FACILITY AUDIT REPORT
HOWLETT GREENHOUSE
#297

FEBRUARY 28, 1992

Prepared by:
The Ohio State University
Department of Physical Facilities
Division of Resource Management

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HOWLETT GREENHOUSE NARRATIVE

GENERAL

This Building Audit was conducted by Physical Facilities for the purpose of evaluating the present condition of the buildings for which Physical Facilities has a budgetary responsibility. This audit describes the current physical condition of the facility and identifies existing corrective maintenance 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 objectives and methodology are described in greater detail in the "Building Audit Methodology" section of this report.

HISTORY

Howlett Greenhouse and headhouse were built in 1969. The original design proposed two greenhouse buildings of equal size. Because of limited funding, only one greenhouse was built. There were also four freestanding polyhouses built. There have not been any additions or major remodeling of the greenhouse since 1969. Three more freestanding polyhouses have been added.

In 1988 a new computerized temperature control system was installed in the greenhouse that provides central monitoring and control. The pneumatic controls were eliminated in the greenhouse and new electrically activated valves were added. New exhaust fans were also installed in the side walls in 1988 and connected to the central temperature control system. In 1991 the exterior doors to the greenhouse were replaced and most of the hot water heating supply lines located in the trenches were replaced.

The Department of Horticulture has submitted a 1.192 million dollar proposal to campus planning to modernize the greenhouse structure. Because of changes in the use of the greenhouse, the department wants to convert the north end of the greenhouse to smaller rooms with concrete floors and computerized temperature controls. This would eliminate the area that was originally designed for vegetable research and convert it to floriculture use. The modernization proposal would also include reglazing the glass and installing new evaporative cooling system.

PRIMARY SYSTEMS

The foundation, substructure, and superstructure all appear to be in good condition. The foundation walls of the greenhouse structure have developed vertical cracks at the corners. There does not appear to be any horizontal movement in these cracks. These cracks need to be sealed to protect the re-bar and monitored for any new movement in these corner cracks. The headhouse did not show any signs of any structural problems. The basement floor and walls are in very good condition.

The roof structure of the greenhouse is aluminum frame with single glazed panes. The aluminum frame is in good condition, but needs to be cleaned. The seals for the glass panes are worn and need to be replaced. The glass panes in the side walls are a butt fit rather than overlapping and these seals come loose and allow air infiltration. The Ohio Agricultural Research and Development Center has been successful at reducing energy costs by 50 to 60 % with double glazed systems. We are recommending a project to restore the single glazed system with new seals,

but consideration should be given to incorporate new technology and install a double glazed system.

The headhouse roof is the original flat BUR with a fiberboard deck. There have been very few leaks in this roof. There are a few blistered areas in the BUR cover that are of concern. The fiberboard deck loses its strength when it becomes wet, which is what happened to the canopy roof that was removed. If any roof leaks occur they need to be repaired immediately before any structural damage can occur. The canopy on the west side of the headhouse needs to be rebuilt. Several years ago, approx 1985, the roof was removed from the canopy because it became wet and there was concern that it might fall. The canopy roof has never been replaced. The steel structure is exposed to the weather and is rusting. The drain from the canopy is held up by the straps holding the downspout to the exterior wall. The exterior lights from the canopy are disconnected and rusting. We have proposed a project to replace the canopy roof.

The concrete roof above the headhouse boiler room has developed a few cracks that leak water. There have also been penetrations in the concrete deck that leak. A project is listed as a Howlett Hall project to repair this concrete deck area.

SECONDARY SYSTEMS

The interior partitions and doors in the greenhouse are in poor condition. The interior partitions for the greenhouse are either glass or a wood fiber material that is used to provide evaporative cooling in the planting areas. Most of the evaporative cooling panels have been removed and the planting rooms are exposed to the corridors. In the north wing of the greenhouse several of the glass panes that separated the corridor from the planting rooms have been broken or removed.

The headhouse has concrete block walls for partitions. These walls are in good condition. The mens restroom and corridor were painted in 1991. The women's restroom, stairwells and basement corridor need to be painted. The wood doors in the greenhouse also need to be painted. The hardware for the greenhouse doors is also worn and needs to be repaired or replaced.

The majority of the ceilings in the headhouse and greenhouse are exposed and in good condition. The classroom, corridor, and office area has a suspended ceiling that has been painted and is in fair condition. The floors are exposed concrete with the exception of the entry and the corridor that have vinyl tile. The floors are in good condition, but are dirty and could use a good cleaning. The greenhouse has a trench that runs in the center of the corridors that is covered with steel panels that are rusted. We have proposed a project to replace the steel covers with new plastic covers to eliminate the rusting and provide easier access to the trenches.

The concrete floor in the south end of the greenhouse has developed a few cracks that need to be repaired. We have proposed a project to repair the cracks and to seal the concrete.

SERVICE SYSTEMS

The major service systems all appear to be functioning adequately. There is a freight elevator that is used to move supplies from the basement to the first floor. The elevator has had very few problems except for the door not closing tight.

The plumbing system has had a few leaks, but operates adequately. All of the planting rooms have hose bibs and portable soaking systems for watering plants. Some of the planting rooms have had spray systems installed with timers to periodically wet the plant life. The evaporative cooling systems that were originally installed had water pipes that wet a wood fiber material and air was pulled through to increase humidity and cool the planting areas. All but a few of these evaporative cooling systems have been disassembled. The water lines remain, but are not used. The department has proposed to restore these evaporative cooling systems as part of the greenhouse modernization project.

The headhouse has had a problem with providing hot water to the mens restroom and the classroom laboratory. The plumbing fixtures are in fair condition and were operating satisfactorily. The hot water heating system and condensate return lines in the boiler room of the headhouse have had several water leaks. A project has previously been proposed as a Howlett Hall project to replace the boiler feed deaerating heater tank and repair several of these leaks. The deterioration of this equipment would hinder the use of the boilers in the headhouse if they were needed to provide steam for this facility.

The main supply lines for the greenhouse hot water heating system were replaced in 1991. Several of the manual and electric control valves to the finned tubes are leaking. A few of the finned tubes are corroded where they have been exposed to chemicals, but in general the finned tubes are in good condition. The steam condensate lines in the mechanical room in the basement have leaks at a couple of different locations.

The chilled water for the air conditioning of the headhouse is supplied by the chiller located in Kottman Hall. The absorption chiller located in the greenhouse has not been operated for several years and has been reported by the maintenance staff as non-repairable. The cooling capacity of the volume of chilled water supplied to Howlett Hall and the Greenhouse does not provide adequate cooling when outside air temperatures rises above 80 degrees. There is a proposed project for Kottman Hall to install an additional 500 ton chiller to supply chilled water to Kottman and Howlett. We have proposed a separate project to replace the absorption chiller in Howlett Greenhouse to restore the original cooling capacity.

The cooling tower at the greenhouse has not been used since the absorption chiller was taken out of service. The drift eliminators are damaged in the cooling tower and need to be replaced. There do not appear to be any other problems with the cooling tower, but it needs to be inspected for proper operation before it could be put back in service. The basement area of the headhouse does not get adequate cooling or ventilation. Several growth chambers have been installed in this area. The newer chambers use domestic water that is discharged into the storm sewer to cool the condensers, but several of the older chambers discharge the condenser heat into the basement. The current ventilation system is not designed to handle this additional heat.

ELECTRICITY

The electric service to Howlett Hall and Greenhouse is supplied by two (2) 1500 KVA transformers. The transformers, switchboards, and distribution panels are located in the basement of the greenhouse in RM G005M. The demand for electricity in the greenhouse has increased since the original construction. The newer lighting systems and computerized monitoring equipment require more power. The current electrical distribution system in the greenhouse has experienced

some corrosion from the chemicals and water. There is a proposed project to install a new electrical distribution system in the greenhouse.

The primary lighting in the headhouse is fluorescent fixtures. The greenhouse uses a combination of incandescent lights and high intensity sodium fixtures. The exterior of the building does not have any lighting except what comes from the interior of the greenhouse. The lights for the front door that were on the canopy were disconnected when the roof was removed from the canopy. We are recommending that the canopy be rebuilt and the lights repaired to provide lighting for the entrance to the headhouse.

SAFETY STANDARDS

Howlett Greenhouse is equipped with a manual fire alarm system. There are portable fire extinguishers located throughout the building. The emergency generator provides power for emergency lighting. There isn't a sprinkler system or standpipe system for the greenhouse.

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, located asbestos containing materials in the heat exchange insulation and pipe insulation located in the mechanical rooms. The four polyhouses have transite panels for the exterior walls.

BUILDING PERIMETER

The sidewalks on the west and north sides of the headhouse are in good condition. There is a low section of sidewalk near the main entrance that should be replaced and the north side has an area next to the cooling tower enclosure that is low were water ponds. There is also a section of the sidewalk that runs between Howlett Hall and the greenhouse that has broken-up and needs to be replaced.

Outside lighting is a concern and has been discussed above with the electrical system. There is no signage for Howlett Greenhouse. It would be appropriate for a sign to be located on the south side along Tharp Street that identifies the building and provides the address. The alcove situated between the greenhouse and the headhouse is used to store materials. It would be appropriate to fence this area so that these stored items are hidden from view and provide some security to the area.

To the west of the headhouse are the seven (7) freestanding polyhouses. Three (3) of these houses are new and are used to store nursery trees and shrubs. The four (4) original polyhouses are in very poor condition. The original finned tube heating has been disconnected and gas fired unit heaters are used to heat these houses. It is proposed by the department to have these polyhouses replaced when funds are approved to modernize the greenhouse.

CONCLUSION

Several changes have taken place in the technology and EPA regulations for greenhouses since Howlett Greenhouse was built in 1969. The departmental needs for the greenhouse have changed since the original construction. There has also been deterioration of the building components over the past 23 years that needs

to be addressed. The greenhouse is energy inefficient and few changes have been made to effectively reduce the amount of energy used to operate the greenhouse.

The ORADC has researched and developed the use of double-plastic-over-glass to reduce the annual energy requirements for greenhouses about 60%. The modernization project for Howlett Greenhouse should incorporate some of the new energy saving technology that ORADC has developed. We were unable to identify the actual utility cost for the greenhouse because all the utilities are not metered. We did locate the water consumption that averaged about 831,000 gallons or $2,200 per month.

The Department of Physical Facilities is concerned with keeping the buildings operating at the level they were originally designed. The repair projects that are proposed in this report are for building components to be brought back to their original operating condition. Any repairs that we considered conflicted with modernization plans for the greenhouse were not included.

GENERAL BUILDING INFORMATION

Howlett Greenhouse #297

BUILDING ADDRESS: 680 THARP STREET

GROSS SQ. FT.: 47,232

NET ASSIGNABLE SQ. FT.: 29,319

MECHANICAL/CUSTODIAL AREA SQ. FT.: 7,460

YEAR OF CONSTRUCTION: 1969

YEAR OF LAST RENOVATION: N/A

NUMBER OF STORIES/BASEMENT: 1 STORY PLUS BASEMENT UNDER HEADHOUSE

AIR CONDITIONING (Percentage): 60% OF THE HEADHOUSE

CURRENT USE: DEPARTMENT OF HORTICULTURE

TYPE OF CONSTRUCTION: ALUMINUM FRAME, GLASS PANELS, CONCRETE BLOCK HEADHOUSE

ESTIMATED REPLACEMENT COST: $ 4,216,000 *

BUILDING APPEARANCE: GREENHOUSE IS IN A STAGE OF TRANSITION WITH CHANGES BEING MADE IN THE USES OF THE FACILITIES. SEVERAL PIECES OF ORIGINAL EQUIPMENT ARE NO LONGER BEING USED

HANDICAPPED ACCESSIBILITY: HEADHOUSE AND GREENHOUSE ARE AT GROUND LEVEL. THE WEST DOOR OF HEADHOUSE HAS AN AUTOMATIC DOOR OPENER THAT PROVIDES ACCESS TO THE REST OF THE BUILDING.

OVERALL BUILDING CONDITION: MINOR REHABILITATION **

NUMBER OF EXIT STAIRWAYS: TWO (2)

* Replacement Cost assigned January 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

Howlett Greenhouse #297

HEATING:
Source STEAM LINE FROM POWER PLANT, 8 CLEAVER BROOKS CLASS #2 BOILERS
Type Heating System HOT WATER FIN-TUBE
Steam (Line size, valve location) 4" MPS, 1 1/2" MPR, RM #G005M
Building Htg Water (line size, valve location) 3" HWS HEADHOUSE, 8" GREENH.

VENTILATION SYSTEM:
HEADHOUSE HAS A TERMINAL REHEAT SYSTEM

COOLING:
Bldg % 60% OF HEADHOUSE Chillers 340 TON ABSORPTION UNIT, OUT OF SERVICE
Window Units N/A Thru-the-wall N/A Direct exp. units N/A

HVAC CONTROL SYSTEM:
JOHNSON, DDC FOR CENTRAL MONITORING

ELECTRIC: Source Size(KVA) Primary/Secondary Switchgear & Main Disc. (Rm)
1. 201/306 CIRCUIT, 1500 KVA, 13,200 / 408Y/277 RM G005M
2. 201/306 CIRCUIT, 1500 KVA, 13,200 / 208Y/120 RM G005M

PLUMBING:
Water (size, valve location) 6" LINE, RM G005M
Gas (size, valve location) 4" LINE, RM G005M
Domestic Hot Water (size, valve location) LOCAL STEAM CONVERTER
Compressed Air (size, location) LOCAL AIR COMPRESSOR, RM G013M

SEWERS:
Storm 2 @ 3", 18 @ 4", 4 @ 5" Sanitary 1 @ 5", 3 @ 6"

METERS:
Gas (size, location) 4" METER, NORTHWEST CORNER GROUND LEVEL
Water (size, location) 6" METER, BASEMENT, SOUTH END
Electric (size, location) 2 METERS, RM G005M

ALARM SYSTEMS:
Fire Alarm YES Panel Location RM # G013M
Fire Pump N/A Pump Location N/A
Sprinklers N/A Panel Location N/A
Other Alarms N/A

ELEVATORS:
Number ONE (1) Type (passenger, freight) FREIGHT
Manufacturer OTIS Size 4000 LBS.

EMERGENCY GENERATOR: Size 375 KVA Location RM G013M

KEY BOX LOCATION: KEYS FOR ACCESS ARE IN HOWLETT HALL KEY BOX, EAST ENTRANCE

ASBESTOS SURVEY (1986):
ASBESTOS CONTAINING MATERIALS WERE FOUND IN THE PIPE INSULATION AND HEAT EXCHANGER INSULATION IN ROOM G005M AND IN THE INSULATION CEMENT RM 61 & 33.

PROPOSED MAINTENANCE PROJECTS
(R&R or CAPITAL FUNDED)

Howlett Greenhouse #297

A. Corrective Maintenance Projects:

1. Roof deck & built-up roof cover replacement of the entrance canopy. Replace downspouts and install entrance lights.....$ 5,340

2. Removal and replacement of the glazing material and bar caps covering the greenhouse. Power wash the aluminum frame and remove unnecessary wires, supports, and overhead irrigation lines. Repair leaking gutters and drip rails.....$185,030 ***

3. Replace metal trench covers located in corridors of the greenhouse.....$ 15,100

4. Replace absorption chiller that has not operated for 4 or 5 years.....$350,000 **

5. Repair cracks in concrete floors and walls of the greenhouse. Clean and seal concrete floors.....$ 17,205 ***

6. Replace boiler feed deaerating heater tank.....$ 38,000 *

7. Repair concrete roof deck over boiler room of the headhouse.....$ 6,500 *

Sub Total $617,175

B. Building Improvement Projects:

1. Install a secondary electric distribution system in the greenhouse that includes main secondary service, panel modification, & circuit redistribution from ceiling.....$ 43,000

C. Building Component Replacements expected within 5 years:

1. Replacement of steel piping supports located in trenches, support steel is rusted and corroded from contact with chemicals.....$ 12,000 *

Total Cost for all Projects = $ 672,175

* These projects are currently listed on the departmental proposed renovation project list.
** The proposed project to add an additional 500 ton chiller at Kottman Hall if funded would eliminate the need for this project.
*** These proposed projects were also included in the Program of Requirements submitted to Campus Planning for the Howlett Hall Greenhouse Renovation.

MAINTENANCE PROJECTS
(Less than $5,000)

Howlett Greenhouse #297

1. Repair domestic hot water supply to the men's restroom and classroom laboratory.

2. Replace sunken sidewalk section a entrance to the headhouse and replace damaged sidewalk section between greenhouse and Howlett Hall.

3. Repair and/or replace damaged hardware on interior wood doors in the greenhouse.

4. Seal corner foundation cracks with caulking.

5. Install proper identification sign on Tharp Street.

6. Repair leaking control valves on hot water heating system in the greenhouse.

7. Repair leaks in the condensate return line located in mechanical room G005M.

8. Paint women's restroom, stairwells, interior wood doors in the greenhouse, and exterior metal doors.

9. Install an emergency telephone in the elevator.

BUILDING EVALUATION SUMMARY

I. BUILDING INFORMATION

FAC # 297 FACILITY NAME: HOWLETT GREENHOUSE
DATE: 2-5-92 INSPECTOR: RDL
YEAR CONSTRUCTED: 1969
GROSS SQ FT: 47,232 NET SQ FT: 29,319
REPLACEMENT COST $ $4,216,000 X 90% = 3,794,400

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	12.21	463,296	0.86	398,435
Columns and Beams	6.71	254,604	0.86	218,959
Exterior Walls	4.17	158,226	0.83	131,328
Windows & Doors	1.83	69,438	0.71	49,301
Roofing	22.69	860,949	0.58	499,350
Partitions & Drs.	1.15	43,636	0.84	36,654
Wall Finishes	1.22	46,292	0.50	23,146
Floor Finishes	4.69	177,957	0.81	144,145
Ceilings & Finish	0.83	31,494	0.81	25,510
Conveying	1.30	49,327	0.77	37,982
Plumbing	17.16	651,119	0.78	507,873
Heating	6.81	258,399	0.75	193,799
Cooling & Vent.	7.81	296,343	0.20	59,269
Elec. Ser. & Dist	1.35	51,224	0.85	43,540
Lighting & Power	7.80	295,963	0.64	189,416
Safety Standards	2.27	86,133	0.63	54,264
TOTALS	100.00	3,794,400	0.69	2,612,971

III. BUILDING RATING SUMMARY

Overall Building Rating = 69.0 %

* Replacement Cost assigned January 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.

FOUNDATIONS

FAC # 297 DATE: 2-12-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Footings:	N/A	Sat	Att
Individual Footings & Piers UNDER COLUMNS FOR MECH. ROOM	[ ]	[X]	[ ]
Continuous Footings UNDER EXTERIOR BEARING WALLS	[ ]	[X]	[ ]
Grade Beams	[X]	[ ]	[ ]
Piles	[X]	[ ]	[ ]
Caissons	[X]	[ ]	[ ]
b. Foundation Wall Materials:			
Steel	[X]	[ ]	[ ]
Concrete Cast-in-place EXTERIOR WALLS WITH RE-BAR	[ ]	[X]	[ ]
Concrete Block	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
c. Waterproofing and Underdrain:			
Coating	[X]	[ ]	[ ]
Membrane WATER PROOFING MATERIAL WAS APPLIED TO OUTSIDE	[ ]	[X]	[ ]
Board	[X]	[ ]	[ ]
Drain Tile PLACED OUTSIDE OF FOOTING	[ ]	[X]	[ ]
d. Slab on Grade (floor):			
Plain	[X]	[ ]	[ ]
Reinforced 5" CONCRETE FLOOR	[ ]	[X]	[ ]
e. Special Substructures:			
	[X]	[ ]	[ ]

B. COMMENTS:

1. CORNERS OF EXTERIOR CONCRETE WALLS OF GREENHOUSE ARE CRACKED. THESE VERTICAL CRACKS APPEAR TO HAVE BEEN CAUSED BY EXPANSION AND CONTRACTION RATHER THAN SETTLEMENT OF THE FOUNDATION.

C. COMPONENT RATING: **($463,296)** X **(0.86)** = **$398,435**

Possible Value		Condition Value Multiplier		Component Value

COLUMNS AND BEAMS

FAC # 297 DATE: 2-12-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Columns and Beams:	N/A	Sat	Att
Concrete-in-place IN MECHANICAL ROOM	[ ]	[X]	[ ]
Precast Concrete	[X]	[ ]	[ ]
Steel	[X]	[ ]	[ ]
Steel Fireproofing	[X]	[ ]	[ ]
Wood	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
b. Floors:			
Concrete Slab POURED IN PLACE	[ ]	[X]	[ ]
Precast Slab	[X]	[ ]	[ ]
Metal Deck	[X]	[ ]	[ ]
Metal Deck w/concrete fill	[X]	[ ]	[ ]
Wood	[X]	[ ]	[ ]
Other NORTH HALF OF GREENHOUSE HAS A DIRT FLOOR	[ ]	[ ]	[X]
c. Roof System:			
Flat BUR WITH GRAVEL SLOPES TO THE DRAINS	[ ]	[X]	[ ]
Pitched	[X]	[ ]	[ ]
Concrete	[X]	[ ]	[ ]
Steel TRUSS BEAMS SUPPORT WOOD FIBER ROOF DECK	[ ]	[X]	[ ]
Wood	[X]	[ ]	[ ]
Other CANOPY ROOF DECK HAS BEEN REMOVED	[ ]	[ ]	[X]

B. COMMENTS:

1. ROOF COVER FOR THE CANOPY ON THE WEST SIDE OF THE BUILDING WAS REMOVED IN 1985 BECAUSE THE WOOD FIBER DECK GOT WET AND FELL OFF STEEL FRAME. STEEL FRAME REMAINS AND IS RUSTING FROM THE ELEMENTS. ALUMINUM GRAVEL STOP WAS REMOVED AND IS LYING ON THE MAIN ROOF.
2. THE NORTH END OF THE GREENHOUSE HAS A DIRT FLOOR THAT IS NO LONGER USED FOR RESEARCH. THE DEPARTMENT HAS REQUESTED THAT THIS FLOOR BE POURED WITH CONCRETE.

C. COMPONENT RATING: ($254,604) X (0.86) = $218,959

Possible Value | Condition Value Multiplier | Component Value

EXTERIOR WALLS

FAC # 297 DATE 2-12-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Walls:	N/A	Sat	Att
Concrete USED FOR THE LOWER 2' OF THE GREENHOUSE WALL	[ ]	[ ]	[X]
Masonry BRICK VENEER WAS USED ON EXTERIOR OF HEADHOUSE	[ ]	[X]	[ ]
Metal Siding	[X]	[ ]	[ ]
Wood Siding	[X]	[ ]	[ ]
Other GLASS PANES WERE USED FOR THE GREENHOUSE	[ ]	[ ]	[X]

b. Finishes:			
Stucco	[X]	[ ]	[ ]
Paint	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]

B. COMMENTS:

1. THE MORTAR JOINT ABOVE THE CANOPY FRAME IS EXPOSED FROM WHERE FLASHING WAS REMOVED. THIS JOINT SHOULD BE SEALED.
2. GLASS PANES IN SIDEWALLS HAVE BUTT JOINT SEALS THAT ARE WORN AND NEED TO BE REPLACED.

C. COMPONENT RATING: ($158,226) X (0.83) = $131,328

Possible Value		Condition Value	Multiplier	Component Value

EXTERIOR WINDOWS & DOORS

FAC # 297 DATE 2-12-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Windows type & number:	N/A	Sat	Att
Wood	[X]	[ ]	[ ]
Steel	[X]	[ ]	[ ]
Alum FRAME AWNING STYLE WINDOWS	[ ]	[X]	[ ]
Other	[X]	[ ]	[ ]
b. Window glazing			
Single pane 17 AWNING STYLE WINDOWS	[ ]	[ ]	[X]
Double pane	[X]	[ ]	[ ]
Other THE ENTIRE GREENHOUSE ROOF IS SINGLE PANE GLASS	[ ]	[ ]	[X]
c. Doors type & number:			
Wood	[X]	[ ]	[ ]
Steel STEEL DOORS TO COOLING TOWER, GAS METER AND SHOP	[ ]	[ ]	[X]
Alum NEW ALUMINUM DOORS WERE INSTALLED IN 1991	[ ]	[X]	[ ]
Other THE GARAGE DOOR TO HEADHOUSE	[ ]	[X]	[ ]
d. Shading Devices:			
Types	[X]	[ ]	[ ]

B. COMMENTS:

1. STEEL DOORS ARE BENT, RUSTED, AND DO NOT CLOSE SATISFACTORY.
2. GREENHOUSE GLASS NEEDS TO BE REMOVE AND INSTALLED WITH NEW SEALS.

C. COMPONENT RATING: **($69,438)** X **(0.71)** = **$49,301**

Possible Value		Condition Value Multiplier		Component Value

ROOFING

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Roof Covering:	N/A	Sat	Att
Built-up	[X]	[ ]	[ ]
Built-up w/gravel HEADHOUSE (6,740 SF) INSTALLED 1969	[ ]	[ ]	[X]
Asphalt Shingle	[X]	[ ]	[ ]
Copper	[X]	[ ]	[ ]
Glass (Skylight) GREENHOUSE (34,800 SF)	[ ]	[ ]	[X]
Slate	[X]	[ ]	[ ]
Spanish Tile	[X]	[ ]	[ ]
Metal	[X]	[ ]	[ ]
Other CONCRETE WATERPROOFED (1600 SF)	[ ]	[ ]	[X]
b. Flashing:			
Base & Counter FELT & METAL	[ ]	[ ]	[X]
Cap ALUMINUM FOR HEADHOUSE ROOF	[ ]	[X]	[ ]
Through Wall ALUMINUM COUNTER FLASHING	[ ]	[X]	[ ]
Valley & Ridge	[X]	[ ]	[ ]
c. Gravel Stop & Edge Strips:			
Type	[X]	[ ]	[ ]
e. Drainage:			
Gutters GREENHOUSE VALLEYS	[ ]	[X]	[ ]
Drains LOCATED IN THE CENTER OF HEADHOUSE ROOF	[ ]	[X]	[ ]
Scuppers LOCATED ON THE EAST SIDE OF THE HEADHOUSE	[ ]	[X]	[ ]
Downspouts THE DOWNSPOUTS FOR THE OLD CANOPY NEED REMOVED	[ ]	[ ]	[X]
f. Parapets:			
Concrete	[X]	[ ]	[ ]
Brick HEADHOUSE HAS BRICK UNDER FELT FLASHING	[ ]	[X]	[ ]
Block	[X]	[ ]	[ ]
Precast COOLING TOWER BRICK SCREEN WALL HAS PRECAST COPING	[ ]	[X]	[ ]
Other	[X]	[ ]	[ ]
g. Insulation:			
Type WOOD FIBER ROOF DECK, 3" THICK	[ ]	[ ]	[ ]

B. COMMENTS

1. REMOVE ALUMINUM GRAVEL STOP (11 PIECES) THAT ARE LYING ON ROOF.
2. FELT FLASHING HAS A VOID IN THE NORTH WEST CORNER THAT NEEDS REPAIRED.
3. OLD CANOPY DOWNSPOUT NEEDS REMOVED.
4. LIGHTNING ROD CABLE IS LOOSE ON THE EAST SIDE OF BUILDING.

C. COMPONENT RATING: ($860,949) X (0.58) = $499,350

Possible Value	Condition Value	Multiplier	Component Value

PARTITIONS & DOORS

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Partition Framing:	N/A	Sat	Att
Concrete Block USED FOR HEADHOUSE PARTITIONS	[ ]	[X]	[ ]
Glazed Block	[X]	[ ]	[ ]
Wood Stud	[X]	[ ]	[ ]
Metal Stud	[X]	[ ]	[ ]
Structural Tile	[X]	[ ]	[ ]
Rated	[X]	[ ]	[ ]
Other ALUMINUM FRAME WITH GLASS PANELS IN GREENHOUSE	[ ]	[X]	[ ]
b. Special partitions and Walls:			
Toilet PAINTED METAL PARTITIONS	[ ]	[X]	[ ]
Screen Walls	[X]	[ ]	[ ]
Gate	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
c. Wall Material:			
Plaster	[X]	[ ]	[ ]
Plaster Board	[X]	[ ]	[ ]
Glass USED IN GREENHOUSE AREA	[ ]	[ ]	[X]
Plywood	[X]	[ ]	[ ]
Paneling	[X]	[ ]	[ ]
Trim & Wainscot	[X]	[ ]	[ ]
Tile/Glazed	[X]	[ ]	[ ]
d. Interior Doors & Frames:			
Met Door/Met Frame USED FOR MECHANICAL ROOMS IN HEADHOUSE	[ ]	[X]	[ ]
Wood Door/Wood Frame	[X]	[ ]	[ ]
Wood Door/Metal Frame USED IN HEADHOUSE FOR CLASSROOMS	[ ]	[X]	[ ]
Glazing	[X]	[ ]	[ ]
Roll Up	[X]	[ ]	[ ]
Sliding	[X]	[ ]	[ ]
e. Hardware:			
Door Closers	[X]	[ ]	[ ]
Lock Sets	[X]	[ ]	[ ]
Kick/Push Plates	[X]	[ ]	[ ]
Thresholds	[X]	[ ]	[ ]
Panic Devices	[X]	[ ]	[ ]
Security & Detection	[X]	[ ]	[ ]
Automatic Openers	[X]	[ ]	[ ]

B. COMMENTS:

1. SEVERAL OF THE GLASS PANES BETWEEN THE CORRIDOR AND THE GROWING AREAS ARE BROKEN OR MISSING.

C. COMPONENT RATING: ($43,636) X (0.84) = $36,654

Possible Value		Condition Value		Component Multiplier		Component Value

WALL FINISHES

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION	N/A	Sat	Att
a. Paint APPLIED TO CONCRETE BLOCK IN HEADHOUSE	[ ]	[ ]	[X]
b. Wall Coating	[X]	[ ]	[ ]
c. Wall Coverings	[X]	[ ]	[ ]
d. Paneling			
Prefinished	[X]	[ ]	[ ]
Plank	[X]	[ ]	[ ]
e. Cork	[X]	[ ]	[ ]
f. Wallpaper	[X]	[ ]	[ ]
g. Ceramic Tile	[X]	[ ]	[ ]
h. Trim & Wainscot	[X]	[ ]	[ ]
i. Decoration	[X]	[ ]	[ ]
j. Glass USED FOR ENTIRE GREENHOUSE AREA	[ ]	[X]	[ ]
k. Other	[X]	[ ]	[ ]

B. COMMENTS

1. WOMEN'S RESTROOM AND STAIRWELLS NEED TO BE PAINTED. THE CORRIDOR AND CLASSROOMS WERE PAINTED BY THE DEPARTMENT IN 1991.
2. WOOD DOORS IN THE GREENHOUSE NEED TO BE PAINTED.

C. COMPONENT RATING: ($46,292) X (0.50) = $23,146

Possible Value		Condition Value		Component Multiplier		Component Value

FLOOR FINISHES

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
a. Carpet:			
Rolled	[X]	[ ]	[ ]
Tile	[X]	[ ]	[ ]
b. Composition:			
Epoxy	[X]	[ ]	[ ]
Synthetic	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
c. Concrete Topping:			
Clear Sealant USED ON THE CONCRETE FLOORS IN BASEMENT	[ ]	[ ]	[X]
Abrasive	[X]	[ ]	[ ]
Epoxy	[X]	[ ]	[ ]
Aggregate GREENHOUSE FLOOR HAS SEVERAL CRACKS IN CONCRETE	[ ]	[ ]	[X]
d. Resilient:			
Vinyl Tile ENTRY AND CORRIDORS OF THE HEADHOUSE	[ ]	[X]	[ ]
Linoleum	[X]	[ ]	[ ]
Rubber	[X]	[ ]	[ ]
Cork	[X]	[ ]	[ ]
e. Ceramic Tile USED IN THE RESTROOMS AND SHOWERS	[ ]	[X]	[ ]
f. Masonry	[X]	[ ]	[ ]
g. Terrazzo	[X]	[ ]	[ ]
h. Wood	[X]	[ ]	[ ]
i. Metal	[X]	[ ]	[ ]

B. COMMENTS

1. CONCRETE FLOORS IN THE BASEMENT OF THE HEADHOUSE SHOULD BE CLEANED AND SEALED WITH A CLEAR CONCRETE SEALER.
2. GREENHOUSE TRENCH COVERS ARE RUSTED AND NEED TO BE REPLACED.
3. CONCRETE FLOOR IN GREENHOUSE SHOULD HAVE CRACKS REPAIRED.

C. COMPONENT RATING: ($177,957) X (0.81) = $144,145

Possible Value	Condition Value	Multiplier	Component Value
$177,957	**0.81**		**$144,145**

CEILINGS AND FINISHES

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. System Type:	N/A	Sat	Att
Exposed BASEMENT CEILING ARE EXPOSED CONCRETE	[ ]	[X]	[ ]
Applied to Structure	[X]	[ ]	[ ]
Suspended CLASSROOM IN HEADHOUSE AND STAIRWELLS	[ ]	[X]	[ ]
b. Materials:			
Drywall	[X]	[ ]	[ ]
Plaster	[X]	[ ]	[ ]
Mineral Fiber Board ACOUSTIC SUSPENDED CEILING TILE	[ ]	[X]	[ ]
Metal Pan	[X]	[ ]	[ ]
Luminous Panels	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
c. Finishes:			
Paint APPLIED TO EXPOSED CONCRETE	[ ]	[X]	[ ]
Mineral Fiber RESTROOM HAS WOOD FIBER DECK EXPOSED	[ ]	[X]	[ ]
Fabric	[X]	[ ]	[ ]
Prefinished ACOUSTIC SUSPENDED CEILINGS	[ ]	[X]	[ ]
Other	[X]	[ ]	[ ]
d. Openings & Inserts:			
Air Distribution IN CLASSROOM AREA ONLY	[ ]	[X]	[ ]
Lighting Fixtures ARE ATTACHED TO SUSPENDED CEILING GRID	[ ]	[X]	[ ]
Access Panels	[X]	[ ]	[ ]
Skylights	[X]	[ ]	[ ]
Fire Protection	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]

B. COMMENTS:

C. COMPONENT RATING: **($31,494)** Possible Value **X (0.81)** Condition Value Multiplier **= $25,510** Component Value

CONVEYING

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Elevators:	N/A	Sat	Att
Number ONE (1)	[ ]	[X]	[ ]
Type OTIS, FREIGHT ELEVATOR, HYDRALIC	[ ]	[X]	[ ]
Speed 75 FPM	[ ]	[X]	[ ]
Capacity (lbs) 4,000 LBS., 2 STOPS	[ ]	[X]	[ ]
Dimensions	[ ]	[X]	[ ]
Door Operation:			
Center VERTICAL LIFT, HOISTWAY DOORS	[ ]	[ ]	[X]
To Side	[X]	[ ]	[ ]
b. Lifts and Hoists:			
Number	[X]	[ ]	[ ]
Type	[X]	[ ]	[ ]
c. Moving Stairs and Walks:			
Number	[X]	[ ]	[ ]
Type	[X]	[ ]	[ ]
d. Conveyors:			
Number	[X]	[ ]	[ ]
Type	[X]	[ ]	[ ]
e. Pneumatic Tubes:			
Number	[X]	[ ]	[ ]
Type	[X]	[ ]	[ ]

B. COMMENTS:

1. ELEVATOR DOES NOT HAVE AN EMERGENGY TELEPHONE.
2. HOISTWAY DOORS HAVE A TENDENCY TO STICK AND NOT CLOSE TIGHT.

C. COMPONENT RATING: **($49,327)** Possible Value **X (0.77)** Condition Value Multiplier **= $37,982** Component Value

MECHANICAL/PLUMBING

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Services Available:	N/A	Sat	Att
Cold Water COMBINATION OF STEEL AND COPPER LINES	[ ]	[X]	[ ]
Hot Water COMBINATION OF STEEL AND COPPER LINES	[ ]	[ ]	[X]
Acid Waste	[X]	[ ]	[ ]
Oxygen	[X]	[ ]	[ ]
Natural Gas STEEL LINES RUN TO THE FREESTANDING HUTS	[ ]	[X]	[ ]
Vacuum	[X]	[ ]	[ ]
Distilled Water	[ ]	[ ]	[ ]
Compressed Air STEEL AND COPPER LINES IN GREENHOUSE	[ ]	[X]	[ ]
b. Piping & Fittings:			
Cast Iron WASTE WATER LINES	[ ]	[X]	[ ]
Copper Tubing PNEUMATIC LINES FOR HVAC CONTROLS	[ ]	[ ]	[X]
Plastic	[X]	[ ]	[ ]
Steel USED FOR MOST WATER LINES, DOMESTIC AND HEATING	[ ]	[X]	[ ]
Glass	[X]	[ ]	[ ]
c. Water Heaters:			
Electric TWO (2) DOMESTIC HOT WATER TANKS IN GREENHOUSE	[ ]	[ ]	[X]
Gas	[X]	[ ]	[ ]
Oil	[X]	[ ]	[ ]
Steam Converter THREE (3) LOCATED IN RM G005M	[ ]	[X]	[ ]
d. Drainage:			
Storm Drains 24" STORM DRAIN LINE IN THARP STREET	[ ]	[X]	[ ]
Sanitary Drainage 18" SANITARY SEWER IN THARP STREET	[ ]	[X]	[ ]
Combined Storm/San.	[X]	[ ]	[ ]
Floor Drains GREENHOUSE HAS SUMP PUMPS FOR FLOOR DRAINAGE	[ ]	[X]	[ ]
e. Fixtures:			
Water Closets FOUR (4), LOCATED IN 2 DIFFERENT RESTROOMS	[ ]	[X]	[ ]
Urinals TWO (2), LOCATED IN MEN'S RESTROOM	[ ]	[X]	[ ]
Lavatories FOUR (4), LOCATED IN 2 DIFFERENT RESTROOMS	[ ]	[X]	[ ]
Showers TWO (2), ONE IN EACH RESTROOM	[ ]	[X]	[ ]
Kitchen Sinks	[X]	[ ]	[ ]
Service Sinks LOCATED IN JANITORIAL CLOSET AND RM G101	[ ]	[X]	[ ]
Drinking Fountains	[X]	[ ]	[ ]
Electric Water Coolers ONE ON 1ST FLOOR, BASEMENT REMOVED	[ ]	[ ]	[X]
f. Sprinkler Systems:			
Wet	[X]	[ ]	[ ]
Dry	[X]	[ ]	[ ]
Water Storage/Supply	[X]	[ ]	[ ]
g. Standpipe Systems:			
Wet	[X]	[ ]	[ ]
Dry	[X]	[ ]	[ ]
Valves	[X]	[ ]	[ ]
Hose Cabinets	[X]	[ ]	[ ]

B. COMMENTS:

1. WATER COOLER IN THE BASEMENT HAS BEEN REMOVED.
2. THE 4" HOT WATER SUPPLY LINES IN THE GREENHOUSE WERE REPLACED IN 1991 BECAUSE OF CORROSION TO THE ORIGINAL LINES.
3. PNEUMATIC CONTROLS IN THE GREENHOUSE HAVE BEEN REPLACED WITH ELECTRIC. THE OLD COPPER PNEUMATIC LINES ARE STILL IN PLACE, BUT DISCONNECTED.
4. THE MEN'S RESTROOM AND CLASSROOM LABORATORY DO NOT HAVE HOT WATER.

C. COMPONENT RATING: ($651,119) X (0.78) = $507,873

Possible Value	Condition Value	Multiplier	Component Value

MECHANICAL/HEATING

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Heat Source:	N/A	Sat	Att
Central Plant Steam 8 INCH LINE FROM CENTRAL POWER PLANT	[ ]	[X]	[ ]
Central Plant Hot Water	[X]	[ ]	[ ]
Boilers: Type CLEAVER BROOKS CLASS #2 BOILERS (8 BOILERS)	[ ]	[ ]	[X]
Size	[X]	[ ]	[ ]
Furnace: Type	[X]	[ ]	[ ]
Size	[X]	[ ]	[ ]
Heat Pump: Type	[X]	[ ]	[ ]
Size	[X]	[ ]	[ ]
Burners: gas	[X]	[ ]	[ ]
oil	[X]	[ ]	[ ]
b. System Type:			
Steam	[X]	[ ]	[ ]
Hot Water FINNED TUBE AND UNIT HEATERS	[ ]	[X]	[ ]
Air SINGLE AIR HANDLER SUPPLIES OUTSIDE AIR TO HEADHOUSE	[ ]	[X]	[ ]
Electric	[X]	[ ]	[ ]
Solar GREENHOUSE HAS A PASSIVE SOLAR HEAT GAIN	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
c. Space Equipment:			
Radiators	[X]	[ ]	[ ]
Convectors	[X]	[ ]	[ ]
Finned Tube USED TO HEAT GREENHOUSE	[ ]	[X]	[ ]
Baseboard	[X]	[ ]	[ ]
2-Pipe Fan Coil LOCATED AT ENTRY	[ ]	[X]	[ ]
Unit Ventilators USED TO HEAT THE FREESTANDING HUTS	[ ]	[X]	[ ]
Multizone	[X]	[ ]	[ ]
Double Duct	[X]	[ ]	[ ]
Terminal Reheat AC-4, SUPPLIES THE HEADHOUSE	[ ]	[X]	[ ]
Other	[X]	[ ]	[ ]
d. Control Type:			
Pneu USED IN THE MECHANICAL ROOM TO OPERATE CONTROLS	[ ]	[X]	[ ]
Electric USED IN GREENHOUSE FOR FAN CONTROL & VALVES	[ ]	[X]	[ ]
Electronic	[X]	[ ]	[ ]
DDC GREENHOUSE HAS A OGLEVEE COMPUTER MONITORING SYSTEM	[ ]	[X]	[ ]
Manual Valves	[X]	[ ]	[ ]

B. COMMENTS:

1. CONSDENSATE RETURN LINE OVER DEAREATOR UNIT IS LEAKING WATER.
2. CONDENSATE RETURN LINE EXITING RM G005M IS LEAKING WATER.
3. TUBE BUNDLE FROM STEAM CONVERTOR IS LYING ON THE FLOOR.
4. SEVERAL OF THE HOT WATER HEAT VALVES ARE LEAKING WATER.
5. THE BOILERS HAVE NOT OPERATED IN THE LAST FEW YEARS.

C. COMPONENT RATING: **($258,399) X (0.75) = $193,799**

Possible Value		Condition Value Multiplier		Component Value

COOLING & VENTILATING

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

	N/A	Sat	Att
a. System:			
Type HEADHOUSE HAS TERMINAL REHEAT SYSTEM	[ ]	[X]	[ ]
Capacity	[X]	[ ]	[ ]
b. Chillers:			
Centrifugal	[X]	[ ]	[ ]
Reciprocating	[X]	[ ]	[ ]
Absorption 340 TON TRANE STEAM ABSORPTION CHILLER	[ ]	[ ]	[X]
c. Cooling Towers:			
Type MARLEY, DOUBLE FLOW, MODEL #376-6	[ ]	[ ]	[X]
Capacity NOMINAL 350 TONS	[ ]	[X]	[ ]
d. Condensers:	[X]	[ ]	[ ]
e. Space Equipment:			
Direct Expansion -			
Window units	[X]	[ ]	[ ]
Thru-the-wall	[X]	[ ]	[ ]
Single zone	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
Air/Water -			
2-pipe fan coil	[X]	[ ]	[ ]
Unit ventilators	[X]	[ ]	[ ]
Terminal Reheat OFFICE AND CLASSROOM AREAS	[ ]	[X]	[ ]
Variable volume	[X]	[ ]	[ ]
Dual Duct	[X]	[ ]	[ ]
Mult-zone	[X]	[ ]	[ ]
f. Special Systems:			
Type GREENHOUSE HAS RIDGE VENT AND A FEW EVAPORATIVE	[ ]	[ ]	[X]
Capacity COOLING MEMBRANES REMAINING.	[X]	[ ]	[ ]
g. Control Systems:			
Pneu USED IN MECHANICAL ROOMS	[ ]	[X]	[ ]
Electric USED IN GREENHOUSE AREAS	[ ]	[X]	[ ]
Electronic USED FOR DDC CENTRAL MONITORING	[ ]	[X]	[ ]
h. Fans:			
Exhaust 49 EXHAUST FANS	[ ]	[X]	[ ]
Recirculating 45 RECIRCULATING FANS, 4 SUPPLY FANS	[ ]	[X]	[ ]

B. COMMENTS:

1. COOLING TOWERS NEEDS NEW DRIFT ELIMINATORS. COOLING TOWER HAS NOT BEEN OPERATED FOR SEVERAL YEARS.
2. THE ABSORPTION CHILLER IS NON-FUNCTIONAL. IT HAS BEEN REPORTED BY MAINTENANCE PERSONNEL THAT IT CANNOT BE REPAIRED.

C. COMPONENT RATING: ($296,343) X (0.20) = $59,269

Possible Value	Condition Value	Multiplier	Component Value

ELECTRICAL/SERVICE & DISTRIBUTION

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

(a)Service:

Substation CIRCUITS 201/306
Primary Voltage 13,200 VOLTS
Transformer:

Manufacture	Type	KVA	Secondary Voltages
GE, M156915	SILICONE	1500	408Y/277
GE, M156914	SILICONE	1500	208Y/120
SORGEL,	DRY	100	480 VOLTS
WESTINGHOUSE	DRY	75	208Y/126

(b)Distribution System:

Panelboard (type) CIRCUIT BREAKERS
Voltage 120/208 VOLTS
Amperage 200 AMP
Conduit ALUMINUM
Conductor COPPER
Wire (type) VARIOUS TYPES
Armored Cable N/A
Other N/A

(c)Emergency System:

General or (type & capacity) CATERPILLAR, 375 KVA

B. COMMENTS:

1. PEAK LOAD OF RECORD WAS APRIL, 1987, 408KW.
2. THE EMERGENCY GENERATOR PROVIDES BACK-UP POWER TO KOTTMAN HALL AND HOWLETT HALL IN ADDITION TO THE GREENHOUSE.

C. COMPONENT RATING: ($51,224) X (0.85) = $43,540

Possible Value		Condition Value	Multiplier	Component Value

ELECTRICAL/LIGHTING & POWER

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

a. Lighting (lamp type):	N/A	Sat	Att
Fluor CLASSROOMS AND LAB AREAS OF HEADHOUSE	[ ]	[X]	[ ]
Incand DIFFERENT AREAS OF GREENHOUSE FOR RESEARCH PROJECT	[ ]	[X]	[ ]
HID	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]
b. Receptacles & Switches			
Type & Capacity SEVERAL ARE CORRODED IN GREENHOUSE	[ ]	[ ]	[X]
c. Special:			
Baseboard Heat	[X]	[ ]	[ ]
Lightning Protection ROOF HAS A LIGHTNING ROD SYSTEM	[ ]	[ ]	[X]
Communication & Alarm	[X]	[ ]	[ ]
Data Systems	[X]	[ ]	[ ]

B. COMMENTS:

1. LIGHTNING ROD CABLE IS LOOSE ON THE EAST SIDE OF THE ROOF AREA.
2. THE MOISTURE AND CHEMICALS HAVE CAUSED CORROSION TO SEVERAL OF THE ELECTRICAL RECEPTACLES, CONDUIT, AND SWITCHES.

C. COMPONENT RATING: **($295,963)** X **(0.64)** = **$189,416**

Possible Value	Condition Value Multiplier	Component Value

SAFETY STANDARDS

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

(a)Exits:

Stair Construction:	N/A	Sat	Att
concrete	[X]	[ ]	[ ]
steel METAL PAN, CEMENT FILLED TREADS	[ ]	[X]	[ ]
wood	[X]	[ ]	[ ]

Number of exits TWO (2)

(b)Fire Rating:

Construction Type: I X II ___ III ___ IV ___ V ___ VI

Building Height: 14 FEET , ONE (1) stories

(c)Extinguishing Systems:

Portable LOCATED AT EXITS TO GREENHOUSE	[ ]	[X]	[ ]
Standpipe	[X]	[ ]	[ ]
Hose Cabinets	[X]	[ ]	[ ]
Sprinklers	[X]	[ ]	[ ]
Suppression	[X]	[ ]	[ ]
Other	[X]	[ ]	[ ]

(d)Detection & Alarm Systems:

Manual Alarm PULL STATIONS LOCATED AT EXITS	[ ]	[X]	[ ]
Annunciator LOCATED IN ROOM G013M	[ ]	[X]	[ ]
Smoke Detectors	[X]	[ ]	[ ]

(e)Lighting Systems:

Exit Signs	[ ]	[X]	[ ]
Exit Lighting	[ ]	[X]	[ ]
Emergency Lighting	[ ]	[X]	[ ]
Emergency Generator	[ ]	[X]	[ ]

B. COMMENTS:

1. BASEMENT AREA IS USED FOR STORAGE OF MATERIALS AND HAS SEVERAL (8) GROWTH CHAMBERS (REFRIGERATED COOLERS) THAT DISCHARGE HEAT INTO THE AREA. ADDITIONAL VENTILATION IS NEEDED IN THIS AREA.

C. COMPONENT RATING: ($86,133) X (0.63) = $54,264

Possible Value	Condition Value	Multiplier	Component Value

BUILDING PERIMETER EVALUATION

FAC # 297 DATE: 2-13-92 INSPECTOR: RDL

A. SYSTEM DESCRIPTION

1. Structural Access:	N/A	Sat	Att
Driveway OFF THARP STREET	[ ]	[X]	[ ]
Loading Dock	[X]	[ ]	[ ]
Sidewalks			
Front WEST WALK IN THE MIDDLE OF THE BLDG. IS SUNK	[ ]	[ ]	[X]
Side NORTH WALK IS CRACKED AND HAS LOW AREAS	[ ]	[ ]	[X]
Rear	[X]	[ ]	[ ]
Steps			
Front	[X]	[ ]	[ ]
Side	[X]	[ ]	[ ]
Rear	[X]	[ ]	[ ]
Handicap Ramp FRONT DOOR IS AT GRADE LEVEL	[ ]	[X]	[ ]
2. Lawn and Landscaping:			
Lawn	[X]	[ ]	[ ]
Shrubs	[X]	[ ]	[ ]
Trees	[X]	[ ]	[ ]
Undesirable Insect	[X]	[ ]	[ ]
Bedding Material	[X]	[ ]	[ ]
Watering System HOSE BIBBS ON HEADHOUSE EXTERIOR WALLS	[ ]	[X]	[ ]
3. General Site Information:			
Signage NONE	[ ]	[ ]	[X]
Address Identification NONE	[ ]	[ ]	[X]
Security Lights NONE	[ ]	[ ]	[X]
Street Lights LOCATED ALONG THARP STREET	[ ]	[X]	[ ]
Drainage NORTH END OF HEADHOUSE HAS LOW AREA THAT PONDS	[ ]	[ ]	[X]
Storm Drains	[ ]	[X]	[ ]

B. COMMENTS:

1. THE PARK BENCH ON THE NORTH SIDE OF HEADHOUSE HAS BROKEN WOOD SLATES.
2. OIL TANK IN STORAGE WELL IS RUSTING ON THE OUTSIDE.
3. HOWLETT GREENHOUSE DOES NOT HAVE AN INDENTIFICATION SIGN OR ADDRESS.
4. LIGHTS ON THE FRONT OF THE BUILDING WERE DISCONNECTED WHEN THE CANOPY WAS REMOVED IN 1985.

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 budgetarily 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 Campus Planning and Space Utilization 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. Ongoing 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

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

Worksheet

CALCULATION OF BUILDING COMPONENT PERCENTAGE OF TOTAL COST

HOWLETT GREENHOUSE #297 **DATE:**

MEANS SQUARE FOOT COSTS

BUILDING SYSTEM	CLASS	LAB.	OFFICE	SUBJECT	% TOTAL
Foundations	2.85	8.61	2.14	8.61	12.21
Columns and Beams	7.70	4.73	6.33	4.73	6.71
Exterior Walls	1.63	2.94	4.56	2.94	4.17
Ext. Windows & Drs.	2.23	2.28	1.29	1.29	1.83
Roofing	1.47	3.01	0.97	16.00	22.69
Partitions & Doors	4.77	5.87	3.76	0.81	1.15
Wall Finishes	1.46	2.96	1.45	0.86	1.22
Floor Finishes	2.76	3.31	4.28	3.31	4.69
Ceilings & Finish	3.93	3.93	3.93	0.58	0.83
Conveying	0.92	0.00	2.04	0.92	1.30
Plumbing	4.54	12.10	1.19	12.10	17.16
Heating	4.80	4.80	4.80	4.80	6.81
Cooling & Vent.	5.51	5.51	3.70	5.51	7.81
Elec. Ser. & Dist.	0.95	0.56	0.73	0.95	1.35
Lighting & Power	6.39	5.50	5.88	5.50	7.80
Safety Standards	3.67	2.66	0.31	1.60	2.27
TOTAL	55.58	68.77	47.36	70.51	100.00

Worksheet

CALCULATION OF THE CONDITION VALUE MULTIPLIER

HOWLETT GREENHOUSE #297 **DATE: 2-13-92**

	Expect Life	Age	Age Condition Value*	Perf Rate	Performance Condition Value**	Component Condition Value
Foundation	100	23	0.26	0.90	0.60	0.86
Column & Beams	100	23	0.26	0.90	0.60	0.86
Exterior Walls	75	23	0.23	0.90	0.60	0.83
Windows & Doors	60	23	0.21	0.75	0.50	0.71
Roofs	50	23	0.18	0.60	0.40	0.58
Partitions	60	23	0.21	0.95	0.63	0.84
Wall Finishes	15	15	0.00	0.75	0.50	0.50
Floor Finishes	60	23	0.21	0.90	0.60	0.81
Ceiling & Finish	40	23	0.14	1.00	0.67	0.81
Conveying	40	23	0.14	0.95	0.63	0.77
Plumbing	60	23	0.21	0.85	0.57	0.78
Heating	50	23	0.18	0.85	0.57	0.75
Cooling & Vent.	30	23	0.08	0.30	0.20	0.28
Electric Serv.	50	23	0.18	1.00	0.67	0.85
Lighting & Power	40	23	0.14	0.75	0.50	0.64
Safety Standards	25	23	0.03	0.90	0.60	0.63

* The age condition value is column (C-B) x 33.33%.
** The performance condition value is column E x 67.77%.