _____	[X]	[]	[]
Slate _____	[X]	[]	[]
Spanish Tile _____	[X]	[]	[]
Metal _____	[X]	[]	[]
Other <u>CSPE OVER ALL SECTIONS WITH STONE BALLAST</u>	[]	[]	[X]
c. Flashing:			
Base & Counter <u>AT SECOND FLOOR AND EQUIPMENT ROOM WALLS</u>	[]	[]	[X]
Cap _____	[X]	[]	[]
Through Wall _____	[X]	[]	[]
Valley & Ridge _____	[X]	[]	[]
Expansion Joint <u>BETWEEN BUILDING SECTIONS AND AT WALLS</u>	[]	[X]	[]
d. Gravel Stop & Edge Strips:			
Type <u>ALUMINUM FASCIA, TWO PIECE AROUND PERIMETER</u>	[]	[]	[X]
e. Drainage:			
Gutters w/ Exterior Downspouts _____	[X]	[]	[]
Scuppers w/ Exterior Downspouts _____	[X]	[]	[]
Drains w/ Interior Storm Drains _____	[]	[X]	[]
f. Parapets:			
Concrete _____	[X]	[]	[]
Brick _____	[X]	[]	[]
Block _____	[X]	[]	[]
Precast _____	[X]	[]	[]
Other _____	[X]	[]	[]
g. Insulation:			
Type <u>FOUR INCHES UNDER CSPE ROOF</u>	[]	[X]	[]

B. COMMENTS

- 1 NOTED SEVERAL LOCATIONS WITH STAINED METAL DECKING, EFFLORESCENCE ON BLOCK WALLS AND STAINED WALLS INDICATING LEAKS IN THE PERIMETER FASCIA.
- 2 THE DRAWINGS SHOW THE MEMBRANE ATTACHED TO THE NAILER WITH THE FASCIA CLIPS ATTACHED ON TOP OF AND TO THE FRONT OF THE MEMBRANE. A COUNTER FLASHING MEMBRANE IS THEN SEALED TO THE MEMBRANE BEHIND THE CLIP SO AS TO COVER THE CLIP WHEN THE FASCIA TRIM IS INSTALLED OVER THE CLIP AND THE COUNTER FLASHING MEMBRANE, THIS WAS NOT INSTALLED.
- 3 SPREAD STONE OVER THE ROOF TO PROTECT FROM UV SUN RAYS.
- 4 BALLAST INSTALLED ON ROOF WAS NOT WASHED, SEVERAL AREAS HAVE MUD AND FINES ON ROOF WHICH COULD CREATE PLUGGED STORM DRAINS IN THE FUTURE.
- 5 SOME OF THE GRAVEL IS FRACTURING INTO MANY SHARP THIN DISKS THAT COULD CUT INTO THE ROOF AS IT WEARS CREATING PREMATURE ROOF FAILURE.
- 6 SEAL OPENINGS IN CAULKED JOINT AT BRICK COUNTER FLASHING.

C. COMPONENT RATING: (\$ 498,184) (78 %) = \$ 388,584
 Possible Condition Component
 Value Value Multiplier Value

PARTITIONS & DOORS

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Partition Framing:

	N/A	Sat	Att
Concrete Block <u>NONLOAD AND LOAD BEARING INTERIOR WALLS</u>	[]	[]	[X]
Glazed Block _____	[X]	[]	[]
Wood Stud _____	[X]	[]	[]
Metal Stud <u>ROOMS IN INTERIOR LAB AND OFFICE</u>	[]	[X]	[]
Structural Tile _____	[X]	[]	[]
Rated _____	[X]	[]	[]
Other <u>POURED CONCRETE DECORATIVE WALLS IN LOBBY</u>	[]	[X]	[]

b. Special partitions and Walls:

Toilet _____	[]	[X]	[]
Screen Walls _____	[]	[X]	[]
Gate <u>IN SOME LABS AND OPEN AREA</u>	[]	[X]	[]

c. Wall Material:

Plaster _____	[X]	[]	[]
Plaster Board <u>DRYWALL ON METAL STUDS</u>	[]	[]	[X]
Glass _____	[X]	[]	[]
Plywood _____	[X]	[]	[]
Paneling <u>METAL PANELS SECOND FLOOR NORTH WALL</u>	[]	[X]	[]
Trim & Wainscot _____	[X]	[]	[]
Tile/Glazed _____	[X]	[]	[]
Other _____	[X]	[]	[]

d. Interior Doors & Frames:

Met Door/Met Frame <u>IN ROOMS TO BE SECURED</u>	[]	[X]	[]
Wood Door/Wood Frame _____	[X]	[]	[]
Wood Door/Metal Frame <u>CLASSROOMS AND SOME LABS</u>	[]	[X]	[]
Glazing <u>LITES IN SOME DOORS</u>	[]	[X]	[]
Rollup <u>THREE STEEL ROLLUP DOORS IN STORAGE AREAS</u>	[]	[X]	[]
Sliding _____	[X]	[]	[]
Other _____	[X]	[]	[]

e. Hardware:

Door Closures _____	[]	[X]	[]
Lock Sets _____	[]	[]	[X]
Kick/Push Plates _____	[]	[X]	[]
Thresholds _____	[]	[X]	[]
Panic Devices _____	[]	[X]	[]
Security & Detection _____	[]	[X]	[]
Automatic Openers _____	[]	[X]	[]
Other _____	[X]	[]	[]

B. COMMENTS:

- 1 NOTED SEVERAL SETTLEMENT CRACKS IN HALLS, SECOND FLOOR MECHANICAL ROOM, LAB WALLS AND AT CONTROL JOINTS INDICATING SOME DIFFERENTIAL SETTLEMENT, RECOMMEND TO EPOXY CRACKS, OUTSIDE CONTROL JOINTS, IN BLOCK AND EVALUATE EVERY FIVE YEARS.
- 2 THE EAST WALL OF MECHANICAL ROOM 125C HAS PULLED AWAY FROM THE NORTH WALL BY 1/2 TO 5/8 INCH, NO TIES ARE APPARENT IN THE JOINT AND SETTLEMENT CRACKS ARE PRESENT IN THE EAST WALL INDICATING AN OUTWARD MOVEMENT.
- 3 NOTED CRACKS AND EFFLORESCENCE ON BLOCK WALLS IN SECOND FLOOR MECHANICAL ROOMS 144M, 145M, 146M & 147M INDICATING PERIMETER FASCIA LEAKS ON ROOF.
- 4 NOTED THAT SOME DOORS NEED ADJUSTED TO CLOSE PROPERLY.
- 5 DRYWALL ABOVE AND BELOW SECOND FLOOR WINDOWS NEEDS REPAIRED AND/OR REPLACED WERE LEAKS OCCURRED.
- 6 THE COORDINATOR IS CONCERNED THAT LOCKS THROUGHOUT THE BUILDING ARE FAILING PREMATURELY, MAINTENANCE RECORDS INDICATE SEVERAL WORK ORDERS FOR LOCKS.
- 7 DOORS AND HINGES TO ROOM 104 NEED ADJUSTED.

C. COMPONENT RATING: (\$1,142,077) (90 %) = \$1,027,869

Possible	Condition	Component
Value	Value Multiplier	Value

WALL FINISHES

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
a. Paint <u>ON BLOCK AND DRYWALL</u>	[]	[X]	[]
b. Wall Coating _____	[X]	[]	[]
c. Wall Coverings _____	[X]	[]	[]
d. Paneling			
Prefinished	[X]	[]	[]
Plank	[X]	[]	[]
e. Cork _____	[X]	[]	[]
f. Wallpaper <u>ON MANY SECOND FLOOR ROOMS</u>	[]	[]	[X]
g. Ceramic Tile <u>IN RESTROOMS</u>	[]	[X]	[]
h. Trim & Wainscot <u>PVC BASE</u>	[]	[X]	[]
i. Decoration _____	[X]	[]	[]
j. Glass _____	[]	[X]	[]
k. Other _____	[X]	[]	[]

B. COMMENTS

1 WALLPAPER IN THE SECOND FLOOR ROOMS ON EXTERIOR WALLS PEELING AND NEEDS REPAIR, WHILE WALLPAPER IN OTHER AREAS NEEDS CLEANED.

C. COMPONENT RATING: (\$ 394,107) (71 %) = \$ 279,896
 Possible Condition Component
 Value Value Multiplier Value

FLOOR FINISHES

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
a. Carpet:			
Rolled <u>IN MANY ROOMS ON THE FIRST AND SECOND FLOORS</u>	[]	[X]	[]
Tile _____	[X]	[]	[]
b. Composition:			
Epoxy _____	[X]	[]	[]
Synthetic _____	[X]	[]	[]
Other _____	[X]	[]	[]
c. Concrete Topping:			
Clear Sealant <u>LAB AREAS</u>	[]	[X]	[]
Abrasive _____	[X]	[]	[]
Epoxy _____	[X]	[]	[]
Aggregate _____	[X]	[]	[]
d. Resilient:			
Vinyl Tile <u>12x12 HALLS AND SOME CLASSROOMS</u>	[]	[]	[X]
Linoleum Tile _____	[X]	[]	[]
Vinyl _____	[X]	[]	[]
Rubber _____	[X]	[]	[]
Cork _____	[X]	[]	[]
e. Ceramic Tile <u>RESTROOMS</u>	[]	[X]	[]
f. Masonry _____	[X]	[]	[]
g. Terrazzo _____	[X]	[]	[]
h. Wood _____	[X]	[]	[]
i. Metal _____	[X]	[]	[]

B. COMMENTS

- 1 SOME OF THE VINYL TILE IN THE HALLS ARE BEGINNING TO CURL BECAUSE OF MOISTURE PROBLEMS AND NEED REGLUED (AT RM 148).
- 2 THE MECHANICAL ROOMS AND 135 MEZZANINE WERE NEVER SEALED AND SOME WATER HAS LEAKED BELOW, THE CRACKS AND FLOOR SHOULD BE SEALED WITH AN EPOXY SEALER.

C. COMPONENT RATING: (\$ 727,155) (87 %) = \$ 632,625
 Possible Condition Component
 Value Value Multiplier Value

CEILING AND FINISHES

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. System Type:	N/A	Sat	Att
Exposed _____	[]	[X]	[]
Applied to Structure _____	[X]	[]	[]
Suspended <u>ALUMINUM GRID 2x2 AND 2x4</u>	[]	[X]	[]
 b. Materials:			
Drywall _____	[X]	[]	[]
Plaster _____	[X]	[]	[]
Mineral Fiber Board <u>2x2, 2x4, LAY-IN, 1x1 CONCEALED SPLINE</u>	[]	[]	[X]
Metal Pan _____	[X]	[]	[]
Luminous Panels _____	[X]	[]	[]
Other _____	[X]	[]	[]
 c. Finishes:			
Paint _____	[]	[X]	[]
Fabric _____	[X]	[]	[]
Prefinished _____	[]	[X]	[]
Other _____	[X]	[]	[]
 d. Openings & Inserts:			
Air Distribution _____	[]	[X]	[]
Lighting Fixtures _____	[]	[X]	[]
Access Panels _____	[]	[X]	[]
Skylights _____	[X]	[]	[]
Fire Protection <u>SPRINKLERS</u>	[]	[X]	[]
Other _____	[X]	[]	[]

B. COMMENTS:

- 1 REPLACE STAINED TILES FROM PREVIOUS LEAKS.
- 2 CEILING TILES IN THE NORTH CORRIDOR HAVE BLACK SOOT COATING ALL EDGES AND OPENINGS, INDICATING AIR PRESSURE DIFFERENTIAL ABOVE THE CEILING. THIS NEEDS INVESTIGATED AND CORRECTED.
- 3 SOME OF THE TILES IN VARIOUS ROOMS HAVE SAGGED IN THE CENTER DUE TO HIGH MOISTURE CONTENT IN THE AIR AT SOME TIME, THESE TILES NEED REPLACED.

C. COMPONENT RATING: (\$ 815,968) (73 %) = \$ 595,657
 Possible Condition Component
 Value Value Multiplier Value

CONVEYING

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Elevators:

	N/A	Sat	Att
Number <u>ONE</u>	[]	[X]	[]
Type <u>MOSELEY</u>	[]	[X]	[]
Speed <u>100</u>	[]	[X]	[]
Capacity (lbs) <u>2500</u>	[]	[X]	[]
Dimensions <u>55" x 80"</u>	[]	[X]	[]
Door Operation:			
Center <u>X</u>	[]	[X]	[]
To Side _____	[X]	[]	[]

b. Lifts and Hoists:

Number _____	[X]	[]	[]
Type _____	[X]	[]	[]

c. Moving Stairs and Walks:

Number _____	[X]	[]	[]
Type _____	[X]	[]	[]

d. Conveyors:

Number <u>ONE OVERHEAD FIVE TON CRANE</u>	[]	[X]	[]
Type _____	[X]	[]	[]

e. Pneumatic Tubes:

Number _____	[X]	[]	[]
Type _____	[X]	[]	[]

B. COMMENTS:

- 1 THE ELEVATORS ARE THE LATEST ADA CODE, FLOOR GONGS WILL BE INSTALLED.
- 2 CRANES NEED TO BE INSPECTED/TESTED ON A YEARLY BASIS.

C. COMPONENT RATING: (\$ 228,971) (87 %) = \$ 199,205

Possible	Condition	Component
Value	Value Multiplier	Value

MECHANICAL/PLUMBING

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Services Available:	N/A	Sat	Att
Cold Water <u>8" INTO ROOM 125C</u>	[]	[X]	[]
Hot Water <u>2" IN ROOM 125C</u>	[]	[X]	[]
Acid Waste <u>INDIVIDUAL NEUTRALIZATION TANKS AT SOURCE</u>	[]	[X]	[]
Oxygen <u>CYLINDERS IN WELDING LABS</u>	[]	[X]	[]
Natural Gas <u>3" IN ROOM 125C</u>	[]	[X]	[]
Vacuum _____	[X]	[]	[]
Distilled Water <u>POINT OF USE EQUIPMENT IN SOME LABS</u>	[]	[X]	[]
Compressed Air <u>2" LOCATED IN 125C WITH AIR DRYER</u>	[]	[X]	[]
Other <u>ACETYLENE GAS FOR WELDING LABS</u>	[]	[X]	[]
Other <u>LOW PRESSURE STEAM TO SEVERAL LABS</u>	[]	[X]	[]
Other <u>MEDIUM PRESSURE STEAM TO ROOM 136 AUTOCLAVE</u>	[]	[]	[X]
b. Piping & Fittings:			
Cast Iron <u>ON SANITARY AND STORM</u>	[]	[X]	[]
Copper Piping <u>ON HOT & COLD WATER AND COMPRESSED AIR</u>	[]	[X]	[]
Copper Tubing <u>ON CONTROL AIR</u>	[]	[X]	[]
Plastic _____	[X]	[]	[]
Steel <u>ON CHILLED, HEATING, FIRE AND STEAM SERVICES</u>	[]	[X]	[]
Steel <u>ON OXYGEN AND ACETYLENE HEADERS</u>	[]	[X]	[]
Glass <u>AHEAD OF NEUTRALIZATION TANK</u>	[]	[X]	[]
c. Water Heaters:			
Electric _____	[X]	[]	[]
Gas _____	[X]	[]	[]
Steam Converter <u>6 GPM HOT WATER WITH HEATER, PUMP & TANK</u>	[]	[X]	[]
d. Drainage:			
Storm Drains <u>SEVERAL TO MAIN ON EAST SIDE OF BUILDING</u>	[]	[X]	[]
Sanitary Drainage <u>3 @ 4" TO SAND TRAP, 2 @ 6" EAST SIDE</u>	[]	[X]	[]
Combined Storm/San. _____	[X]	[]	[]
Floor Drains <u>IN RESTROOMS, EQUIPMENT ROOMS AND LABS</u>	[]	[X]	[]
e. Fixtures:			
Water Closets <u>17</u>	[]	[X]	[]
Urinals <u>13</u>	[]	[X]	[]
Lavatories <u>14</u>	[]	[]	[X]
Showers <u>2</u>	[X]	[]	[]
Kitchen Sinks <u>3</u>	[]	[X]	[]
Service Sinks <u>3</u>	[]	[X]	[]
Hand Wash Fountain <u>3</u>	[]	[x]	[]
Electric Water Coolers <u>6</u>	[]	[X]	[]
f. Sprinkler Systems:			
Wet _____	[]	[X]	[]
Dry <u>TO OPEN COVERED STORAGE AREA, VALVE IN ROOM 147M</u>	[]	[X]	[]
g. Standpipe Systems:			
Wet _____	[X]	[]	[]
Dry _____	[X]	[]	[]
Hose Cabinets _____	[X]	[]	[]

B. COMMENTS:

- 1 LAV FAUCETS IN SEVERAL RESTROOMS WERE NOT WORKING PROPERLY AND NEED REPAIRED, SPRING CLOSING FAUCETS SHOULD BE REPLACED WITH THE LEVER TYPE.
- 2 THE CONDENSATE PUMP TANK FROM HPS LINE IN ROOM 136 SHOULD BE VENTED TO THE ROOF.
- 3 A MPS VALVE SHOULD BE INSTALLED IN THE PIPE TO ROOM 136. 4 REPAIR INSULATION DAMAGE ON COLD AND HOT WATER PIPING.

C. COMPONENT RATING: (\$1,350,232) (90 %) = \$ 1,215,209

Possible	Condition	Component
Value	Value Multiplier	Value

MECHANICAL/HEATING

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Heat Source:	N/A	Sat	Att
Central Plant Steam <u>4" HPS LINE FROM MIDWEST CAMPUS</u>	[]	[]	[X]
Central Plant Hot Water _____	[X]	[]	[]
Boilers: Type _____	[X]	[]	[]
Size _____	[X]	[]	[]
Furnace: Type _____	[X]	[]	[]
Size _____	[X]	[]	[]
Heat Pump: Type _____	[X]	[]	[]
Size _____	[X]	[]	[]
b. System Type:			
Steam <u>4" HPS REDUCED TO MPS AND DESUPERHEATED IN RM 125C</u>	[]	[X]	[]
Hot Water <u>LPS TO HOT WATER CONVERTER IN 125C, 6" SUPPLY</u>	[]	[X]	[]
Air <u>15 VAV & CAV AIR HANDLERS THROUGHOUT THE BUILDING</u>	[]	[X]	[]
Multizone _____	[X]	[]	[]
Dual Duct _____	[X]	[]	[]
Terminal Reheat <u>ON SOME PERIMETER VAV BOXES</u>	[]	[X]	[]
Variable Volume <u>AH-1 AND AH-3</u>	[]	[X]	[]
Other _____	[X]	[]	[]
c. Space Equipment:			
Radiators _____	[X]	[]	[]
Convectors <u>AT WINDOWS</u>	[]	[X]	[]
2-Pipe Fan Coil <u>AT PUBLIC ENTRANCES</u>	[]	[X]	[]
Unit Heaters <u>IN STORAGE AREAS AND SOME LABS</u>	[]	[X]	[]
Other <u>RADIANT CEILING PANELS NORTH WALL SECOND FLOOR</u>	[]	[X]	[]
Other <u>ELECTRIC REHEAT ON DUCTS TO ROOM 101 & 120</u>	[]	[]	[X]
d. Control Type:			
Pneu _____	[]	[X]	[]
Electric _____	[]	[X]	[]
DDC _____	[]	[X]	[]
Manual Valves _____	[X]	[]	[]

B. COMMENTS:

- 1 HPS STEAM VALVE IS LEAKING IN ROOM 136.
- 2 THE COOLING FROM AHU-12 AND ELECTRIC REHEAT DOES NOT WORK PROPERLY DUE TO THERMOSTAT LOCATION AND CONTROL SEQUENCE.
- 3 AHUs TO ROOMS 156, 158, 164, 166, 145 137 AND 135 PRODUCE A POSITIVE PRESSURE IN THE ROOM AND INTERLOCKS TO EXHAUST FANS OR LOCAL AIR CLEANING EQUIPMENT DOES NOT FUNCTION PER THE OCCUPANTS REQUIREMENTS.
- 4 WHEN THE DUST COLLECTION SYSTEM IN THE WOOD WORKING SHOP IS RUNNING AND AIR IS RETURNED TO THE ROOM A POSITIVE ROOM PRESSURE WAS NOTED, ALSO A POSITIVE PRESSURE WITH THE UNIT OFF WAS OBSERVED.
- 5 THESE SYSTEMS SHOULD BE BALANCED SUCH THAT THE ROOMS ARE SLIGHTLY NEGATIVE RELATIVE TO THE HALL SO SAW DUST IS NOT RELEASED TO THE HALL.

C. COMPONENT RATING: (\$ 997,756) (87 %) = \$ 868,048
 Possible Condition Component
 Value Value Multiplier Value

COOLING & VENTILATING

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
a. System:			
Type <u>TWO VAV WITH VARIABLE SPEED FAN & CAV ON 13 UNITS</u>	[]	[]	[X]
Capacity <u>180 TONS NOMINAL</u>	[]	[X]	[]
b. Chillers:			
Centrifugal <u>180 TON R-11 CARRIER UNIT ROOM 125C INST 1986</u>	[]	[]	[X]
Reciprocating _____	[X]	[]	[]
Absorption _____	[X]	[]	[]
c. Cooling Towers:			
Type <u>ONE MARLEY</u>	[]	[X]	[]
Capacity <u>185 TON AT 540 GPM</u>	[]	[X]	[]
d. Condensers: <u>ONE 2 TON R-22 AND ONE 5 TON R-22</u>	[]	[X]	[]
<u>ONE 13 TON R-22 TO AHU-12</u>	[]	[X]	[]
e. Space Equipment:			
Direct Expansion -			
Window units _____	[X]	[]	[]
Thru-the-wall _____	[X]	[]	[]
Single zone <u>TWO SPLIT SYSTEM UNITS ROOM 108M & 110</u>	[]	[X]	[]
Single zone con. vol. <u>AHU-12 ROOM 101 & 120</u>	[]	[X]	[]
Other <u>5 TON ROOF TOP UNIT (RTU) ROOM 152</u>	[]	[X]	[]
Air/Water -			
2-pipe fan coil _____	[]	[X]	[]
Unit ventilators _____	[]	[X]	[]
Terminal reheat <u>ON SOME PERIMETER VAV BOXES</u>	[]	[X]	[]
Variable volume <u>ON MAIN UNIT AH-1 & 3</u>	[]	[]	[]
Constant volume <u>ON AHU-2 AND AHU-10</u>	[]	[X]	[]
Dual Duct _____	[X]	[]	[]
Multizone _____	[X]	[]	[]
f. Special Systems:			
Type <u>DUST COLLECTION WITH FILTER AND RETURN AIR FAN</u>	[]	[]	[X]
Capacity _____	[]	[X]	[]
g. Control Systems:			
Pneu _____	[]	[]	[X]
Electric _____	[]	[X]	[]
Electronic _____	[]	[X]	[]
h. Fans:			
Exhaust <u>33 FROM VARIOUS LAB AREAS</u>	[]	[X]	[]
Recirculating <u>ON AUH 1 & 3</u>	[]	[X]	[]

B. COMMENTS:

- 1 THE 180 TON R-11 CHILLER WAS INSTALLED IN 1988, HOWEVER, THIS UNIT WILL NEED TO BE REPLACED WITHIN 10 YEARS IF R-11 REFRIGERANT BECOMES SCARCE.
- 3 SEVERAL PIPES IN EQUIPMENT ROOM 125M WERE SWEATING AND/OR RUSTING WHERE PIPE INSULATION WAS REMOVED OR DAMAGED, THE INSULATION NEEDS TO BE REPLACED OR REPAIRED.
- 4 SOME LEAKS ON THE FIRST FLOOR UNDER THE EQUIPMENT ROOM 144M AND 147M APPEAR TO BE DUE TO LEAKS OR CONDENSATION FROM THE AIR HANDLING UNIT AROUND THE CHILLED WATER COILS.
- 5 ALL INTAKE AIR DAMPER SCREENS ARE PARTIALLY PLUGGED WITH DEBRIS AND NEED TO BE CLEANED.

C. COMPONENT RATING: (\$1,144,853) (76 %) = \$ 870,088

Possible	Condition	Component
Value	Value Multiplier	Value

ELECTRICAL/LIGHTING & POWER

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

a. Lighting (lamp type):	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
Fluor <u>ALL AREAS</u>	[]	[X]	[]
Incand <u>ACCENT AND TRACK LIGHTING</u>	[]	[]	[X]
HID <u>YARD AND AREA LIGHTING</u>	[]	[X]	[]
Other <u>12 VOLT HID ACCENT LIGHTING IN SOME AREAS</u>	[]	[X]	[]
Other <u>FLUORESCENT RECESSED CAN TYPE ACCENT LIGHTING</u>	[]	[X]	[]
b. Receptacles & Switches:			
Type & Capacity <u>120V @ 20A</u>	[]	[X]	[]
c. Special:			
Baseboard Heat _____	[X]	[]	[]
Lightning Protection _____	[]	[X]	[]
Communication & Alarm _____	[X]	[]	[]
Data Systems _____	[X]	[]	[]

B. COMMENTS:

- 1 IT WAS NOTED THAT 32 WATT ELECTRONIC BALLAST IS BEING INSTALLED AS REPLACEMENTS OF THE ORIGINAL 40 WATT BALLAST.
- 2 THE TRACK LIGHTS ON THE SOUTH WALL OF THE MAIN ENTRANCE WERE NOT WORKING

C. COMPONENT RATING: (\$1,353,008) (90 %) = \$1,217,707

Possible	Condition	Component
Value	Value Multiplier	Value

SAFETY STANDARDS

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

	<u>N/A</u>	<u>Sat</u>	<u>Att</u>
(a) Exits:			
Stair Construction:			
concrete <u>BLOCK AND CONCRETE</u>	[]	[X]	[]
steel <u>STAIRS WITH CONCRETE FILL</u>	[]	[X]	[]
wood _____	[X]	[]	[]
Number of exits <u>FIVE PLUS LABS</u>	[]	[X]	[]
(b) Fire Rating:			
Construction Type: I _____ II <u>X</u> III <u>X</u> IV _____ V _____ VI _____			
Building Height: <u>30 FOOT</u> ft., <u>TWO</u> stories			
(c) Extinguishing Systems:			
Portable <u>THROUGHOUT BUILDING</u>	[]	[X]	[]
Standpipe _____	[X]	[]	[]
Hose Cabinets _____	[X]	[]	[]
Sprinklers <u>TOTAL BUILDING</u>	[]	[X]	[]
Suppression <u>CO2 IN HOOD OVER STOVE SECOND FLOOR</u>	[]	[X]	[]
Other <u>DRY PIPE TO OUTSIDE OPEN AREA, VALVE IN 147</u>	[]	[X]	[]
(d) Detection & Alarm Systems:			
Manual Alarm <u>PULL STATIONS AT EXITS</u>	[]	[X]	[]
Annunciator <u>BELLS IN HALLWAYS</u>	[]	[X]	[]
Smoke Detectors <u>AT ELEVATORS</u>	[]	[X]	[]
(e) Lighting Systems:			
Exit Signs <u>ON EMERGENCY CIRCUIT</u>	[]	[X]	[]
Exit Lighting _____ "	[]	[X]	[]
Emergency Lighting _____ "	[]	[X]	[]
Emergency Generator <u>30 KW 17.5 KVA</u>	[]	[X]	[]

B. COMMENTS:

C. COMPONENT RATING: (\$ 539,815) (90 %) = \$ 485,834
 Possible Condition Component
 Value Value Multiplier Value

BUILDING PERIMETER EVALUATION

FAC # 298 DATE 09/30/95 INSPECTOR: JAO

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
1. Building Access:			
Driveway <u>NORTH, SOUTH, EAST AND WEST</u>	[]	[X]	[]
Loading Dock <u>PIT ON EAST SIDE AND RAMP EAST OF PAD</u>	[]	[]	[X]
Concrete Aprons <u>AT LAB OVERHEAD AND MAN DOORS</u>	[]	[]	[X]
Sidewalks			
Front <u>SOUTH CONCRETE</u>	[]	[]	[X]
Side <u>EAST CONCRETE</u>	[]	[]	[X]
Rear <u>CONCRETE APRONS AND ASPHALT DRIVE</u>	[]	[]	[X]
Steps			
Front _____	[X]	[]	[]
Side _____	[X]	[]	[]
Rear _____	[X]	[]	[]
Handicap Ramp _____	[X]	[]	[]
2. Lawn and Landscaping:			
Lawn <u>SOUTH EAST AND WEST</u>	[]	[X]	[]
Shrubs <u>SOUTH EAST AND WEST</u>	[]	[X]	[]
Trees <u>SOUTH EAST AND WEST</u>	[]	[X]	[]
Undesirable Insect _____	[X]	[]	[]
Bedding Material _____	[]	[X]	[]
Watering System <u>EXTERIOR HOSE BIBBS</u>	[]	[X]	[]
3. General Site Information:			
Signage _____	[]	[X]	[]
Address Identification _____	[]	[X]	[]
Security Lights <u>ON NORTH AND EAST WALLS</u>	[]	[]	[X]
Street Lights <u>ON EAST, NORTH AND SOUTH</u>	[]	[]	[X]
Drainage _____	[]	[X]	[]
Storm Drains <u>ON ALL SIDES</u>	[]	[]	[X]

B. COMMENTS:

- 1 SOUTH SIDEWALK IS HEAVING IN SEVERAL SECTIONS AT CONTROL JOINTS AND HAS RAISED AND/OR THE ROAD CURB SETTLED CREATING CRACKS IN MOST ALL JOINT SEALANTS. RECOMMEND THAT CONTROL JOINTS BE SAW CUT AND EXPANSION JOINTS RESEALED.
- 2 PATCH SPALLED CONCRETE AT DOCK PIT HAND RAIL THREE PLACES.
- 3 SEAL CRACKS IN CONCRETE APRONS TO PREVENT MOISTURE PENETRATION.
- 4 INSTALL WALL PACK AREA LIGHT OVER WEST LAB DOOR SIMILAR TO OTHERS.
- 5 INSTALL THREE STREET LIGHTS IN ISLANDS ON WEST SIDE FOR PROPER COVERAGE.
- 6 TREES AND SHRUBS NEED TRIMMED AND BEDS MULCHED.

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 172 OSU buildings that the Department of Physical Facilities is budgetary responsible. These audits will be used to establish repair and renovation projects, budget cost estimates for these projects, and overall levels of required maintenance funding.

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, auditor 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 University Resource Planning & Institutional Analysis for each OSU building. This building replacement cost is allocated to each building component to provide an estimated value for each component. Project cost estimates will exceed the building component values in most situations because of tear-out, handling and site limitations that occur in building component replacement projects.

5. DATA USAGE

Repair and Renovation Projects: provided to assist in the budgeting process for the Department of Physical Facilities.

Building Evaluation: provided to give a numerical rating for each building on campus quantifying its percentage of deficiency.

6. 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 first step up at all entries. Ramps outside the buildings are included; the steps and walks up to the ramps are not included.

(d) Blinds, drapes, light bulbs, and movable furniture are 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

A/C	AIR CONDITIONING
AHU	AIR HANDLING UNIT
ATT	ATTENTION
BLDG	BUILDING
BUR	BUILT UP ROOF
COND	CONDENSATE WATER
CAV	CONSTANT AIR VOLUME
DD	DUAL DUCT AIR HANDLING UNIT
DDHV	DUAL DUCT HIGH VELOCITY
DHWH	DOMESTIC HOT WATER HEATER
DHWR	DOMESTIC HOT WATER RETURN
DHWS	DOMESTIC HOT WATER SUPPLY
DHWT	DOMESTIC HOT WATER TANK
DX	DIRECT EXPANSION AIR CONDITIONER
EWC	ELECTRIC WATER COOLER
FPM	FEET PER MINUTE
GPM	GALLONS PER MINUTE
HID	HIGH INTENSITY DISCHARGE LIGHT
HPS	HIGH PRESSURE STEAM (125 PSI)
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
KV	KILOVOLTS
KVA	KILOVOLTS AMPS
KW	KILOWATTS
LC	LIQUID COOLED
LF	LINEAL FEET
LPS	LOW PRESSURE STEAM (15 PSI)
MPS	MEDIUM PRESSURE STEAM (50 PSI)
MZCV	MULTIZONE CONSTANT VOLUME AIR HANDLING
N/A	NOT APPLICABLE
PSI	POUNDS PER SQUARE INCH
RM	ROOM
RTU	ROOF TOP UNIT (HEATING OR A/C)
SAT	SATISFACTORY
SF	SQUARE FEET
S/P	STAND PIPE
SR	STEAM RETURN LINE
SS	STEAM SUPPLY LINE
SY	SQUARE YARDS
TR	TERMINAL REHEAT
V	VOLTS
VAV	VARIABLE AIR VOLUME

APPENDIX

**Building Floor Plans
C-1 Building Space Assignments**

Worksheet

CALCULATION OF BUILDING COMPONENT PERCENTAGE OF TOTAL COST

AG ENG #298

DATE: 9-11-95

MEANS SQUARE FOOT COSTS

BUILDING SYSTEM	CLASS	LAB.	OFFICE	SUBJECT	% TOTAL
Foundations	2.85	8.61	2.14	8.60	12.88
Columns and Beams	7.70	4.73	6.33	6.30	9.43
Exterior Walls	1.63	2.94	4.56	4.50	6.74
Ext. Windows & Drs.	2.23	2.28	1.29	2.20	3.29
Roofing	1.47	3.01	0.97	2.40	3.59
Partitions & Doors	4.77	5.87	3.76	5.50	8.23
Wall Finishes	1.46	2.96	1.45	1.90	2.84
Floor Finishes	2.76	3.31	4.28	3.50	5.24
Ceilings & Finish	3.93	3.93	3.93	3.93	5.88
Conveying	0.92	0.00	2.04	1.10	1.65
Plumbing	4.54	12.10	1.19	6.50	9.73
Heating	4.80	4.80	4.80	4.80	7.19
Cooling & Vent.	5.51	5.51	3.70	5.51	8.25
Elec. Ser. & Dist.	0.95	0.56	0.73	0.95	1.42
Lighting & Power	6.39	5.50	5.88	6.50	9.73
Safety Standards	3.67	2.66	0.31	2.60	3.89
TOTAL	55.58	68.77	47.36	66.79	99.98

Worksheet

CALCULATION OF THE CONDITION VALUE MULTIPLIER

AG ENG #298

DATE: 9-11-95

	Expect Life	Age	Age Condition Value*	Perf Rate	Performance Condition Value**	Component Condition Value
Foundation	100	9	0.30	.95	0.63	0.93
Column & Beams	100	9	0.30	.85	0.57	0.87
Exterior Walls	100	9	0.30	.80	0.53	0.83
Windows & Doors	50	9	0.27	.80	0.53	0.80
Roofs	25	9	0.21	.85	0.57	0.78
Partitions	50	9	0.27	.95	0.63	0.90
Wall Finishes	20	9	0.18	.80	0.53	0.71
Floor Finishes	50	9	0.27	.90	0.60	0.87
Ceiling & Finish	30	9	0.23	.75	0.50	0.73
Conveying	50	9	0.27	.90	0.60	0.87
Plumbing	50	9	0.27	.95	0.63	0.90
Heating	50	9	0.27	.90	0.60	0.87
Cooling & Vent.	30	9	0.23	.80	0.53	0.76
Electric Serv.	50	9	0.27	.95	0.63	0.90
Lighting & Power	50	9	0.27	.95	0.63	0.90
Safety Standards	50	9	0.27	.95	0.63	0.90

* The age condition value is column (C-B) x 33.33%

** The performance condition value is column E x 67.77%.