

FACILITY AUDIT REPORT

209 WEST EIGHTEENTH AVE.

#004

JANUARY 31, 1999

209 WEST EIGHTEENTH AVE.

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209 WEST EIGHTEENTH AVE.

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EXECUTIVE SUMMARY FOR 209 WEST EIGHTEENTH AVE.

The 209 West Eighteenth building was constructed in 1993 and is attached to the Math Tower. It consists of two large lecture halls on the first floor and four classrooms on the second floor. The six-year old building has a number of deficiencies. Numerous caulking and sealant failures have been identified. The steam station will need to be replaced and the makeup water for the system should not be city water. The steam room, in the basement, needs to be ventilated. The east basement wall has developed a major vertical crack. The building gets its cooling capacity from chillers located in the new Math Tower and its hot water heating capacity is supplied by steam from the Power Plant.

PROPOSED MAINTENANCE PROJECTS

WEST EIGHTEENTH AVE. #004

| A. Corrective Maintenance Projects: | | Control No |
|--|-------------------|-------------------|
| <i>1. Reinforce the east foundation wall.</i> | \$ 9,500 | 3569 |
| <i>2. Correct sealant and caulking defects.</i> | \$ 12,000 | 3570 |
| Sub Total | \$ 21,500 | |
| | | |
| B. Building Improvement/Addition Projects: | | |
| <i>1. Provide ventilation for the steam room.</i> | \$ 40,000 | 3571 |
| Sub Total | \$ 40,000 | |
| | | |
| C. Building Component Replacements expected within the next 5-10 years: | | |
| <i>1. Replace the steam station in room 090M.</i> | \$ 120,000 | 3572 |
| Sub Total | \$ 120,000 | |
| Total Cost for all Projects | \$ 181,500 | |

**RENOVATION PROJECTS IN PROGRESS OR RECENTLY COMPLETED
SINCE LAST AUDIT
209 WEST EIGHTEENTH AVE. #004**

Projects:

Control #

None

GENERAL BUILDING INFORMATION

209 WEST EIGHTEENTH AVE. #004

BUILDING ADDRESS: *209 WEST 18TH AVE.*

GROSS SQ. FT.: *25,070*

NET ASSIGNABLE SQ. FT.: *17,917*

MECHANICAL/CUSTODIAL AREA SQ. FT.: *2,060*

YEAR OF CONSTRUCTION: *1993*

YEAR OF LAST RENOVATION: *None*

NUMBER OF STORIES/BASEMENT: *Two stories with basement and penthouse*

AIR CONDITIONING (Percentage): *90%*

CURRENT USE: *Lecture halls and Pool Classrooms*

TYPE OF CONSTRUCTION: *Steel with Masonry Skin*

ESTIMATED REPLACEMENT COST: *\$ 3,267,000 **

COST PER GROSS SQUARE FEET: *\$130.32*

WHEELCHAIR ACCESSIBILITY: *From the south entrances to elevators which give access to all floors.*

OVERALL BUILDING CONDITION: *Satisfactory ***

NUMBER OF EXIT STAIRWAYS: *None (0)*

NUMBER OF OTHER EXITS: *Three (3)*

AREA SHOP RESPONSIBILITY: *North Shop*

* *Replacement Cost assigned June 1998 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

209 WEST EIGHTEENTH AVE. #004

HEATING:

Source – *Power plant*

Type Heating System – *Hot water*

Main Steam Feed (Line size, valve location) – *2” HPS to room 080M*

Building Htg. Water (line size, valve location) – *6” , room 090M*

VENTILATION SYSTEM: *variable air volume, dual duct system*

COOLING:

BLDG. % *90*, Chiller: *two 1993, R22, Trane at 300 tons each in Math Tower*

Window Units: *none*, Thru-the-wall: *none*, Direct expansion units: *none*

HVAC CONTROL SYSTEM: *Electric, pneumatic and DDC controls*

ELECTRIC:

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

PGS3/PGN9 1500 13,200/480/277 ROOM 060M

PGS3/PGN9 500 13,200/208/120 ROOM 060M

PLUMBING SERVICES:

Water (size, valve location) – *2 1/2” at east wall from room 001M*

Gas (size, valve location) - *None*

Domestic Hot Water (size, valve location) – *1” from room 001M*

Compressed Air (size, location) – *none*

SEWERS:

Storm – *1 @ 8”, 1 @ 3” Sanitary - 1 @ 4” Combined Storm/San- none*

METERS:

Gas (size, location) – *N/A*

Water (size, location) – *2 1/2” at east side from room 001M*

Electric (location) - *room 060M*

ALARM SYSTEMS:

Fire Alarm, Main Panel Room *001M*, Remote Panel Location *in Lobby*

Fire Pump @ 1000 GPM, Riser , Pump Location, Room *001M*

Sprinkler, Valve Location Room *001M* , 100%, [] Partial, [] Limited

Horns/Strobes, [] Bells in Halls, Rooms

Other Alarms – *Room 065*

ELEVATORS:

Number-*One*, Type (passenger, freight)- *Passenger*
Manufacturer – *Dover*, Size- *2,500#*, *56”x80”*

EMERGENCY GENERATOR:

Size- *1125 KVA*, located in room *050M*

ASBESTOS SURVEY (1986): *Building was not included in the 1986 survey because it was constructed in 1993.*

209 WEST EIGHTEENTH AVE. NARRATIVE

HISTORY

The building at 209 West Eighteenth Ave. was constructed in 1993, along with the Math Tower. The buildings were constructed on the old Brown Hall Annex site. The Brown Hall Annex was the site of the old Power House, which was decommissioned in 1920. The east and south sides of the building are tied into the original tunnels and basement walls of the old Power House. These tunnels interconnect utility services to other campus buildings. The building has two large lecture halls on the first floor and four pool classrooms on the second floor. The Math Tower and 209 West 18th share all plumbing, HVAC, and electrical systems.

The building occupants have expressed several concerns with the functioning of the building. There have been leaks in the building that have flooded the western ends of both lecture halls. A can was found in a gutter drain at the east wall of the Math Tower. The east wall is a common wall shared by the Math Tower and 209 West 18th. The can was removed and since that time no further flooding has occurred. The consulting report by Archatas Inc. and our own observations observed numerous caulking or sealant failures. To correct the sealant failures, the consulting firm recommends that “ a redesign of how the joints in the stone are detailed is a must. Flashings need to be reviewed and modifications will be necessary. In many cases, the details were not followed.” The bricks on the east wall have several cracks that will need to be sealed.

A review of the work orders indicated that there are a normal number of emergency and maintenance calls to the building. The most frequent calls relate to rooms that were too hot. However, this did not seem to present a serious concern with the building occupants.

Occupancy of the building, reported by The Office of University Resource Planning & Institutional Analysis in the C-1 Building Space Assignment Report dated June, 1998 for a Net Assignable Area of 19,977 SF, is as follows; Instructional space 44%, Research 5%, Circulation 36 %, Mechanical 10%, and Custodial/Toilet 5%.

PRIMARY SYSTEMS

The structural components consist of concrete spread footers and grade beams with poured in place concrete basement walls up to the first floor. The east basement wall consists of concrete and stone from the old Power Plant and tunnel system. The concrete wall on the east side of room 060M has a large vertical crack. This crack is caused by movement of part of the wall, into room 060M. The top of this concrete wall has moved about two inches since construction. This wall will need to be supported to prevent further movement and avoid a catastrophic failure of the

wall. There are steel fireproofed columns that support reinforced concrete floors. These form the basic skeletal components of this two-story building with basement and penthouse.

There is one sign of major settlement or movement in the east foundation wall. The structural columns and supports appear to be in good condition.

A brick veneer was installed on concrete block to form the exterior walls. There are brick arches over the windows and in the north and south walls, limestone panels at the base perimeter and at the base of the brick arches complete the architectural elements that accent this building. Openings for windows and entrance doors are accented with brick arches or steel lintels that form the head and jambs with limestone window sills. The exterior brick has cracks on the east side of the building that need to be sealed.

The windows are double glazed, fixed, aluminum windows. The windows are in good condition.

The three entrance doors are stainless steel with single pane glass. The lobby entrances, at the north and south side of the building, are vestibule entrances, with one set of double, stainless steel doors at each entrance. There are a like number doors on the interior of the vestibule. The stairwells exit into the vestibule areas. There is one single steel exterior door that is an exit from the lower level of the north lecture hall. There is one single, stainless steel exit door on the southwest side of the building. This door and the other south vestibule entrance provide accessible entrances to the building. The steel door that opens to the areaway from room 050M does not close and needs to be rehung. Other than the door in room 050M; the exterior doors are in good condition.

The perimeter roof is sloped, with steel beams and rafters that support a fireproofed, metal deck with insulation. The sloped roof is a coated-steel, standing seam roof. The flat roof consists of modified bitumen. There are perimeter metal lined gutters with interior downspouts. The flashing is stainless and the brick parapet walls have limestone caps. The consulting report by Archatas Inc. and our own observations observed numerous caulking or sealant failures. To correct the sealant failures, the consulting firm recommends that “Flashings need to be reviewed and modifications will be necessary. In many cases, the details were not followed.” It is recommended that the caulking and flashing be repaired to prevent further deterioration.

INTERIOR SYSTEMS

The concrete floors and steel columns of the building are enclosed with concrete blocks at the perimeter and in the stairwells. Metal studs with drywall enclose the interior spaces. The walls are in good condition throughout the building.

The building has mainly wood doors in metal frames. Steel fire doors in steel frames are used at mechanical rooms and stairwells. The doors to the classrooms have lever handles and limited glazing. All the doors are in good condition.

The wall finishes are paint throughout the building. The restrooms have ceramic tiles on the walls. The wall finishes in the corridors and in the labs should be repainted. There is a hole in the dry wall in room 275 that should be repaired. There is also a panel in the drywall of room 170 that is missing and should be replaced. There is a filter attached to the lobby wall above the entrance to room 160 that needs to be reworked so that a grill hides the filter.

This building has carpeting in the second floor lobby area and in the lecture halls. The carpeting is frayed at the interior stairs and should be repaired. All the carpeting in the building should be cleaned. The corridors and the labs have vinyl tile floor covering. The vinyl floors need to be cleaned. The first floor lobby area has a slate tile floor. This floor should be cleaned and sealed. The mechanical room has concrete floors with a clear sealant.

The ceilings in the building consists of a suspended aluminum, 2x2 grid, with mineral fiber board tiles. There are many ceiling tiles that show signs of water leaks and should be replaced. The ceiling tiles at room 090M should not be replaced until the steam station has been replaced.

SERVICE SYSTEMS

The major service systems, domestic cold and hot water, sanitary and storm drainage all appeared to be in good condition and functioning well at this time. The plumbing drainage system did not appear to have any problems. The domestic cold and hot water system and the plumbing system are shared with the Math Tower building. The restroom fixtures are in good condition. The domestic hot water to the building is supplied by a 1" line from a hot water tank. The hot water tank has a steam water heater and is located in room 001M. The domestic cold and hot water piping is copper and appears to be in good condition.

There is one passenger elevator that serves the general public, giving access to both floors. The elevator is in good condition and meets accessibility and fire codes.

A 3", high-pressure steam line from the power plant supplies steam to the building from the tunnel located at the southeast corner. The steam is reduced in pressure and converted to heating hot water in mechanical room 090M. The system supplies hot water for the heating coils of the VAV, CV and DDVAV systems, as well as to the unit heaters in mechanical rooms and the fan coil units in the stairwells and at the entrances. There were no complaints noted about the heating system.

Cooling is provided by VAV, CV and DDVAV systems. Chilled water is supplied by two 300 ton chillers located in the basement of the Math Tower. These chillers provide cooling capacity for the Science and Engineering Library, the Math Tower and the 209 West 18th Ave. building. The cooling system seems to be functioning as designed and there were no complaints noted about its cooling capacity. The heating and cooling system has pneumatic, electric and a DDC control systems that is tied into the central campus system.

Exhaust fan located in the penthouse remove air from restrooms and common areas.

ELECTRIC

Circuits number PGS3/PGN9 feed a 1500 KVA, 480/277 volt transformer and a 500 KVA , 208/120 volt transformer, located in room 060M that supply the electrical service to the Math Tower and the 209 West 18th building. Switchgear located in room 060M feeds the lighting and power distribution panels throughout both buildings. Panel sizes vary throughout the building depending on the load. At approximately 23 watts per square foot the building has more than an adequate power supply.

The building has 32-watt fluorescent tube throughout most of the building, and incandescent light fixtures in the lobby areas. The lighting level in first floor lobby area was very low due to many missing or burnout bulbs. There are an adequate number of convenience outlets in the building.

SAFETY STANDARDS

The 209 West 18th Ave. building is equipped with a manual fire alarm system consisting of pull stations at exits that provide local fire annunciation from the panel in room 001M to the horns and strobes located throughout the building. There are wet standpipes in the stairwells, there are sprinklers throughout the building and there is a Halon system for room 065.

There are lighted exit signs at each exit that are on an emergency circuit. There are emergency lights located throughout the building and in the stairwells. There is an emergency generator, located in room 050M, that supplies emergency power for 209 West 18th, the Science and Engineering Library and the Math Tower.

Automatic door openers are installed at the two south entrances of the building. These entrances give access to the first floor and the elevator.

ASBESTOS

This building was not covered in the Ohio Board of Regents Facilities Asbestos Inspection and Risk Assessment Program's report titled "Inventory of Friable

Asbestos Containing Material in Buildings of the Ohio State University (Main and Branch Campuses) and Recommendations for Corrective Action”, prepared by PEI Associates and dated Sept. 1986 because it was constructed after 1986.

PERIMETER

The sidewalks around the building are in good condition except for the curb at the northeast corner of the building. The posts of the address sign should be repainted. The steps at the north entrance need to be repaired and then sealed to prevent further deterioration. The grating over the areaway on the north side of the building needs to be cleaned of leaves and other debris.

Entrances to the building are well lighted and area, flood and street lighting appear to be distributed properly.

**Maintenance Projects (Less Than \$5000) INTERIOR
209 WEST EIGHTEENTH AVE. #004 JANUARY 31, 1999**

- 1 Install a reducing trip in the carpet at the top of the lobby stairway.
Workorder # 01-5064-334451-71
- 2 Replace the damaged ceiling tiles in the second floor labs and in the basement.
Workorder # 01-5064-334450-65
- 3 Clean vinyl and carpeted floors.
Workorder # 01-5063-032046-45
- 4 Clean slate tiles and seal.
Workorder #01-5063-032046-45
- 5 Repair wall in room 265 and outside room 170
Workorder # 01-5064-334450-65
- 6 Replace missing/burnout lights in the lobby area.
Workorder # 01-5064-334450-65
- 7 Place a grill over the filter at the entrance to room 160.
Workorder # 01-5064-334450-65

**Minor Maintenance Projects (Less Than \$5000) EXTERIOR
209 WEST EIGHTEENTH AVE. #004 JANUARY 31, 1999**

- 1 Repair the concrete curb at the northeast corner of the building.
Work order # 01-5063-032131-51
- 2 Clean leaves and debris from the grate over the areaway on the north side.
Workorder # 01-5063-032059-55
- 3 Repair caulking and flashing as needed.
Workorder # 01-5064-334558-73
- 4 Rehang the exterior door in room 050M.
Workorder # 01-5064-334553-72

Repair limestone steps and wall at the north entrance. Then seal with clear epoxy and anti-slip sand. Control # 5392
Seal cracks on the east wall. Control # 5392

BUILDING INFORMATION

Fac # **004**, Facility Name: **209 WEST EIGHTEENTH AVE.**, Date: *1/31/99*

Inspector: *AJR* Year Constructed: *1993*, Gross Sq. Ft: *25,070*

Net Sq. Ft: *17,917*, Replacement Cost: \$ *3,267,000* *

II. COMPONENT RATING

| COMPONENT | BUILDING COMPONENT PERCENTAGE OF TOTAL COST ** | BUILDING COMPONENT REPLACEMENT COST | BUILDING COMPONENT CONDITION VALUE MULTIPLIER | BUILDING COMPONENT CURRENT VALUE |
|----------------------|--|-------------------------------------|---|----------------------------------|
| Foundation | 5.13 | 167,554 | 85 | 141,877 |
| Columns and Beams | 13.86 | 452,689 | 97 | 437,642 |
| Exterior Walls | 2.93 | 95,829 | 84 | 80,505 |
| Ext. Windows & Doors | 4.01 | 131,103 | 95 | 124,123 |
| Roofing & Flashing | 2.65 | 86,422 | 85 | 73,466 |
| Partitions & Doors | 8.58 | 280,432 | 95 | 267,371 |
| Wall Finishes | 2.61 | 85,247 | 83 | 71,046 |
| Floor Finishes | 4.97 | 162,262 | 93 | 150,378 |
| Ceilings & Finishes | 7.07 | 231,048 | 82 | 188,708 |
| Conveying | 1.66 | 54,087 | 93 | 50,126 |
| Plumbing | 8.17 | 266,910 | 93 | 247,361 |
| Heating | 8.64 | 282,195 | 93 | 261,527 |
| Cooling and Vent. | 9.92 | 323,937 | 90 | 291,571 |
| Elect. Serv. & Dist. | 1.71 | 55,851 | 93 | 51,760 |
| Lighting and Power | 11.50 | 375,673 | 93 | 348,157 |
| Safety Standards | 6.60 | 215,762 | 90 | 194,204 |
| TOTALS | 100.00 | 3,267,000 | 91 | \$2,979,822 |

III. BUILDING RATING SUMMARY

Overall Building Rating = **91%**

* *Replacement Cost assigned September 1997 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 #:004

DATE: 1/31/99

INSPECTOR: AJR

COMPONENT RATING: (\$ 167,554) x (85%) = \$ 141,877

| | | |
|-------------------|-------------------------------|--------------------|
| Possible Value | Condition Value Multiplier | Component Value |
|-------------------|-------------------------------|--------------------|

SYSTEM DESCRIPTION

Sat Att

a. Footings:

- [] Interior Footings/Piers
- [] Interior Footings/Bearing Walls
- [] Perimeter Footings.....
- [] Grade Beams
- [] Piles
- [] Caissons.....

b. Foundation Wall Materials:

- [X] Concrete Cast-in-place *to the first floor*
- [] Concrete Block
- [] Stone
- [] Brick
- [] Other.....

c. Waterproofing and Underdrain:

- [] Coating
- [] Membrane.....
- [] Board
- [] Drain Tile..... *4" at perimeter*

d. Slab on Grade:

- [] Plain.....
- [] Reinforced

e. Ground/Basement Floor Slab:

- [] Plain.....
- [] Reinforced

f. Special Substructures:

- [] *utility tunnel under the lobby area*

COMMENTS:

The foundation wall on the east side has a major vertical crack. Part of the east basement wall consists of a stone wall from the old Power House.

COLUMNS AND BEAMS

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

COMPONENT RATING: (\$ 452,689) x (97%) = \$ 437,642

| | | |
|----------|------------------|-----------|
| Possible | Condition | Component |
| Value | Value Multiplier | Value |

SYSTEM DESCRIPTION

Sat Att

a. Columns and Beams:

- Reinforced Concrete*to the first floor*
- Precast Concrete.....
- Steel
- Fireproofing
- Wood.....
- Other

b. Floor Joists:

- Concrete
- Steel Trusses
- Wood
- Other

d. Floor Decks:

- Concrete Slab.....
- Precast Slab.....
- Metal Deck w/concrete fill....*second floor and penthouse*
- Wood

e. Roof Joists:

- Concrete
- Steel
- Wood

f. Pitched Roof System:

- Pitch []3/12, [X]6/12, []10/12.....
- Dormers
- Steel Beams and Purlins
- Wood Rafters
- Fireproofing
- Underlayment.....
- Insulation.....*3.5" board*
- Ventilation
- Other*metal deck*

g. Flat Roof System:

- Slope*1/4"/foot*
- Concrete Deck.....
- Precast Slab.....

- Metal Deck w/concrete fill
- Metal Deck w/insulation.....
- Wood Deck.....
- Insulation
- Other.....

COMMENTS:

There were no problems noted with the columns and beams other than some fireproofing material is separating from the beams.

EXTERIOR WALLS

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

COMPONENT RATING: (\$ 95,829) x (84%) = \$ 80,505

| | | | | |
|-------------------|-----|-------------------------------|------|--------------------|
| Possible Value | x (| <u>84%</u>) | = \$ | <u>80,505</u> |
| Value | | Condition Value Multiplier | | Component Value |

SYSTEM DESCRIPTION

Sat Att

a. Walls:

- [] [] Concrete []CIP []PRECAST
- [] [] Concrete Block/brick.....
- [] [X] Brick []MASONRY [X]VENEER
- [] [] Veneer.....
- [] [] Window/Curtainwall
- [] [] Metal Siding
- [X] [] Other..... *drivit wall at penthouse*

b. Wall Lintels Over Openings:

- [] [] Concrete []PRECAST []CIP
- [] [] Limestone
- [] [] Brick Masonry
- [X] [] Steel*at windows and doors*
- [] [] Wood
- [] [] Other.....

c. Wall Trim:

- [X] [] Limestone*at base of arches*
- [X] [] Brick ..*arches at windows and in north, east, south walls*
- [] [] Marble.....
- [] [] Wood
- [] [] Other.....

d. Finishes:

- [X] [] Plain.....
- [X] [] Stucco
- [] [] Paint.....
- [] [] Parging.....
- [] [] Exposed Aggregate
- [] [] Drivit
- [] [] Other.....

e. Exterior Wall Backing System:

- [] [] Concrete.....
- [X] [] Concrete Block
- [] [] Brick Masonry
- [] [] Ceramic Glazed Clay Tiles.....

[] [] Metal Studs.....
[] [] Wood Studs

COMMENTS:

*The exterior wall on the east side has several vertical stress cracks that should be sealed.
The arches at the second level of the east wall have bowed out and need to be secured.*

EXTERIOR WINDOWS AND DOORS

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

COMPONENT RATING: (\$ 131,103) x (95%) = \$ 124,123

| | | |
|-------------------|-------------------------------|--------------------|
| Possible Value | Condition Value Multiplier | Component Value |
|-------------------|-------------------------------|--------------------|

SYSTEM DESCRIPTION

Sat Att

a. Window materials:

- Wood
- Steel
- Alum
- PVC
- Other

b. Windows type & number:

- Double Hung
- Awning
- Casement
- Pivoted
- Sliding
- Fixed66
- Other

c. Window glazing:

- Single pane
- Double pane

d. Window Wall and/or Store Front:

- Store Front
- Vestibule*at main entrances*
- Single pane
- Double pane
- Other

e. Door Materials:

- Wood
- Steel *one at the lecture hall exit*
- Alum
- Stainless Steel*at main and southwest entrances*

f. Doors type & number:

- Vestibule *two double*
- Double
- Exit2
- Stair Exit
- Garage

- Special*exit to the Math Tower*
- g. Hardware:**
- Automatic opener*at the south entrances*
- Push Bar Openers wt Closures
- Key Cards

COMMENTS:

The double glazed, fixed type windows are in good condition. The exterior doors are also in good condition.

ROOFING

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|--|
| COMPONENT RATING: (\$ <u>86,422</u>) x (<u>85%</u>) = \$ <u>73,466</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|--|

SYSTEM DESCRIPTION

Sat Att

a. Roof Covering:

- [] [] Built-up []asphalt []Coal Tar []Modified
- [] [] Built-up w/gravel []asphalt []Coal Tar
- [X] [] Asphalt Roll.....*modified 33,269 SF*
- [] [] Asphalt Shingle
- [] [] Copper
- [] [] EPDM.....
- [X] [] Other.....*coated steel, 5,220 SF*

b. Flashing:

- [X] [] Materials: []Cu []Galv []Al []EPDM [X]SS []PVC....
- [X] [] Counter*589 LF*
- [X] [] Cap.....*589 LF*
- [X] [] Reglet.....*589 LF*
- [] [] Valley & Ridge.....*210 LF*

c. Gravel Stop & Edge Strips:

- [X] [] Type [X]SS []Galv []Al []Cu []PVC*100 LF*

d. Drainage:

- [] [] Gutters w/ Interior Downspouts
- [] [] Scuppers w/o Exterior Downspouts
- [X] [] Drains w/ Interior Storm Drains*360 LF*
- [X] [] Emergency Overflow.....

e. Parapets:

- [] [] Concrete.....
- [X] [] Brick*658 LF*
- [] [] Precast
- [] [] Other.....

f. Parapet Caps:

- [] [] Metal []SS []Galv []Al []Cu []PVC
- [] [] Tile
- [X] [] Limestone*658 LF*
- [] [] Precast
- [] [] Other

h. Roof accessories:

- [] Lightning Protection.....
- [] Roof Curbs
- [] Equipment Frames.....
- [] Pitch Pockets
- [] Other

COMMENTS:

The roof was installed in 1993, however, there are deficiencies that have been identified in the Archatas report. The report identifies caulking and sealant failures that need to be corrected to prevent further deterioration.

PARTITIONS AND DOORS

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|--|
| COMPONENT RATING: (\$ <u>280,432</u>) x (<u>95%</u>) = \$ <u>267,371</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|--|

SYSTEM DESCRIPTION

Sat Att

a. Partition Framing:

- Concrete Block
- Clay Tile Block.....
- Glazed Clay Tile Block
- Masonry
- Wood Stud.....
- Metal Stud
- Other

b. Special partitions and Walls:

- Demountable.....
- Toilet *metal*
- Screen Walls.....
- Glass
- Gate.....
- Other

c. Wall Material:

- Plaster
- Drywall
- Glass
- Wood Paneling
- Composite Paneling.....
- Steel Panels.....
- Tile/Glazed *in restrooms*
- Other

d. Interior Doors & Frames:

- Met Door/Met Frame.....
- Wood Door/Wood Frame
- Wood Door/Metal Frame
- Glazing
- Roll-up.....
- Sliding
- Other

e. Hardware:

- [] Door Knobs Levers
- [] Door Closures
- [] Kick/Push Plates
- [] Security & Detection*for computer room 065*
- [] Automatic Openers*at the south entrances*
- [] Fire Door Magnets*at doors to the Math Tower*
- [] Other

COMMENTS :

The partitions and doors are in good condition except for cracked drywall at the door stop of the south entrance to the south lecture hall and a hole in the drywall in room 275.

WALL FINISHES

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|---|
| COMPONENT RATING: (\$ <u>85,247</u>) x (<u>83%</u>) = \$ <u>71,046</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|---|

SYSTEM DESCRIPTION

Sat Att

a. Wall Finishes:

- [] [X] Paint
- [] [] Vinyl Wall Coverings
- [] [] Prefinished Paneling
- [] [] Cork
- [] [] Wallpaper
- [X] [] Ceramic Glazed Tile *in restrooms*
- [] [] Marble
- [] [] Stone
- [] [] Trim & Wainscot
- [] [] Decoration.....
- [] [] Glass.....
- [] [] Other

COMMENTS:

Wall finishes are not in good condition and the classrooms on the second floor need to be repainted.

FLOOR FINISHES

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| | | | | | | |
|--|------------------|-----------|-----------|-------|------------------|-------|
| COMPONENT RATING: (\$ <u>162,262</u>) (<u>93%</u>) = \$ <u>150,378</u> | | | | | | |
| <table style="margin: auto;"> <tr> <td style="text-align: center;">Possible</td> <td style="text-align: center;">Condition</td> <td style="text-align: center;">Component</td> </tr> <tr> <td style="text-align: center;">Value</td> <td style="text-align: center;">Value Multiplier</td> <td style="text-align: center;">Value</td> </tr> </table> | Possible | Condition | Component | Value | Value Multiplier | Value |
| Possible | Condition | Component | | | | |
| Value | Value Multiplier | Value | | | | |

SYSTEM DESCRIPTION

Sat Att

- a. Carpet:**
- [] [X] Rolled *in lecture halls and in the second floor lobby*
- [] [] Tile.....
- b. Concrete Topping:**
- [X] [] Clear Sealant.....*on equipment room floors*
- [] [] Antislip
- [] [] Epoxy.....
- c. Resilient:**
- [] [X] Vinyl Composition Tile..... *in corridors and labs*
- [] [] Vinyl/Plastic Tile.....
- [] [] Asphalt Asbestos Tile.....
- [] [] Linoleum Tile
- [] [] Vinyl Roll
- [] [] Rubber
- [] [] Other
- [] [] **d. Ceramic Tile** []Mosaic []Quarry []Pavers
- [] [X] **f. Masonry** []Marble []Granite [X]Slate []Brick.....
- [] [] **g. Terrazzo** []Marble []Granite
- [] [] **h. Wood** []Tiles []T&G Hardwood []Planking
- [] [] **i. Pedestal** []Vinyl Tiles []Grills []Supply Air []Vent....
- j. Base Molding:**
- [X] [] Vinyl.....
- [X] [] Wood
- [] [] Terrazzo.....
- [X] [] Ceramic Tile
- [] [] Masonry.....

COMMENTS:

Vinyl tiles are used in the four classrooms and in the corridors. Slate is used in the main entrance. Carpeting is used in the lecture halls and in the second floor lobby. The carpeting is frayed at the stairs on the second floor and should be repaired. The vinyl tiles should be cleaned and the slate tiles in the lobby should be cleaned and sealed.

CEILINGS AND FINISHES

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| | | | | | | |
|--|------------------|-----------|-----------|-------|------------------|-------|
| COMPONENT RATING: (\$ <u>231,048</u>) x (<u>82%</u>) = \$ <u>188,708</u> | | | | | | |
| <table style="margin: auto;"> <tr> <td style="text-align: center; padding: 0 10px;">Possible</td> <td style="text-align: center; padding: 0 10px;">Condition</td> <td style="text-align: center; padding: 0 10px;">Component</td> </tr> <tr> <td style="text-align: center; padding: 0 10px;">Value</td> <td style="text-align: center; padding: 0 10px;">Value Multiplier</td> <td style="text-align: center; padding: 0 10px;">Value</td> </tr> </table> | Possible | Condition | Component | Value | Value Multiplier | Value |
| Possible | Condition | Component | | | | |
| Value | Value Multiplier | Value | | | | |

SYSTEM DESCRIPTION

Sat Att

a. System Type:

- Exposed *in equipment room*
- Applied to Structure
- Suspended Steel Grid
- Suspended Aluminum Grid
- Suspended Sealed Grid.....
- Suspended Concealed Spline.....

b. Materials:

- Drywall *in first floor lobby*
- Plaster
- Mineral Fiber Board *throughout*
- Fiberglas Board.....
- Metal Pan Tile
- Other

c. Finishes:

- Paint..... *lobby ceiling*
- Prefinished Paint vinyl Fabric
- Other

d. Openings & Inserts:

- Air Distribution
- Lighting Fixtures
- Access Panels
- Sprinklers.....
- Smoke Detectors.....
- Speakers.....
- Skylights
- Other

COMMENTS:

Most areas have 2 X 2 ceiling tiles with the exception of the main lobby area where there is a drywall ceiling. Many of the ceiling tiles are stained and should be replaced.

CONVEYING

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| | | |
|--|-------------------------------|--------------------|
| COMPONENT RATING: (\$ <u>54,087</u>) x (<u>93%</u>) = \$ <u>50,126</u> | | |
| Possible Value | Condition Value Multiplier | Component Value |

SYSTEM DESCRIPTION

Sat Att

a. Elevators:

- [] Number..... *one Dover*
- [] Type.....*Passenger*
- [] Speed *125 FPM*
- [] Capacity (lbs.)..... *2,500 Lbs.*
- [] Dimensions..... *56"x80"*
- [] Door Operation: []Center [X] To Side
- [] Accessible Codes.....
- [] Fire Codes.....

b. Elevators:

- [] [] Number.....
- [] [] Type.....
- [] [] Speed
- [] [] Capacity (lbs.).....
- [] [] Dimensions.....
- [] [] Door Operation: []Center [] To Side
- [] [] Accessible Codes.....
- [] [] Fire Codes.....

c. Lifts and Hoists:

- [] [] Number.....
- [] [] Type.....

d. Moving Stairs and Walks:

- [] [] Number.....
- [] [] Type.....

e. Conveyors:

- [] [] Number.....
- [] [] Type.....

COMMENTS:

The elevator is 6 years old and is in good condition.

MECHANICAL/PLUMBING

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

COMPONENT RATING: (\$ 266,910) x (93%) = \$ 247,361

| | | |
|----------|------------------|-----------|
| Possible | Condition | Component |
| Value | Value Multiplier | Value |

SYSTEM DESCRIPTION

Sat Att

a. Services Available:

- Cold Water4" DWS
- Backflow Valve
- Hot Water2-1/2" DHW
- Natural Gas.....
- Compressed Airfrom the Math Tower
- Other.....

b. Piping & Fittings:

- Cast Iron
- Vitrified Clay
- Copper Pipe
- Copper Tubing.....
- Steel
- Galv. Steel
- Other.....

c. Water Heaters:

- Electric.....
- Steam Converter/Tank..... room 001M
- Steam Instantaneous
- Central Hot Water.....

d. Drainage:

- Storm Drains..... 1 @ 8"
- Sanitary Drainage 1 @ 6"
- Floor Drains
- Sump Pumps

e. Fixtures: Number

- Water Closets 13
- Urinals 3
- Lavatory Sinks 8
- Kitchen Sinks
- Service Sinks 2
- Showers
- Electric Water Coolers 2

- f. Sprinkler Systems:**
- Wet *throughout the building*
- Dry.....
- Carbon Dioxide
- Halon*for computer room 065*
- g. Standpipe Systems:**
- []Wet []Dry
- Fire Hose Valves []2.5" []1.25"
- Hose Cabinets, Hoses []Installed []Removed

COMMENTS:

The plumbing and the fixtures are all in good condition.

MECHANICAL/HEATING

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|---|
| COMPONENT RATING: (\$ <u>282,195</u>) x (<u>93%</u>) = \$ <u>261,527</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|---|

SYSTEM DESCRIPTION

Sat Att

- a. Heat Source:**
- Central Plant Steam2" HPS
- Central Plant Hot Water
- b. System Type:**
- Steam 2" in room 001M
- Hot Water 6" in room 001M
- Warm Air.....
- c. Air Handling Units:**
- Multizone Preheat Heating Reheat.....
- VAVDual Duct Preheat Heating Reheat.....
- Make-up Air Preheat Heating Reheat.....
- Variable Volume Air Preheat Heating Reheat
- Constant Volume Air Preheat Heating Reheat....
- Other.....
- d. Air Filters:**
- Prefilter Multi DDAHU MUAHU VAVAHU CAV
- Bagfilter Multi DDAHU MUAHU VAVAHU CAV
- Other.....
- e. Space Equipment:**
- Radiators.....
- Convectors.....
- Unit Heaters..... *in mechanical room*
- Reheat Coils
- DD Boxes
- CAV Boxes.....
- 2-Pipe Fan Coil..... *at entrance and in stairwells*
- Other.....
- f. Control Type:**
- Pneu Electric DDC DDC Upgrade.....

COMMENTS:

There were no complaints noted regarding the heating system and the system is functioning as designed.

COOLING/VENTILATING

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|---|
| COMPONENT RATING: (\$ <u>323,937</u>) x (<u>90%</u>) = \$ <u>291,571</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|---|

SYSTEM DESCRIPTION

Sat Att

- a. System/Capacity:**
 - [] Water
 - [] DX
- b. Chillers Capacity/Year/Refrigerant/Manufacturer:**
 - [] Centrifugal
 - [] Reciprocating.....
 - [] Absorption
 - [] Screw*from the Math Tower*
- c. Condenser Side:**
 - [] Type/Capacity []CW []DX
- d. Air Handling Units:**
 - [] Multizone []CW []DX []HUMD.....
 - [] Dual Duct [X]CW []DX []HUMD.....
 - [] Make-up Air []CW []DX []HUMD.....
 - [] Variable Volume [X]CW []DX []HUMD.....
 - [] Constant Volume [X]CW []DX []HUMD
 - [] Other.....
- e. Additional Air Filters:**
 - [] Postfilter []Multi []DDAHU []MUAHU []VAVAHU []CAV
 - [] Other []HEPA []BAG []CARTRIDGE []CHARCOAL
- f. Direct Expansion: Number**
 - [] Window units
 - [] Thru-the-wall.....
 - [] Single zone
 - [] Other
- g. Distribution Boxes:**
 - [] VAV []FC []REHEAT
 - [] CAV []FC []REHEAT.....
 - [] DUAL DUCT []FC [X]REHEAT
- h. Special Systems:**
 - [] Type.....
 - [] Capacity.....
- i. Control Systems:**
 - [] [X]Pneu [X]Electric [X]DDC []DDC Upgrade.....

j. Fans:

- Exhaust equipment..... *3 Exhaust fan*
- Recirculating..... *2 Recirculating fans*

COMMENTS:

The Trane chillers, that supply chilled water to 209 West 18th Ave., are located in the basement of the Math Tower.

ELECTRICAL SERVICE AND DISTRIBUTION

FAC #: 005

DATE: 1/31/99

INSPECTOR: AJR

| | | |
|--|-------------------------------|--------------------|
| COMPONENT RATING: (\$ <u>55,851</u>) x (93%) = \$ <u>51,760</u> | | |
| Possible Value | Condition Value Multiplier | Component Value |

SYSTEM DESCRIPTION

a. Service:

Substation: Buckeye, McCracken Power Plant AEP

Primary Voltage: 13,200 Volts, Volts

Switch Gear Circuit No.: *PGS3/PGN9*

Transformer:

| Manufacture | Type | KVA | Secondary/Voltages | Location |
|-------------|----------------|-------------|--------------------|------------------|
| <i>WEST</i> | <i>silicon</i> | <i>1500</i> | <i>480/277</i> | <i>room 060M</i> |
| <i>WEST</i> | <i>silicon</i> | <i>500</i> | <i>208/120</i> | <i>room 060M</i> |

b. Distribution System:

1. Motor Control Center (MCC) Room *560M*

Panelboard Fused, Circuit Breakers

Voltage 480/3, 277/3, 208/3, 240/1

Amperage 1200A, 800A, 600A, 400A, 200A

2. Lighting Room *060M*

Panelboard Fused, Circuit Breakers

Voltage 480/3, 277/3, 208/3, 240/1

Amperage 800A, 400A, 250A, 200A, 150A, 100A

3. Building Power Room *060M*

Panelboard Fused, Circuit Breakers

Voltage 480/3, 277/3, 208/3, 240/1

Amperage 800A, 400A, 250A, 200A, 150A, 100A

4. Isolated Ground Power Room *060M*

Panelboard Fused, Circuit Breakers

Voltage 480/3, 277/3, 208/3, 240/1

Amperage 800A, 400A, 250A, 200A, 150A, 100A

c. Conduit and wire:

Conduit Steel, Aluminum, PVC, Flexible

Conductor Copper, Aluminum, MIT

Wire: PVC Cover, Romex, Armored Cable(BX)

d. Emergency System:

Battery backup Room

Emergency Panel Room *060M and computer room*

UPS Room

e. Emergency Generator: *in basement of the 209 West 18th Ave. room 050M*

COMMENTS:

The electrical distribution system is 6 years old and is in good condition. There is an emergency generator located in the basement of 209 West 18th Ave. in room 050M. which provides emergency backup power to the elevator and emergency lights The transformers that supply power to 209 West 18th Ave. and the Math Tower are more than adequate for the building load.

ELECTRICAL LIGHTING AND POWER

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| |
|--|
| COMPONENT RATING: (\$ <u>375,673</u>) x (<u>93%</u>) = \$ <u>348,157</u> <div style="display: flex; justify-content: space-around; font-size: small;"> Possible Value Condition Value Multiplier Component Value </div> |
|--|

SYSTEM DESCRIPTION

Sat Att

a. Lighting (lamp type):

- [] [] Fluor 40 watt.....
- [X] [] Fluor 32 watt..... *in most of the building*
- [] [] Fluor Can
- [X] [] Incandescent *in the lobby areas*
- [] [] HID []Mercury []HPS []Metal Halide
- [] [] Low Voltage (12V).....
- [] [] Other

b. Lighting Levels

- [X] [] Halls..... *lobby areas*
- [X] [] Rooms.....
- [X] [] Mechanical Rooms

c. Fixture Condition

- [X] [] Fixtures
- [] [X] Bulbs..... *need to be replaced*
- [X] [] Fixture Lens.....

d. Receptacles & Switches:

- [X] [] Wall Outlet 20A
- [] [] GFIC Breakers
- [X] [] Switches.....
- [X] [] Cover Plates.....

c. Special:

- [X] [] Lightning Protection
- [X] [] Communication [X]Clock []Public Address [X]Bells
- [X] [] Alarm [X]Fire [X]Security
- [X] [] Telecommunication [X] Phones [X]Data []Cable TV
- [X] [] Data Systems
- [X] [] Fiber Optics

COMMENTS:

The building has 32 watt fixtures throughout, with incandescent lighting in the first and second floor lobbies. There are many incandescent lights in the lobby areas that need to be replaced.

SAFETY STANDARDS

FAC #: 004

DATE: 1/31/99

INSPECTOR: AJR

| | | | | | | |
|--|------------------|-----------|-----------|-------|------------------|-------|
| COMPONENT RATING: (\$ <u>215,762</u>) x (<u>90%</u>) = \$ <u>194,204</u> | | | | | | |
| <table style="margin: auto; border: none;"> <tr> <td style="padding: 0 10px;">Possible</td> <td style="padding: 0 10px;">Condition</td> <td style="padding: 0 10px;">Component</td> </tr> <tr> <td style="padding: 0 10px;">Value</td> <td style="padding: 0 10px;">Value Multiplier</td> <td style="padding: 0 10px;">Value</td> </tr> </table> | Possible | Condition | Component | Value | Value Multiplier | Value |
| Possible | Condition | Component | | | | |
| Value | Value Multiplier | Value | | | | |

SYSTEM DESCRIPTION

Sat Att

a. Exits:

Stair Construction:

- [] [] concrete
- [X] [] steel *with concrete fill*
- [] [] wood.....
- [X] [] Number of Exit Stairs... *to the north and south vestibules*
- [X] [] Number of Other Exits *three*

b. Fire Rating:

- [X] [] Construction Type: I_ II_ III_X IV_ V_ VI___.....
- Building Height: *48 ft, 2 stories*

c. Extinguishing Systems:

- [X] [] Portable.....
- [X] [] Standpipe
- [] [] Hose Cabinets.....
- [] [] Hoses
- [X] [] Sprinklers..... *100%*
- [X] [] Gas Suppression *to the computer room 065*
- [] [] Other

d. Detection & Alarm Systems:

- [X] [] Pull Stations.....
- [] [] Bells.....
- [X] [] Horns
- [X] [] Strobes
- [X] [] Annunciator Panel *off lobby*
- [X] [] Smoke Detectors.....
- [] [] Halls
- [X] [] Elevators.....
- [] [] Rooms
- [X] [] Equip Rooms.....
- [X] [] Ducts

e. Lighting Systems:

- [X] [] Exit Signs []BATTERY [X]EMC
- [X] [] Exit Lighting []BATTERY [X]EMC
- [X] [] Emergency Lighting []BATTERY [X]EMC

- Emergency Generator *in basement, room 050M*
- f. Lightning Protection**

COMMENTS:

Exit and emergency lighting has been installed in halls, stairs and at exits. There are sprinklers throughout the entire building.

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 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 State of Ohio Division of Factory and Building Inspection at the time of construction approved the buildings inspected. 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 |
| DDAHU | 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) |
| MBH..... | THOUSAND BTU PER HOUR |
| MCC | MOTOR CONTROL PANEL |
| 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
Reduced Scale Building Floor Plans
C-1 Building Space Assignments