



FAIRLANE

THE HENRY FORD ESTATE

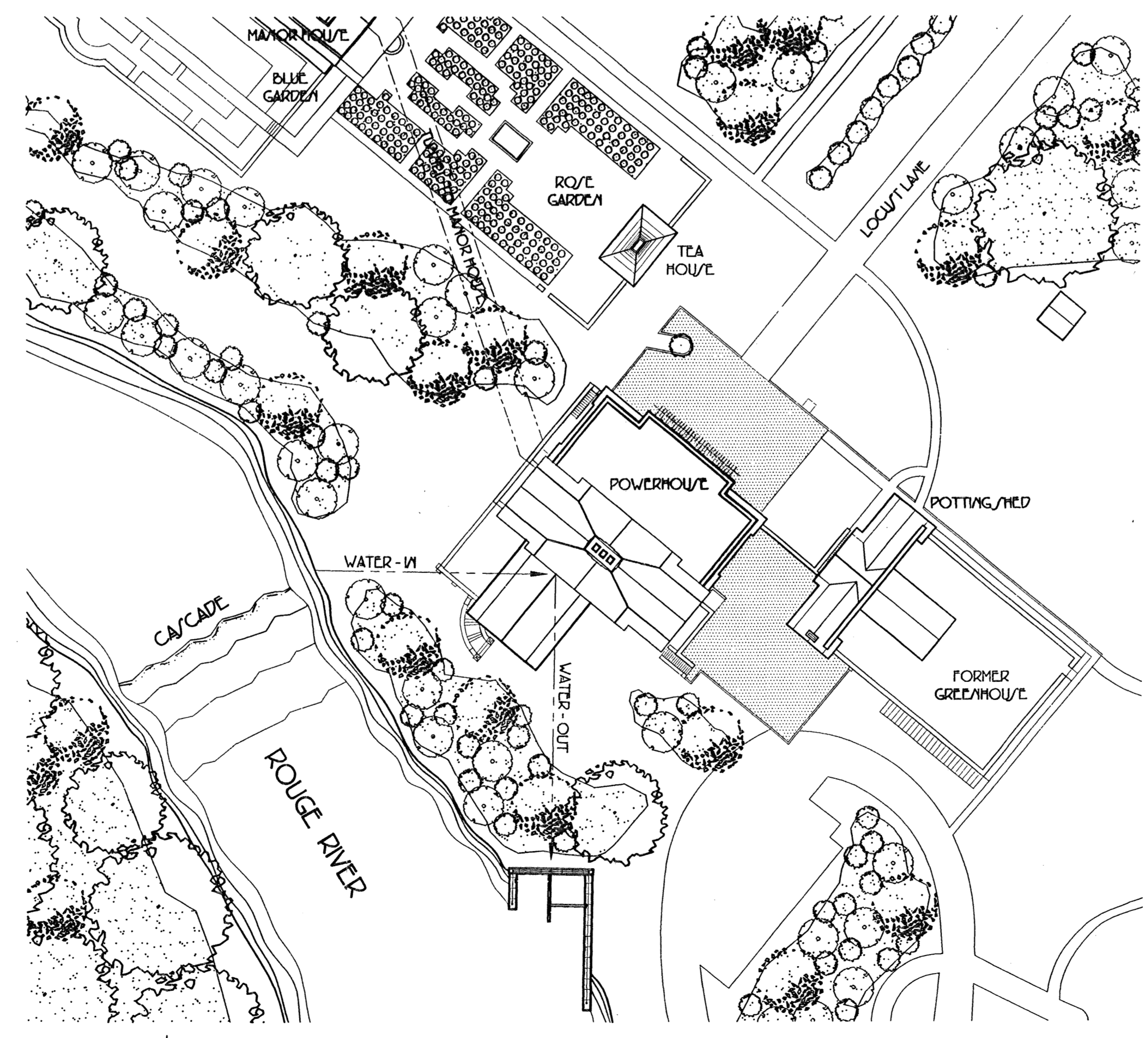
DEARBORN, MICHIGAN

THE STORY

CONSTRUCTION OF FAIRLANE, THE HENRY FORD ESTATE, BEGAN IN 1914 WITH THE GENERATOR WING OF THE POWERHOUSE. HENRY FORD WOULD NOT ALLOW A MINUTE TO GO BY IN HIS NEW HOME WITHOUT THE COMFORTS OF ELECTRICITY. THOMAS EDISON, A LONG TIME FRIEND OF THE FORDS AND LIFELONG INSPIRATION TO HENRY, DESIGNED THE POWERHOUSE'S HYDROELECTRIC GENERATING SYSTEM. EDISON'S RUN OF THE RIVER POWER PLANT WAS POWERFUL ENOUGH, IN ITS DAY, TO PROVIDE POWER FOR THE ENTIRE CITY OF DEARBORN. THE BRONZE PLAQUE AFFIXED TO CORNERSTONE DEDICATES THE BUILDING TO EDISON AS FORD'S AGENT OF INFLUENCE. DURING THE DEDICATION CEREMONY HENRY STATED:

I WANT THESE LARGE STONES OF THIS OUTDOOR SPIRAL STAIRS TO TELL THE WORLD FOR GENERATIONS TO COME TO GO DOWN AND SEE WHO THE CORNERSTONE OF MY SUCCESS WAS - WHO GAVE ME NOT SIMPLY WORDS, BUT ALSO THE SLAP ON THE TABLE THAT SIGNALLED BOTH APPLAUSE AND ENCOURAGEMENT. APPLAUSE FOR MY IDEA THAT IT WAS INDEED THE GASOLINE CAR THAT WOULD PROPEL THE WORLD INTO THE AUTO AGE, AND ENCOURAGEMENT NOT TO HE STATE, NOT TO DOUBT, BUT TO ROLL UP MY SLEEVES AND EMBRACE THE STRUGGLES THAT REALIZATION OF MY IDEA OR ANY IDEA ENTAILS. GENIUS TRULY IS AS HE HAS SAID: 'ONE PERCENT INSPIRATION AND NINETY NINE PERCENT PERSPIRATION'. THIS POWERHOUSE THUS STARTED WILL PROVIDE THE FIRES FOR THE DAWN OF MANY IDEAS. (D. WERLING, A HEARTHIDE PERSPECTIVE, P.9)

THE ESTATE WAS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, AND WAS ALSO RECOGNIZED AS AN HISTORIC LANDMARK ON NOVEMBER 13, 1966.



THE POWERHOUSE

DRAWING INDEX

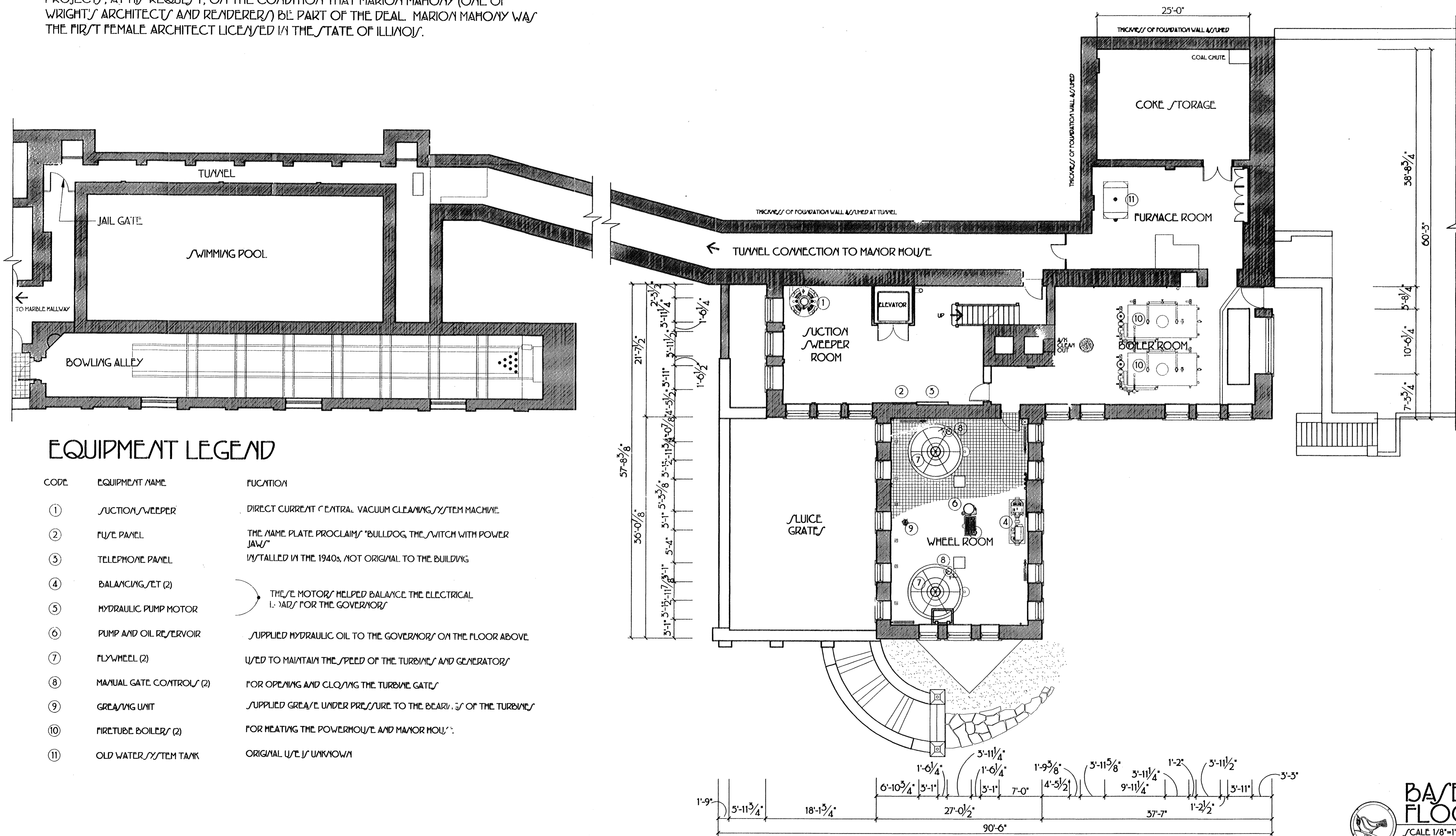
1. COVER SHEET-SITE PLAN
2. BASEMENT TWO FLOOR PLAN
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4. FIRST FLOOR PLAN-GARAGE
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13. DETAILS-SELECTED

TEAM MEMBERS:

- | | |
|--------------------|----------------|
| MARC BELJAN | BOB HOUYER |
| KELLEY COEY | YOUNG KANG |
| SARA EMHOFF | BRANDI KOVACH |
| RYAN GRASS | ANDY LUNG |
| JEREMY GREENWOOD | CHRIS MICHAELS |
| JARED GRUTTADAURIA | SARAH NORTH |
| JON HIATT | |

KENT STATE UNIVERSITY
SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
PROFESSOR ELIZABETH MURPHY

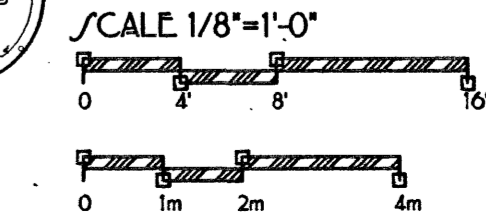
THE DESIGN OF THE POWERHOUSE WAS BEGUN IN 1909 WHEN HENRY FORD VISITED FRANK LLOYD WRIGHT TO DISCUSS FORD'S PROPOSED COUNTRY HOUSE. WRIGHT'S UNCERTAINTY REGARDING THE PROPOSAL BECAME CLEAR SHORTLY AFTER THEIR MEETING, WHEN WRIGHT LEFT FOR EUROPE WITH MARGARET MAMAH CHENEY, THE WIFE OF A CLIENT. THE FIRM OF VONHOLT AND FYFE ASSUMED FRANK LLOYD WRIGHT'S PROJECTS, AT HIS REQUEST, ON THE CONDITION THAT MARION MAHONY (ONE OF WRIGHT'S ARCHITECTS AND RENDERERS) BE PART OF THE DEAL. MARION MAHONY WAS THE FIRST FEMALE ARCHITECT LICENSED IN THE STATE OF ILLINOIS.



EQUIPMENT LEGEND

CODE	EQUIPMENT NAME	FUNCTION
①	SUCTION SWEEPER	DIRECT CURRENT CENTRAL VACUUM CLEANING SYSTEM MACHINE
②	FUSE PANEL	THE NAME PLATE PROCLAIMS "BULLDOG THE SWITCH WITH POWER JAW"
③	TELEPHONE PANEL	INSTALLED IN THE 1940s, NOT ORIGINAL TO THE BUILDING
④	BALANCING SET (2)	THE/E MOTOR HELPED BALANCE THE ELECTRICAL LOADS FOR THE GOVERNORS
⑤	HYDRAULIC PUMP MOTOR	
⑥	PUMP AND OIL RESERVOIR	SUPPLIED HYDRAULIC OIL TO THE GOVERNORS ON THE FLOOR ABOVE
⑦	FLYWHEEL (2)	USED TO MAINTAIN THE SPEED OF THE TURBINE AND GENERATORS
⑧	MANUAL GATE CONTROLS (2)	FOR OPENING AND CLOSING THE TURBINE GATES
⑨	GREASING UNIT	SUPPLIED GREASE UNDER PRESSURE TO THE BEARINGS OF THE TURBINES
⑩	FIRETUBE BOILERS (2)	FOR HEATING THE POWERHOUSE AND MAJOR HOUSE
⑪	OLD WATER SYSTEM TANK	ORIGINAL USE IS UNKNOWN

BASEMENT TWO FLOOR PLAN



LIBRARY OF CONGRESS INDEX NUMBER
 HISTORIC AMERICAN BUILDING SURVEY SHEET 2 OF 13 SHEETS
 SURVEY NUMBER MI-422-A
 NAME AND LOCATION OF STRUCTURE FAIR LANE POWERHOUSE WAYNE COUNTY, MICHIGAN
 4901 EVERGREEN RD., DEARBORN
 HENRY FORD LITL PROJECT 2002
 KUTVATE UNIVERSITY SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
 NATIONAL PARK SERVICE UNITED STATES DEPARTMENT OF THE INTERIOR
 DRAWN BY: KELLEY COREY

MARION'S DESIGN FOR THE ESTATE WAS ONE OF PURE PRAIRIE SCHOOL ARCHITECTURE AND MET WITH HENRY FORD'S APPROVAL. HOWEVER, CONTROVERSY AROSE SHORTLY AFTER FOUNDATIONS WERE IN PLACE. ACCORDING TO LOCAL LEGEND, THE FORDS RETURNED TO DEARBORN AFTER A EUROPEAN VACATION REQUESTING BARONIAL EMBELLISHMENTS. THIS STORY IS NOT CONFIRMED, BUT IT IS TRUE THAT, UPON THE FORDS' RETURN, MAHONY AND VON HOLST AND FYTE WERE REPLACED BY AN INTERIOR DESIGNER, WILLIAM H. VAN TINE OF PITTSBURGH.

TODAY, THE BUILDINGS AT FAIRLAKE STAND, A BIT CONFUSED, AS AN ARCHITECTURAL COLLABORATION OF GRACEFUL PRAIRIE-STYLE EAVES, AND MASSIVE CREMELLATED STONE ROOF LINES. THE SOUTHWEST WING OF THE POWERHOUSE AND THE POOL WING ON THE MAJOR HOUSE ARE TH PORTIONS OF THE ESTATE THAT REFLECT, MOST ACCURATELY, MARION MAHONY'S ORIGINAL DESIGN FOR THE ESTATE.

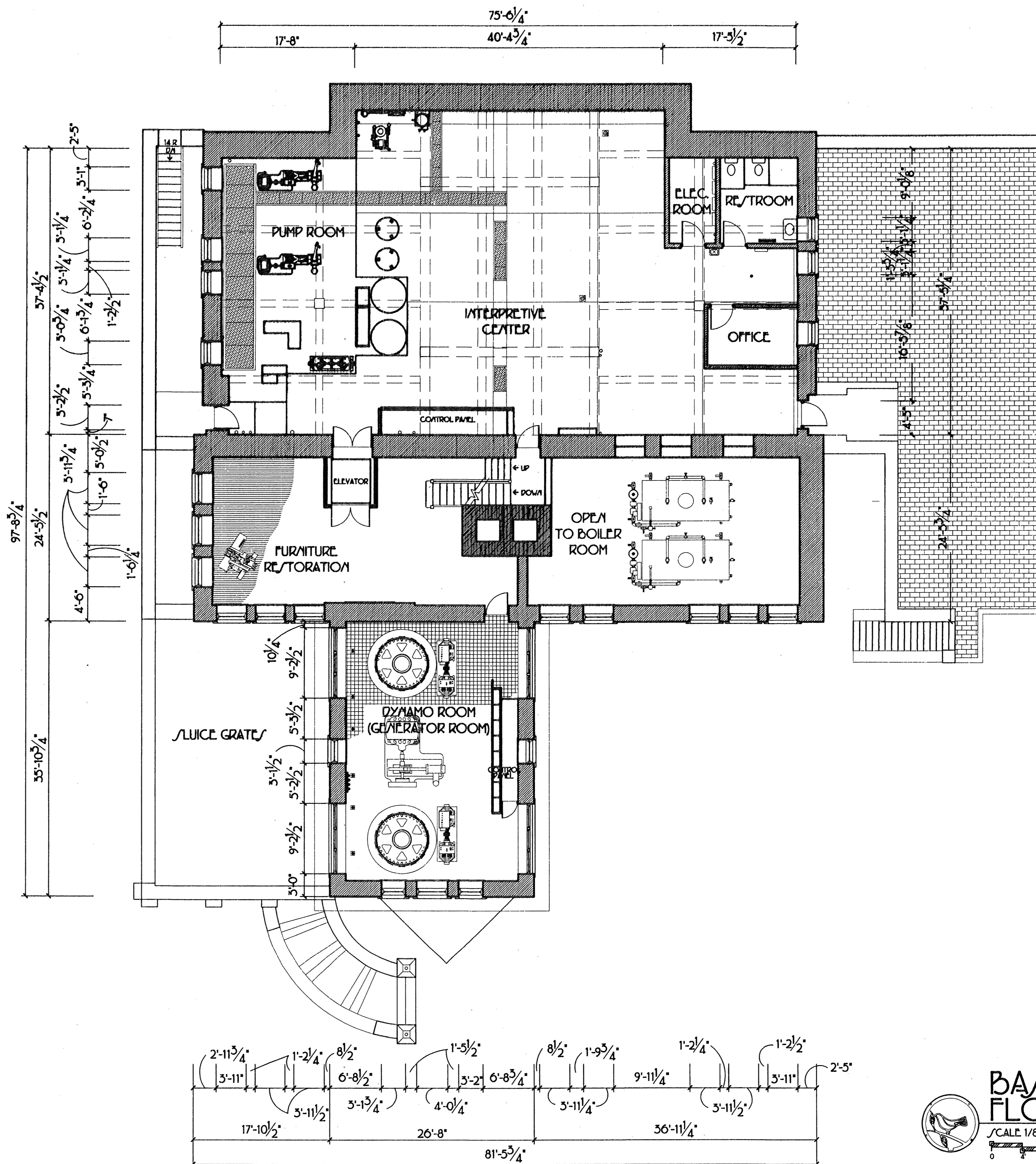
BIRDS WERE HENRY FORD'S PASSION, AND HIS IDEAL LANDSCAPE WOULD BE A NATURAL HABITAT FOR DEARBORN'S FEATHERED RESIDENTS. FAMED LANDSCAPE ARCHITECT JES JENSEN DESIGNED MUCH OF THE ESTATE GROUNDS AS A PLUM RESERVE FILLED WITH WILDLIFE. JENSEN BELIEVED THAT BEAUTY IN THE LANDSCAPE CAME FROM CAREFUL ARRANGEMENT OF NATIVE PLANT SPECIES. USING THIS DESIGN PHILOSOPHY, JENSEN DESIGNED, ALSO, THE GREAT MEADOW.

WITH A SMALL DAM OF LOCAL STONE, JENSEN GUIDED THE ROUGE RIVER TO THE POWERHOUSE. THE MAN-MADE CASCADE RETAINS THE RIVER, CREATING THE NECESSARY PRESSURE TO DRIVE WATER TO THE POWERHOUSE TURBINES.

THOMAS EDISON WAS AWARDED A PATENT FOR HIS DYNAMO-ELECTRIC MACHINE IN 1879. THE MACHINE GENERATED ALTERNATING CURRENT BY MAKING USE OF MAGNETIC ENERGY. THE IDEA BEING THAT A REVOLVING RING OF MAGNETS WILL INTERACT WITH A STATIONARY MAGNET OF OPPOSITE POLARITY, A HYDRO-POWER TURBINE IS A NATURAL MEANS OF REVOLVING THE MAGNETS. THE FIRST DOCUMENTED HYDROELECTRICITY PLANT IN THE U.S. WAS BUILT IN APPLETON, WISCONSIN IN 1882. EDISON PAIRED HIS DYNAMO-ELECTRIC MACHINE WITH THE POWER OF THE ROUGE RIVER AT THE POWERHOUSE AT FAIRLAKE IN 1909. THE ROUGE RIVER PLANT WAS DESIGNED AS A PROTOTYPE FOR SMALL-TOWN POWER PLANTS ACROSS THE COUNTRY.

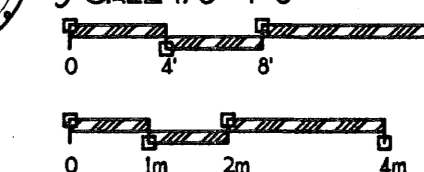
EQUIPMENT LEGEND

CODE	EQUIPMENT NAME	FUNCTION
①	STEAM ENGINE	THIS PIECE OF EQUIPMENT IS OLDER THAN THE OTHER GENERATING EQUIPMENT. IT WAS MANUFACTURED AROUND 1890 BY ARMINGTON & SIMS ENGINE CO.
②	DIRECT CURRENT GENERATOR (G)	THERE ARE TWO TYPES OF GENERATORS HERE: ONE IS DRIVEN BY THE STEAM ENGINE, THE OTHERS ARE CONNECTED TO THE WATER DRIVEN TURBINES.
③	MAIN SWITCHBOARD	THIS MARBLE FRONTED ELECTRICAL PANEL IS KNOWN AS A 'LIVE FRONT' PANEL MEANING THAT ELECTRICAL POWER IS PRESENT IN EXPOSED CONTACTS ON THE FRONT OF THE BOARD.



BASEMENT ONE FLOOR PLAN

SCALE 1/8"=1'-0"



WATER AND GRAVITY ARE THE FIRST COMPONENTS OF HYDRO POWER. THE TERM "HYDRAULIC HEAD" REFERS TO THE VERTICAL FALL BETWEEN THE SURFACE OF THE WATER SOURCE AND THE TURBINES. JEAN JEAN'S GRACEFUL CASCADE PROVIDES THE HYDRAULIC HEAD FOR EDISON'S TURBINES. DESPITE THE CASCADE, THE FAIRLANE POWER PLANT IS ESSENTIALLY A RUN-OF-RIVER PLANT. THIS MEANS THAT THERE IS NO RESERVOIR; POWER GENERATION AT FAIRLANE RELIES ON THE FLOW OF THE ROUGE RIVER.

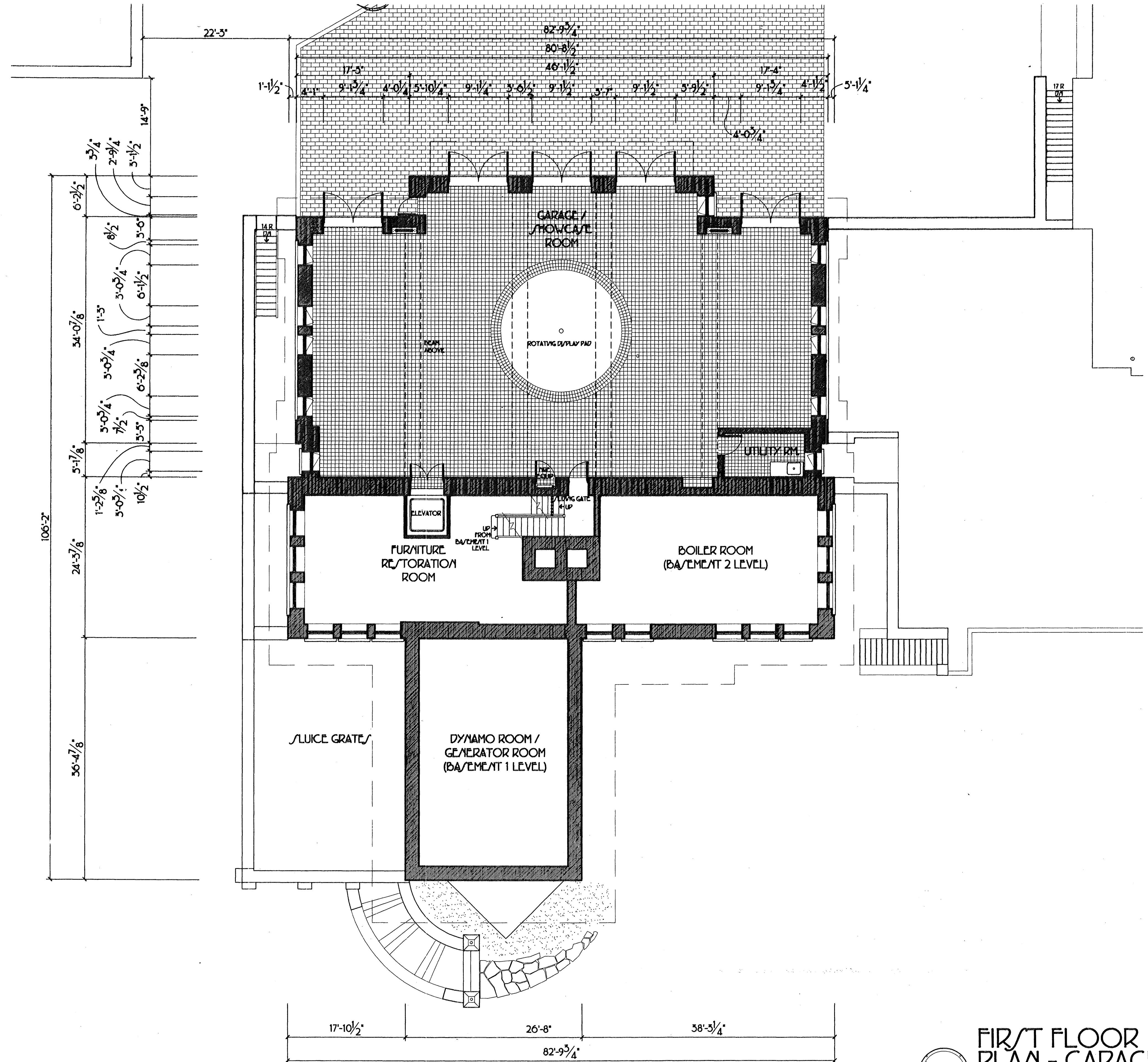
WATER FROM THE RIVER IS COLLECTED AT THE HEAD OF THE CASCADE AND DRAWN THROUGH A WATERWAY CALLED A PENSTOCK. BY TIGHTENING THE DIMENSIONS OF THE PENSTOCK THE WATER IS FORCED TO GAIN PRESSURE. WATER ENTERS THE POWERHOUSE FROM THE WEST, TURNING TURBINES THAT ARE LOCATED IN A SUB-BASEMENT BELOW THE FLYWHEEL ROOM.

A FLYWHEEL IS NOT ESSENTIAL FOR THE GENERATION OF HYDROELECTRIC POWER, BUT IT IS INVALUABLE IN ITS ABILITY TO SUSTAIN THE TURBINE'S MOTION. A FLYWHEEL IS AN ENERGY STORAGE SYSTEM. HIGH DENSITY COMPONENTS ON THE OUTSIDE OF THE WHEEL STORE MOMENTUM IN THEIR ROTATING MASS. WITH FLYWHEELS TO MAXIMIZE THE POWER OF THE WATER, A SMALLER AMOUNT OF WATER CAN WORK WITH A LOWER HYDRAULIC HEAD TO GENERATE ELECTRICITY.

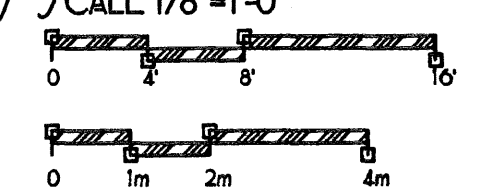
THE TURNING TURBINES ARE LINKED TO MAGNETIC ARMS IN THE GENERATOR ROOM. THE MAGNETS ROTATE PART THE COPPER COILS IN A GENERATOR, MAKING ALTERNATING CURRENT IN THE SAME WAY AS EDISON'S ORIGINAL DYNAMO-ELECTRIC MACHINE. MEANWHILE, THE WATER RETURNS TO THE ROUGE RIVER THROUGH THE TAILRACE ON THE EAST SIDE OF THE POWERHOUSE. IN 1909, AT THE TIME OF ITS CONSTRUCTION, THE ROUGE RIVER POWER PLANT PROVIDED POWER NOT ONLY TO THE ENTIRE FAIRLANE ESTATE, BUT ALSO TO THE ENTIRE CITY OF DEARBORN.

LATER, ADDITIONS TO THE HUMBLE POWER PLANT TURNED IT INTO A BEEHIVE OF PRODUCTIVITY. HENRY FORD ADDED A GARAGE FOR DEVELOPMENT OF HIS AUTOMOBILES. THE GARAGE HAD A LARGE TURNABLE SET INTO THE FLOOR SO THAT THE VEHICLES COULD BE EASILY MANEUVERED INTO PLACE. HE ADDED A ROOM FOR FURNITURE RESTORATION, AS WELL AS A "SUCTION SWEEPER ROOM" TO ACCOMMODATE A CENTRAL VACUUMING MACHINE FOR THE MAJOR HOUSE. TWO COAL FIRED BOILERS OCCUPY A TWO-STORY BOILER ROOM ON THE BASEMENT ONE LEVEL (ADJACENT TO THE FLYWHEEL ROOM). A PUMP ROOM BELOW THE GARAGE MOVED WATER TO THE SWIMMING POOL IN THE MAJOR HOUSE. ALSO IN THIS ROOM WAS A HAIR DRYER WHICH FORCED HOT AIR FROM THE POWERHOUSE RIGHT INTO CLARA FORD'S DRESSING ROOM. THE THIRD FLOOR CONSISTED OF A BRIGHT, HIGH-CEILINGED OFFICE AND LABORATORY SPACE IN WHICH HENRY FORD TENDED TO THE DETAILS OF HIS BUSINESS AND HIS INVENTIONS.

THE WHOLE BUILDING WAS CONNECTED BY DIRECT TELEPHONE LINE TO HENRY FORD'S MANUFACTURING PLANTS SO THAT, THE INSTANT HE GOT AN IDEA, FORD COULD PASS THE INFORMATION TO THE FACTORY FLOOR. AN UNDERGROUND TUNNEL LEADS FROM THE BASEMENT ONE LEVEL TO THE MAJOR HOUSE.



FIRST FLOOR PLAN - GARAGE



THE TUNNEL WAS AN EXTENSION OF THE SERVICE ENTRANCE TO THE MANOR HOUSE, SINCE ALL DELIVERIES WERE RECEIVED AT THE POWERHOUSE. SERVANTS USED A HYDRAULIC ELEVATOR TO MOVE HOUSEHOLD GOODS FROM THE GARAGE LEVEL TO THE BASEMENT ONE LEVEL, FROM WHICH THEY WOULD WHEEL THEIR CARGO TO THE ENTRANCE OF THE TUNNEL. THE TUNNEL GRADUALLY SLOPES UPWARD AS IT LEADS TO THE LOWEST LEVEL OF THE MANOR HOUSE.

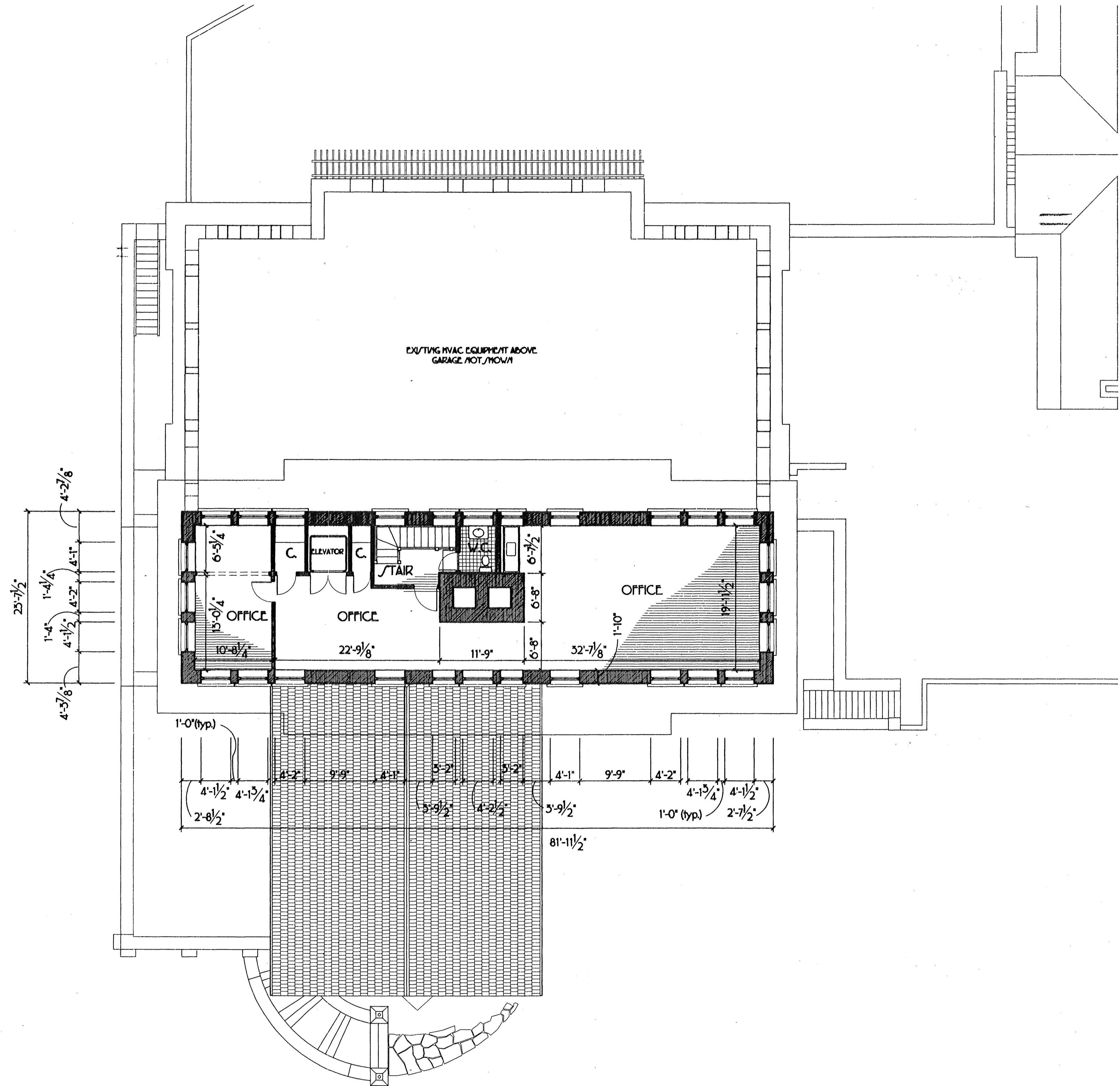
FIXTURES IN THE POWERHOUSE REFLECT THE WORKING NATURE OF THE BUILDING. SIMPLE LAMPS ARE MOUNTED THROUGHOUT. LARGE WINDOWS IN THE GENERATOR ROOM MAY BE REMOVED FROM THEIR FRAMES, SO THAT MACHINERY CAN BE HOISTED IN AND OUT BY THE GANTRY OVERHEAD. HOLES IN THE FLOOR OF THE GENERATOR ROOM AND FLYWHEEL ROOM ACCOMMODATE CHAINS USED TO HOIST THE FLOODGATES.

DESPITE ITS WORKING NATURE, THE BUILDING IS NOT WITHOUT GRACE. DETAILS SUCH AS THE BIRD VENTS IN THE GENERATOR ROOM, BRACKETS ALONG THE EAVES, AND TRELLISES ON THE GARAGE FACADE BALANCE THE ROUGH HEWNS/STONE WALLS AND CONCRETE FLOORS. TINY CURVED HANDLES ON THE DOORS AND WINDOWS CONTRAST THE BRUTE STRENGTH OF THE STONE LINTELS. THROUGHOUT THE POWERHOUSE, AS THROUGHOUT THE ESTATE, THE DESIGN ILLUSTRATES BOTH THE DELICACY AND THE POWER OF NATURAL FORCES.

HAD THE MANOR HOUSE BEEN COMPLETED TO MARION MAHONY'S DESIGN, THE ESTATE WOULD HAVE BEEN A TRIPTYCH TELLING THE STORY OF MODERN MAN'S EMERGING STRUGGLE WITH HIS NATURAL RESOURCES. FIRST, ONLY IN THE MODERN WORLD WOULD A MAN NEED TO FIND A WAY TO BRING THE EXPANSE OF LANDSCAPE BACK INTO HIS LIFE, AND THUS COMMISSION A PRAIRIE-STYLE HOME. MAHONY'S DESIGN IS A MODERN MARVEL, WITH ELECTRICITY, CENTRAL VACUUM, AND AN INDOOR SWIMMING POOL. YET THE HOME'S LONG, LOW LINES BRING TO MIND THE NATURAL MYSTERY OF THE DISTANT HORIZON. THE GROUNDS, WHILE METICULOUSLY DETAILED, DEFER TO THE WISDOM OF NATURE TO SELECT THE PLANT AND ANIMAL LIFE ON THE ESTATE.

JENS JENSEN BORROWED FROM NATURE TO CREATE HIS IDEA OF A MIDWESTERN EDEN. A VISIT TO THE GREAT MEADOW TODAY SHOWS HOW NATURE, WITH ITS OWN GRACE, IS BORROWING IT BACK. FOR NOW, THE POWERHOUSE ALONG THE ROUGE RIVER ILLUSTRATES THE PERFECT BALANCE BETWEEN MAN AND HIS ENVIRONMENT.

WITH LEVELS OF ROUGH HEWNS/STONE STEPPING DOWNHILL TOWARD THE ROUGE RIVER, THE POWERHOUSE ITSELF RECALLS THE CASCADE THAT PROPELS THE TURBINES. FOR ALL THESE YEARS, THE POWERHOUSE HAS BEEN USING MAN'S INVENTION TO DERIVE ONE NATURAL FORCE FROM ANOTHER, ELECTRICITY FROM GRAVITY. THROUGH THOMAS EDISON'S MARRIAGE OF HYDROPOWER AND THE DYNAMO, THE ROUGE RIVER POWER PLANT PROVIDED ELECTRICITY THAT ENABLED HEARY FORD AND THE FORD MOTOR COMPANY TO MOBILIZE THE MODERN WORLD.



SECOND FLOOR PLAN - OFFICE

SCALE 1/4"=1'-0"

0 4' 8'

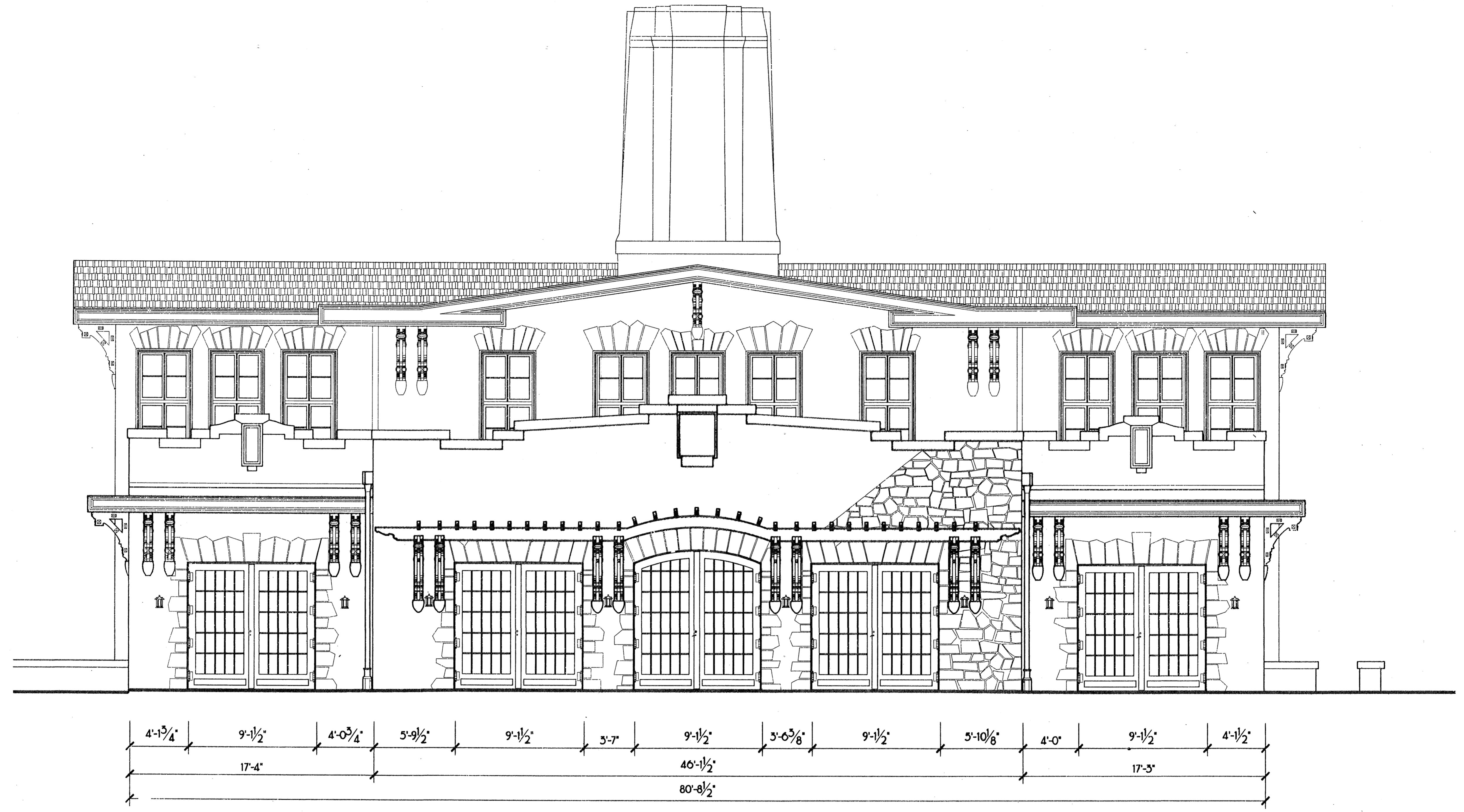
0 0.5m 1m 2m

2002 CHARLES E. PETERSON PRIZE, SECOND PLACE.

EL. 67'-9 1/2"
CHIMNEY HEIGHT
BY TRIANGULATION

EL. 49'-6 5/8"
RIDGE HEIGHT

EL. 37'-8"
TOP OF ROOF



NORTH ELEVATION
 SCALE 1/4"=1'-0"
 0 0.5m 1m 2m

LIBRARY OF CONGRESS
INDEX NUMBER

HISTORIC AMERICAN
BUILDING SURVEY
CONSIST & C. 1930

SURVEY NUMBER
MI-422-A

NAME AND LOCATION OF STRUCTURE
FAIR LAKE, POWERHOUSE
4901 EVERGREEN RD., DEARBORN, MI 48124
WAYNE COUNTY, MICHIGAN

DRAWN BY: ANDY LUNG, SARAH NORTH
 HEAD OF STATE PROJECT 2002
 ROY / MTL UNIVERSITY
 SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
 NATIONAL PARK SERVICE
 UNITED STATES DEPARTMENT OF THE INTERIOR

EL. 67'-9 1/2"
CHIMNEY HEIGHT
BY TRIANGULATION

EL. 49'-6 5/8"
RIDGE HEIGHT

EL. 52'-7"

EL. 52'-7"
RIDGE HEIGHT

EL. 29'-10 7/8"
SECOND FLR.

EL. 11'-5/8"
BASEMENT ONE

EL. 37'-8"
TOP OF ROOF

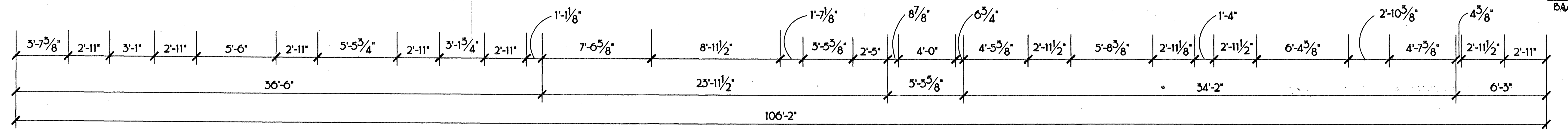
EL. 19'-1 1/4"
FR./T FLR.

EL. 8'-1"

EL. 8'-1"

EL. 0'-0"

EL. 0'-0"
BASEMENT TWO



EAST ELEVATION
SCALE 1/4"=1'-0"
0 0.5m 1m 2m

2002 CHARLES E. PETERSON PRIZE, SECOND PLACE.

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INDEX NUMBER

HISTORIC AMERICAN
BUILDING SURVEY
SHEET 7 OF 13 SHEETS

SURVEY NUMBER
MI-422-A

NAME AND LOCATION OF STRUCTURE
FAIR LANE POWERHOUSE
4901 EVERGREEN RD., DEARBORN
WAYNE COUNTY, MICHIGAN

DRAWN BY: BRANDI KOVACH, SARAH HOSBET
HELVY TOOD DATE PROJECT 2002
MICHIGAN STATE UNIVERSITY
SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

EL. 67'-9 7/16"
CHIMNEY HEIGHT
BY TRIANGULATION

EL. 49'-6 5/8"
RIDGE HEIGHT

EL. 52'-7"
RIDGE HEIGHT

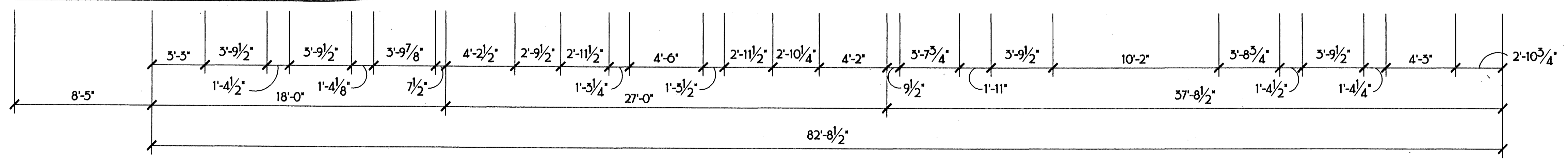
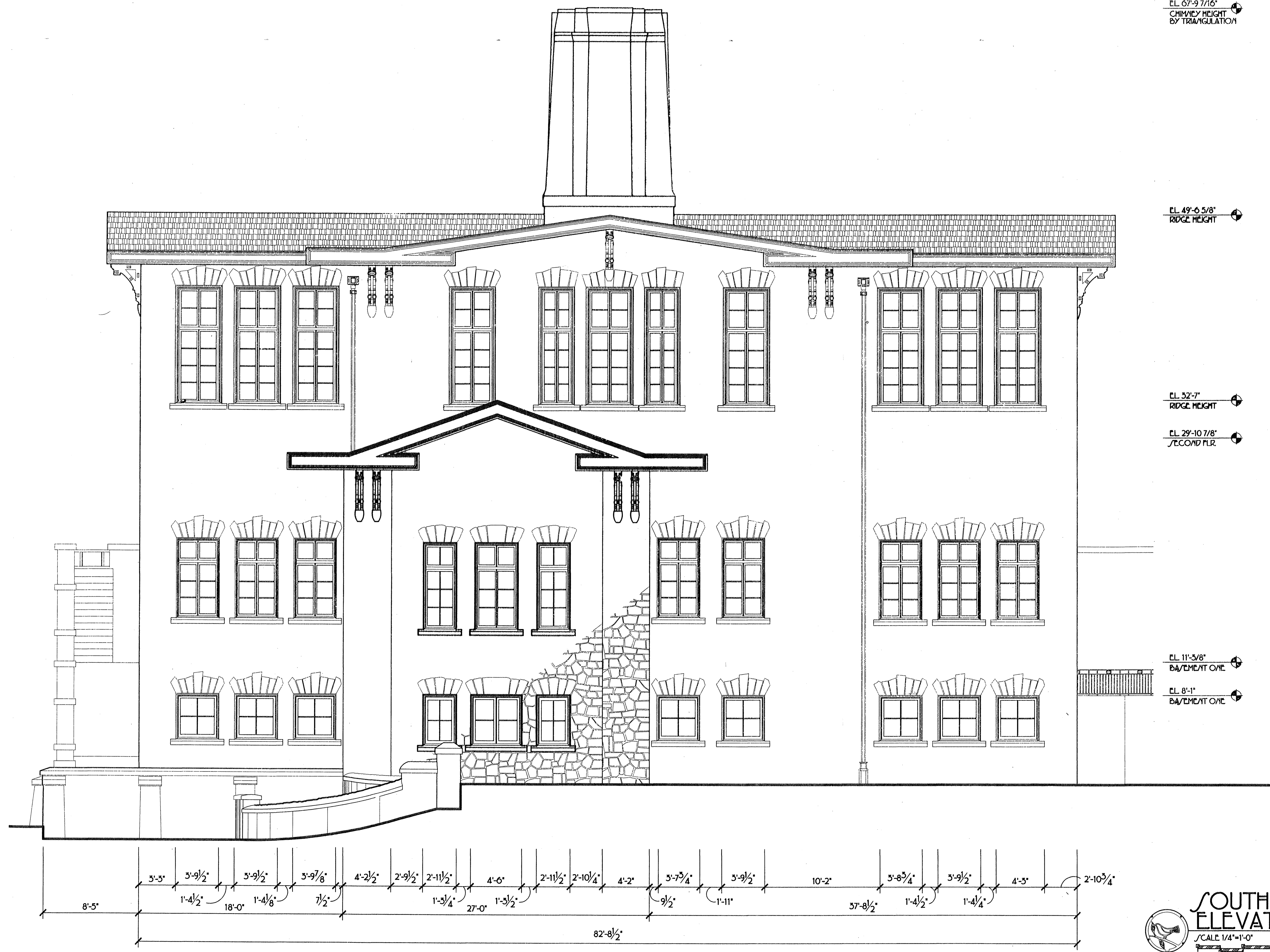
EL. 29'-10 7/8"
SECOND FLR.

EL. 11'-3/8"
BASEMENT ONE

EL. 8'-1"
BASEMENT ONE

CL. 19'-1 1/4"
FRONT FLR.

EL. 0'-0"
BASEMENT TWO



SOUTH ELEVATION
SCALE 1/4"=1'-0"

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HISTORIC AMERICAN
BUILDING SURVEY
SHEET 6 OF 13 SHEETS

SURVEY NUMBER
MI-422-A

NAME AND LOCATION OF STRUCTURE
FAIR LAKE, POWERHOUSE
WAYNE COUNTY, MICHIGAN

499 EVERGREEN BL., DEARBORN

DRAWN BY: SARA BRIDGES, SARAH NORTH
FIELD/FOOT/CAD PROJECT 2002
NOT TO SCALE
SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

2002 CHARLES E. PETERSON PRIZE, SECOND PLACE.

EL. 67'-9 7/16"
CHIMNEY HEIGHT
BY TRIANGULATION

EL. 49'-6 5/8"
RIDGE HEIGHT

EL. 32'-7"
RIDGE HEIGHT

EL. 29'-10 7/8"
SECOND FLR

EL. 11'-3/8"
BASEMENT ONE

EL. 37'-8"
TOP OF ROOF

EL. 19'-1 1/4"
FIRST FLR

EL. 8'-1"
BASEMENT ONE

EL. 0'-0"
BASEMENT TWO

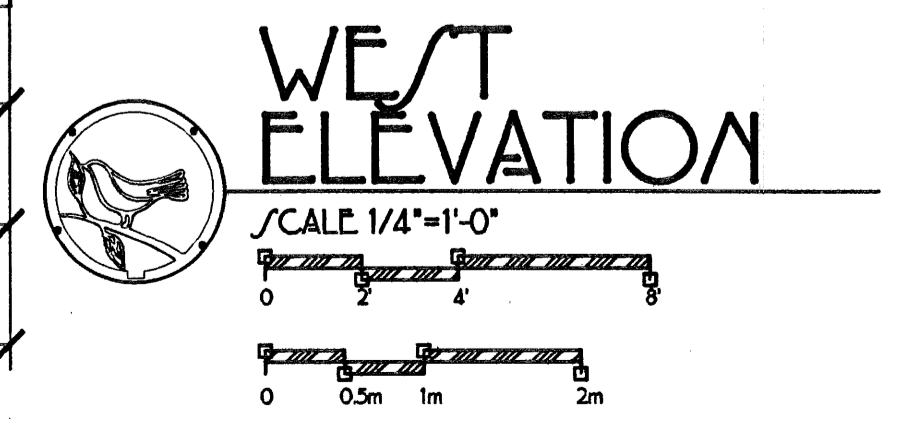
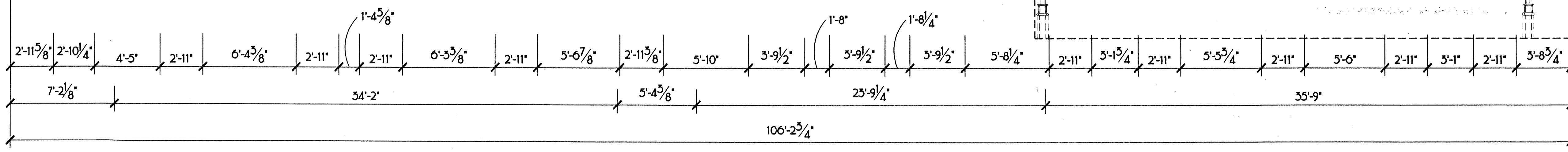
LIBRARY OF CONGRESS
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HISTORIC AMERICAN
BUILDING SURVEY
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SURVEY NUMBER
MI-422-A

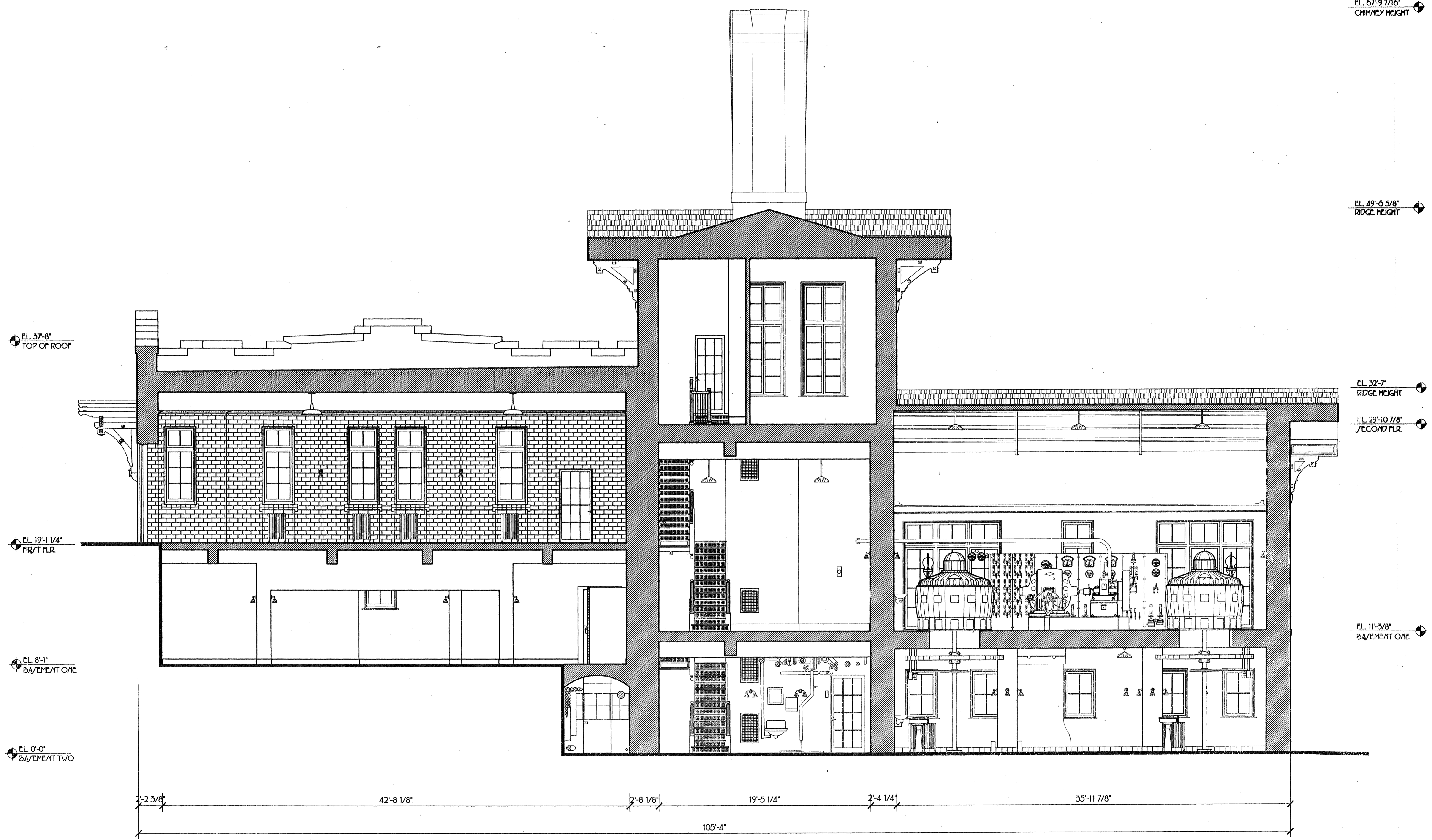
NAME AND LOCATION OF STRUCTURE
FAIR LAKE, POWERHOUSE
4901 EVERGREEN RD., DEARBORN
WAYNE COUNTY, MICHIGAN

DRAWN BY: CHRISTOPHER SARAHAN
HERY FOD STATE PROJECT 2002
ROY/THE UNIVERSITY
SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN
UNITED STATES DEPARTMENT OF THE INTERIOR



2002 CHARLES E. PETERSON PRIZE, SECOND PLACE.

2002 CHARLES E. PETERSON PRIZE, SECOND PLACE.



EL. 37'-8" TOP OF ROOF

EL. 19'-1 1/4" 1ST FLR.

EL. 8'-1" BASEMENT ONE

EL. 0'-0" BASEMENT TWO

EL. 67'-9 7/16" CHIMNEY HEIGHT

EL. 49'-0 5/8" RIDGE HEIGHT

EL. 32'-7" RIDGE HEIGHT

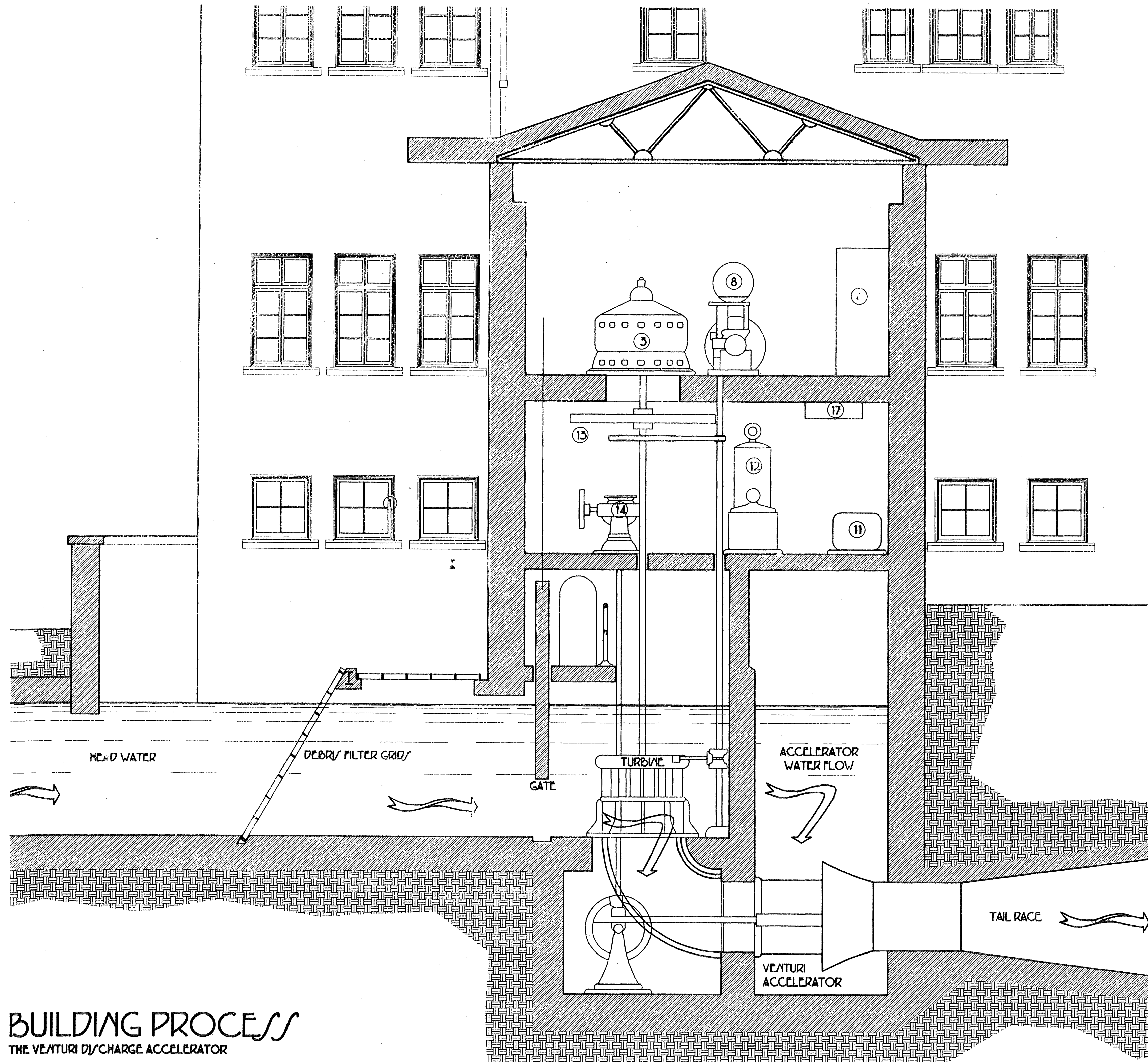
EL. 29'-10 7/8" SECOND FLR.

EL. 11'-3/8" BASEMENT ONE

2'-23/8" 42'-8 1/8" 2'-8 1/8" 19'-5 1/4" 2'-4 1/4" 55'-11 7/8" 105'-4"

NORTH - SOUTH SECTION
 SCALE 1/4" = 1'-0"
 0 0.5m 1m 2m

LIBRARY OF CONGRESS INDEX NUMBER
 HISTORIC AMERICAN BUILDING SURVEY SHEET 10 OF 13 SHEETS
 SURVEY NUMBER MI-422-A
 NAME AND LOCATION OF STRUCTURE FAIR LAKE POWERHOUSE WAYNE COUNTY, MICHIGAN
 4901 EVERGREEN RD., DEARBORN, MI
 DRAWN BY: JOHN HART, JOHN KANG
 NEW FORD URBAN PROJECT 2002
 UNIVERSITY OF MICHIGAN ARCHITECTURAL SCHOOL OF ARCHITECTURE NATIONAL ARCHIVE OF THE UNITED STATES DEPARTMENT OF THE INTERIOR



BUILDING PROCESS

THE VEENTURI DISCHARGE ACCELERATOR

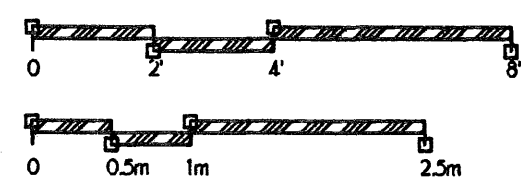
ALTHOUGH GREAT CARE WAS TAKEN IN DESIGNING A RELIABLE POWERHOUSE AND SELECTING TRIED AND TRUE EQUIPMENT A VARIABLE REMAINS: THE ROUGE RIVER. RIVERS ARE AN EVER CHANGING POWER SOURCE. THE LEVEL OF THE RIVER DETERMINES THE FLOW OF WATER THROUGH THE TURBINES. THIS DICTATES THE AMOUNT OF POWER TO BE CREATED BY THE GENERATOR. THE ITALIAN ENGINEER VEENTURI DEvised A METHOD THAT WAS INCORPORATED INTO THE HEINRY FORD STATE POWERHOUSE TO COMBAT THE NATURAL FLUCTUATIONS THAT THE RIVER CREATES AND TO PROVIDE A GREATER AMOUNT OF POWER AT ALL LEVELS. A PORTION OF THE WATER REDIRECTED FROM THE RIVER IS DIVERTED PAST THE TURBINE. IT IS THEN ADDED TO THE SYSTEM DISCHARGE. THIS CREATES A DROP IN PRESSURE THAT LITERALLY SUCKS THE WATER THROUGH THE TURBINE AT A GREATER SPEED PROVIDING, IN GENERAL, A QUANTITY OF ELECTRICAL POWER GREATER THAN THAT OF A POWERHOUSE OF SIMILAR SIZE WITHOUT THE ACCELERATOR. IN ADDITION, WHEN THE HEAD WATER FLUCTUATES THE VEENTURI ACCELERATOR ENABLES THE POWERHOUSE TO GENERATE TWO TO FOUR TIMES THE AMOUNT OF ENERGY AVAILABLE WITHOUT IT.

INFORMATION FOR THESE DRAWINGS AND TEXT WAS COMPILED FROM THE FOLLOWING: A REPORT ON THE EQUIPMENT OF THE FAIRLANE POWERHOUSE BUILT BY HEINRY FORD IN 1914
 JOHN BOWDITCH, ANN ARBOR, MICH; MARCH 20, 1986
 THE STAFF AND RESEARCHERS OF THE HEINRY FORD STATE



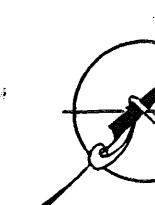
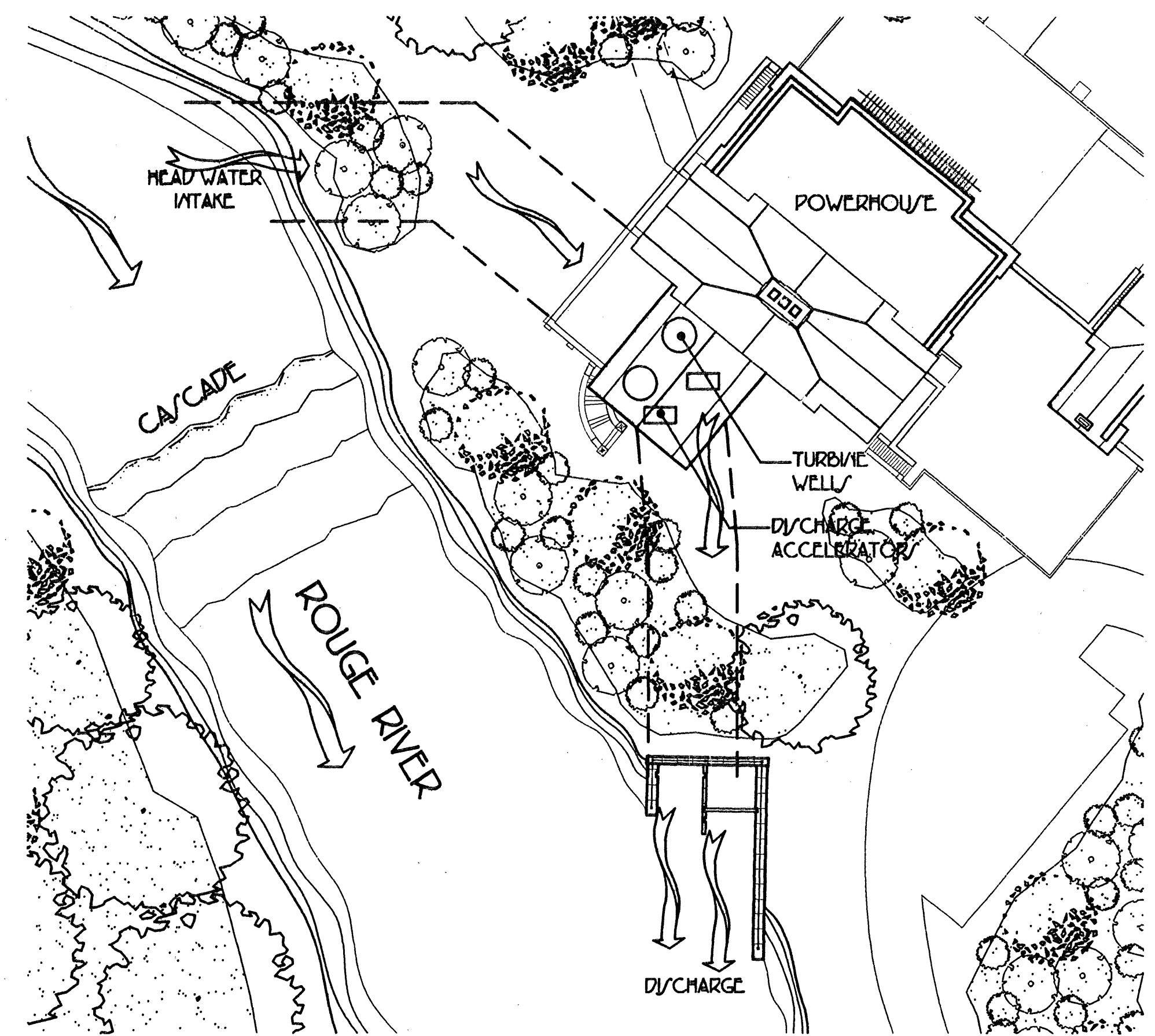
PROCESS SCHEMATIC

SCALE 1/4"=1'-0"



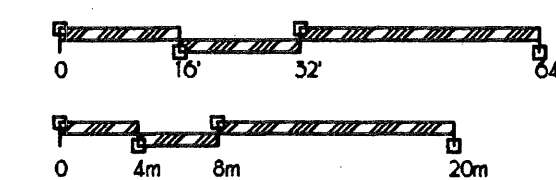
EQUIPMENT LEGEND

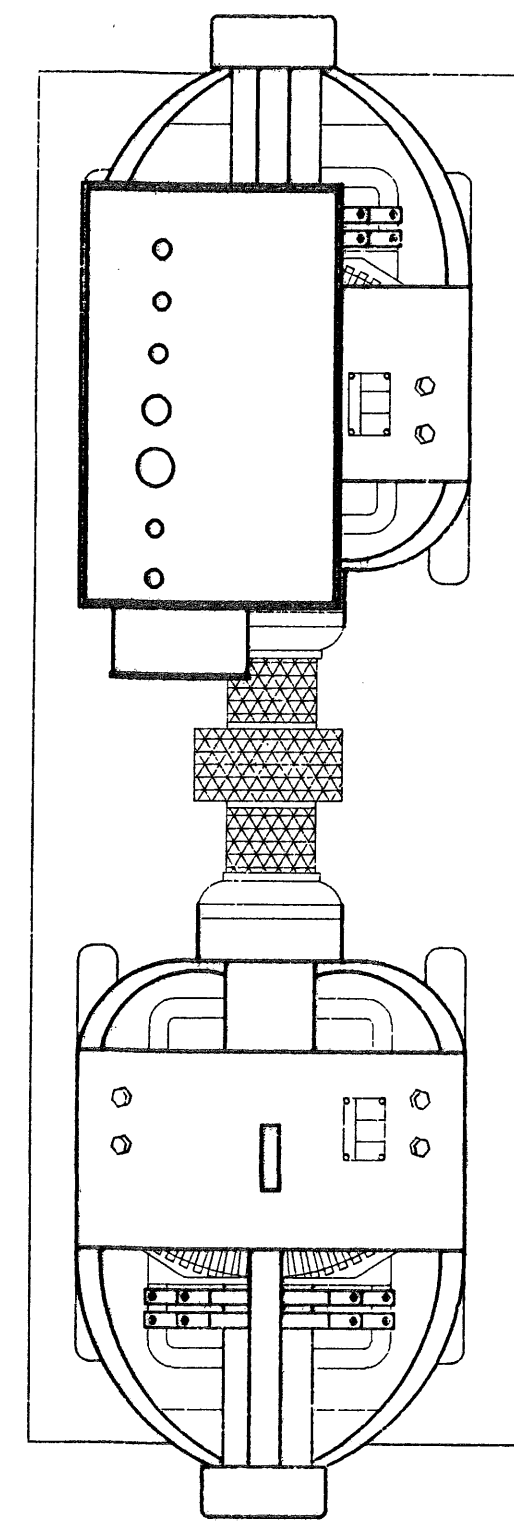
CODE	EQUIPMENT NAME	FUNCTION
③	DIRECT CURRENT GENERATOR	VERTICAL SHAFT WATER TURBINE DRIVEN GENERATOR THAT PRODUCED THE ELECTRICITY NEEDED FOR THE STATE.
④	MAIN SWITCHBOARD	PINK MARBLE CLAD, LIVE FRONT ELECTRIC PANEL CONTROLLED AND MONITORED THE ELECTRICAL PRODUCTION AND DISTRIBUTION.
⑧	WATER TURBINE GOVERNOR	A HAND WHEELED, CAST IRON MOUNTED HYDROLOGIC WATER TURBINE GOVERNOR THAT BALANCED THE SPEED OF THE WATER TURBINE AND THE ELECTRICAL GENERATOR.
⑪	BALANCING SET	A PAIR OF DIRECT CURRENT MOTORS COUPLED TOGETHER TO BALANCE THE ELECTRICAL LOAD ON THE BUILDING'S THREE WIRE SYSTEM.
⑫	HYDROLOGIC PUMP FOR GOVERNOR	MOTOR AND RESERVOIR FOR SUPPLYING OIL TO THE WATER TURBINE GOVERNOR.
⑬	FLYWHEEL	108 INCH DIAMETER FLYWHEEL USED TO EVEN OUT THE SPEED OF THE WATER TURBINE BY ADDING INERTIA TO THE MACHINE.
⑭	MANUAL GATE CONTROLS	CONTROLS THE OPENING AND CLOSING OF THE TURBINE GATE TO START AND STOP THE MACHINES.
⑰	DISTRIBUTION BUS	COLLECTED CABLING FROM THE GENERATORS BEFORE ENTERING THE SWITCHBOARD.



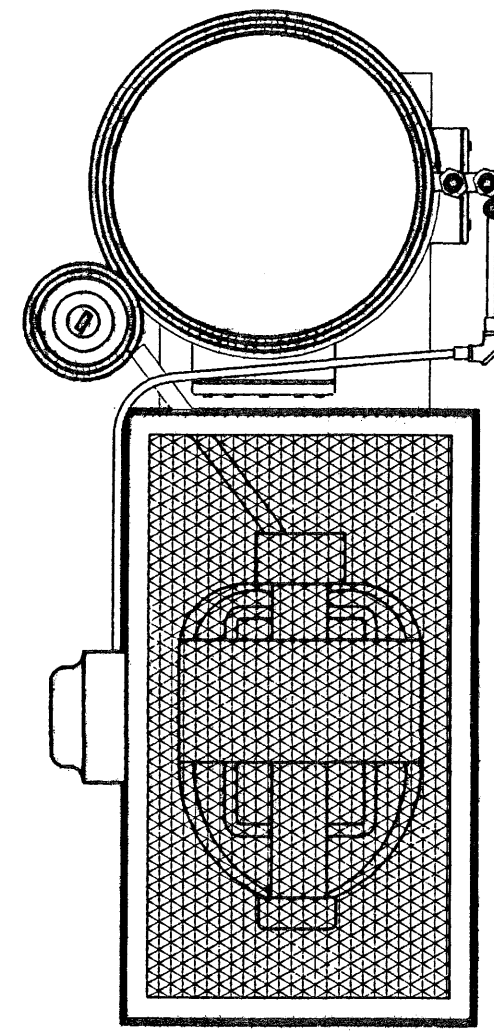
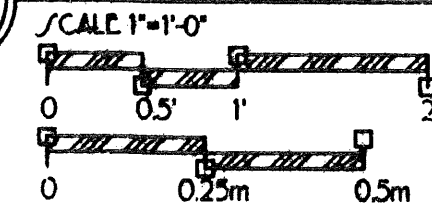
PROCESS SCHEMATIC-SITE PLAN

SCALE 1/32"=1'-0"

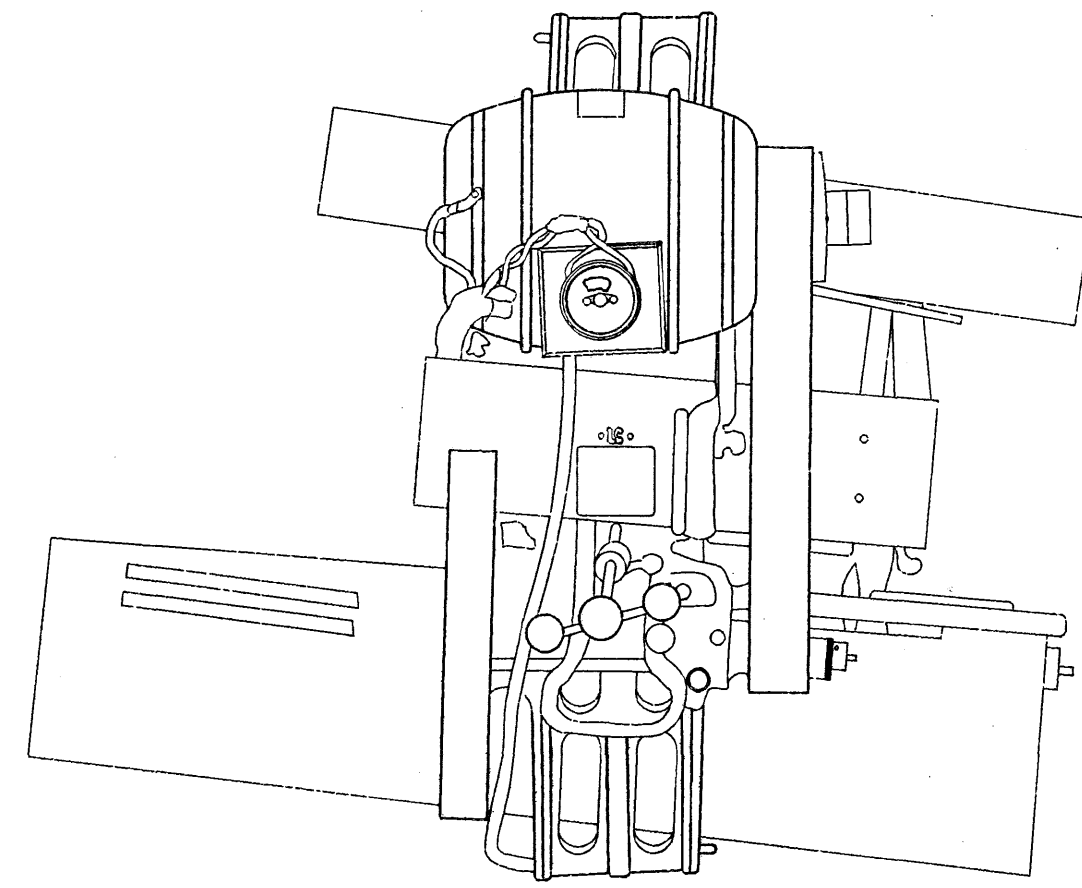
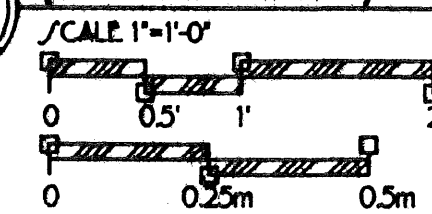




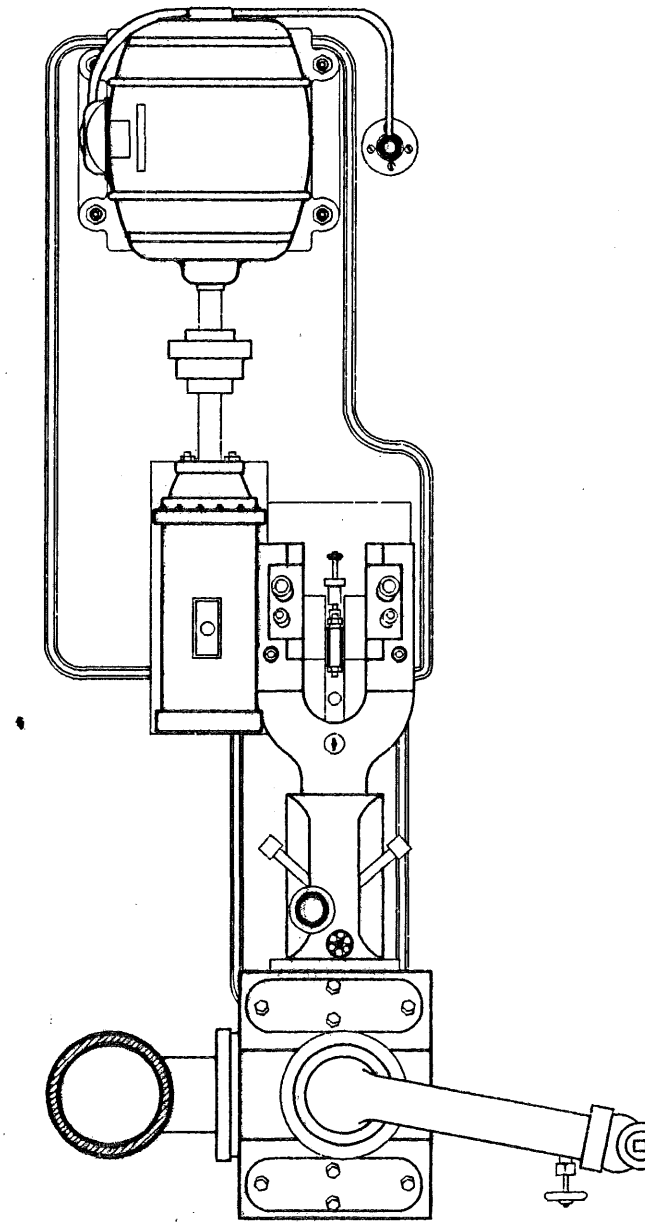
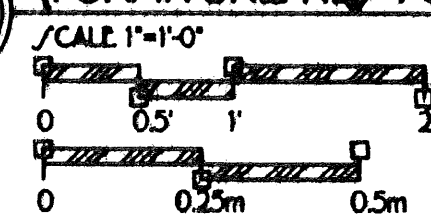
BALANCING SET
(WHEEL ROOM)



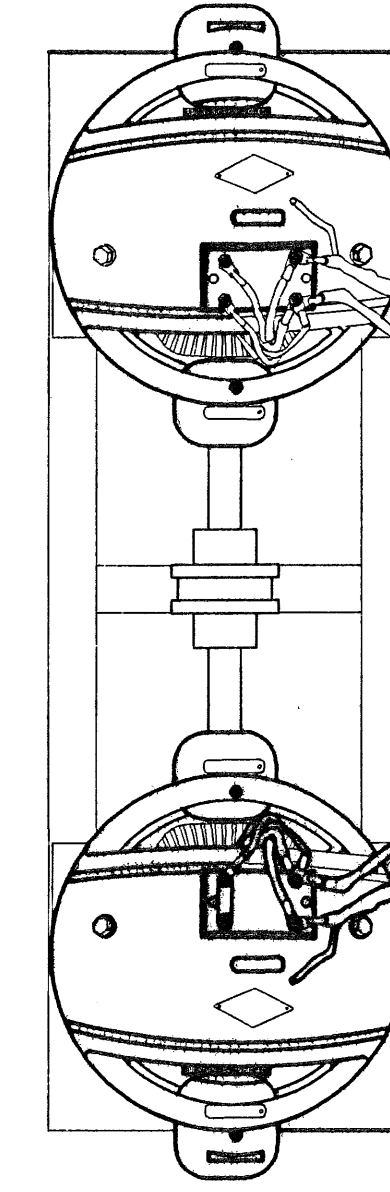
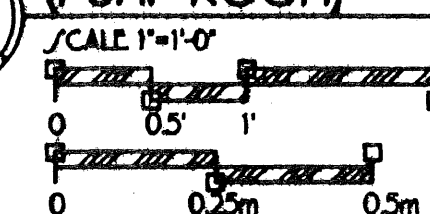
OIL RESERVIOR AND PUMP
(WHEEL ROOM)



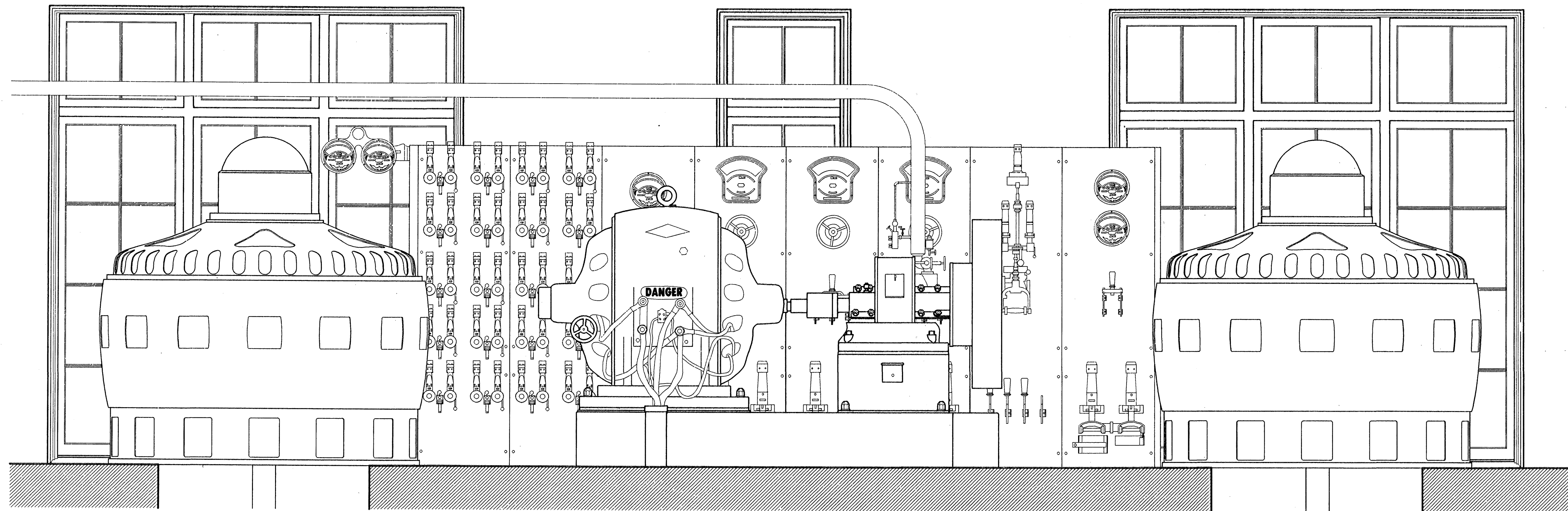
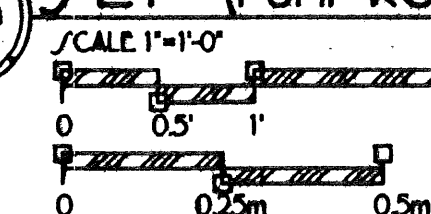
WOOD SAW
(FURNITURE RESTORATION ROOM)



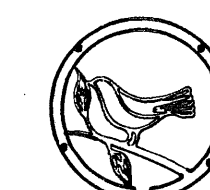
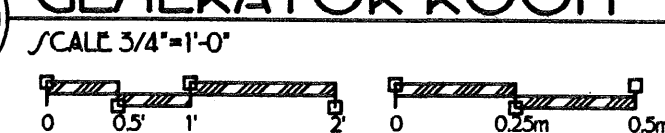
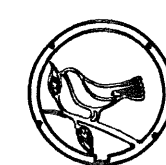
AIR COMPRESSOR
(PUMP ROOM)



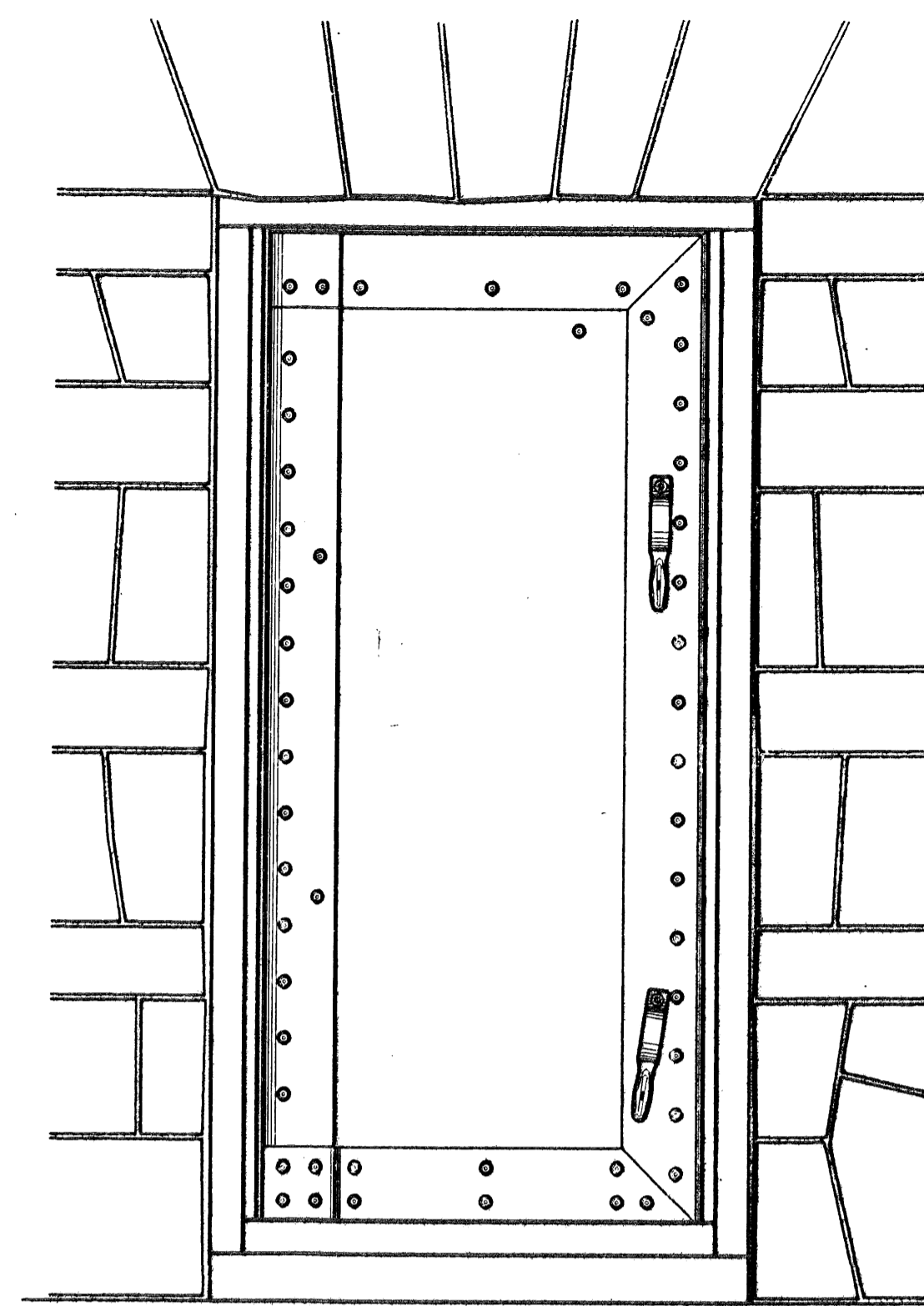
MOTOR GENERATOR SET
(PUMP ROOM)



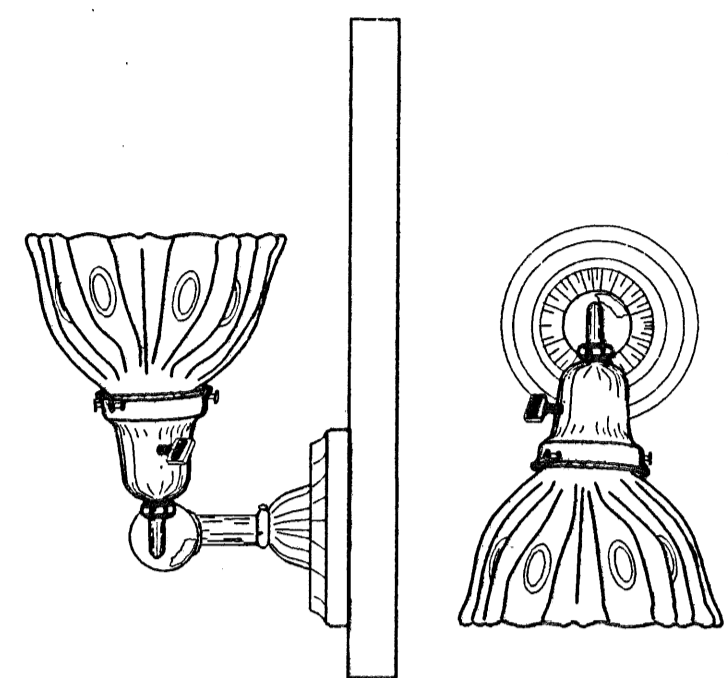
GENERATOR ROOM



EQUIPMENT
DETAILS
/SCALE/ VARY



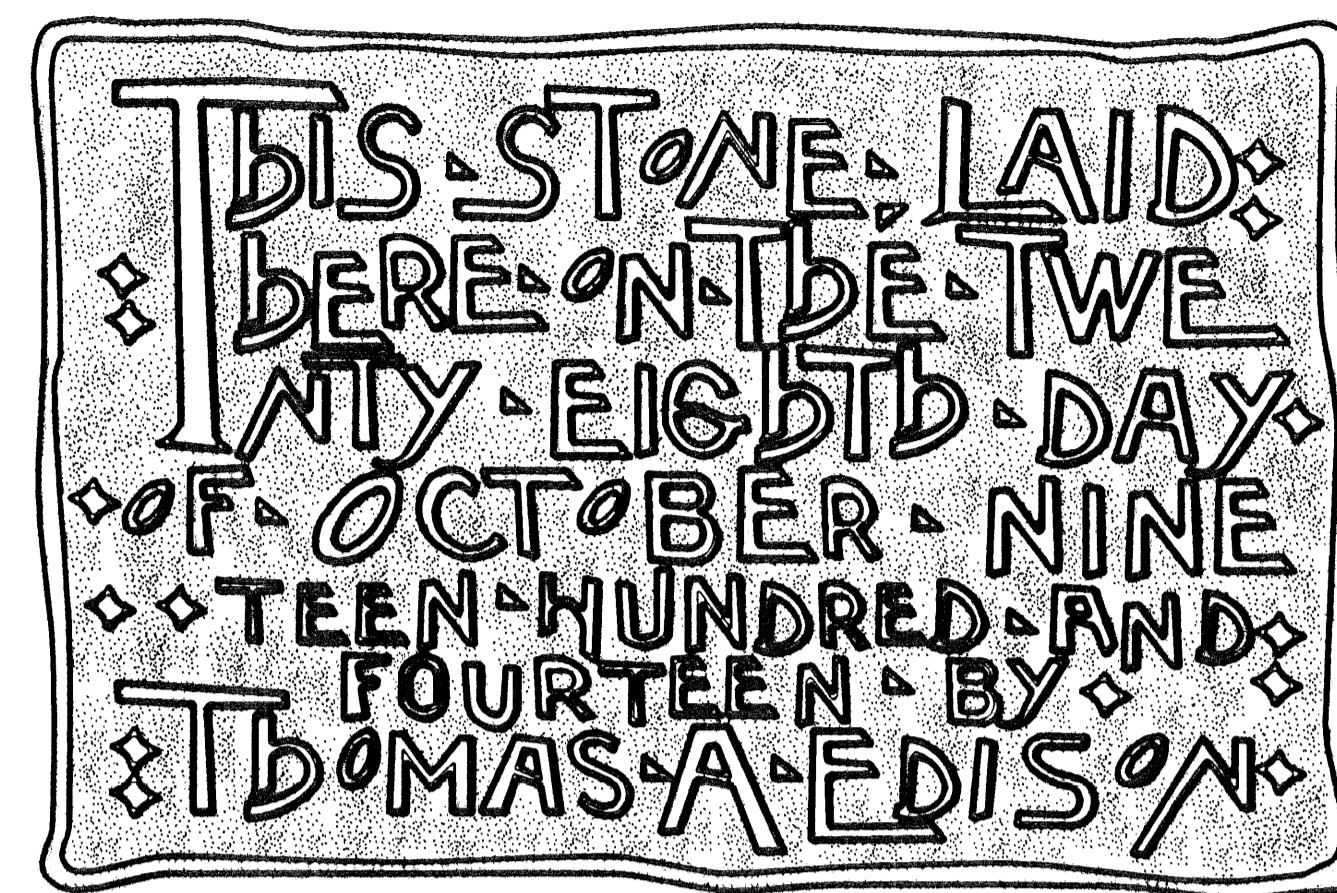
SLUICE DOOR
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 0 0.5 1 0 0.25m 0.5m



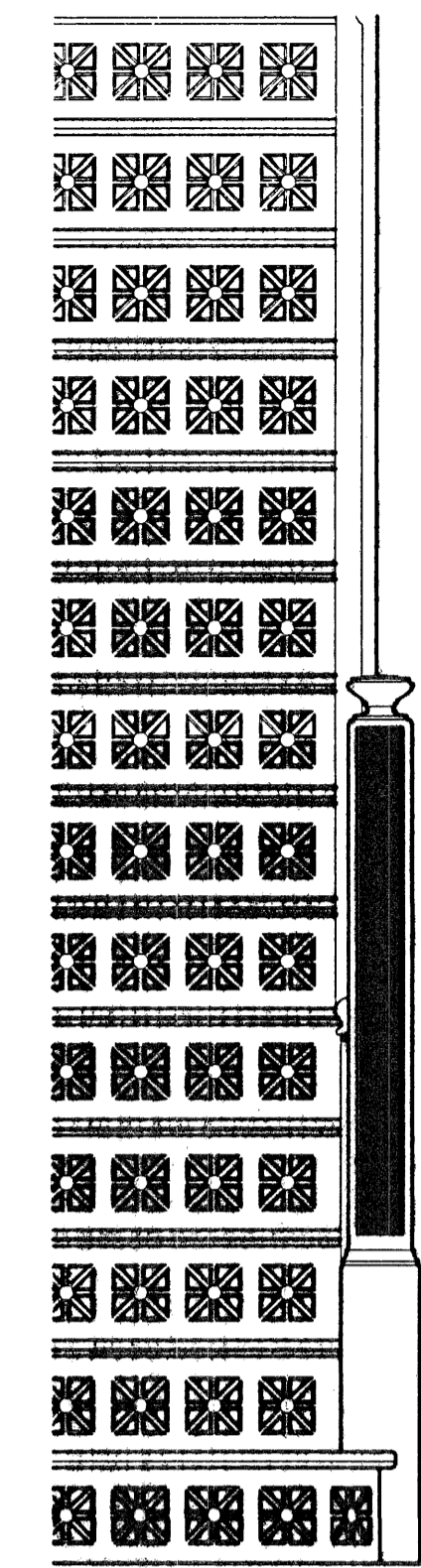
TYPICAL INTERIOR LAMP
 /SCALE 3/4"=1'-0"
 0 0.5 1 0 0.25m 0.5m



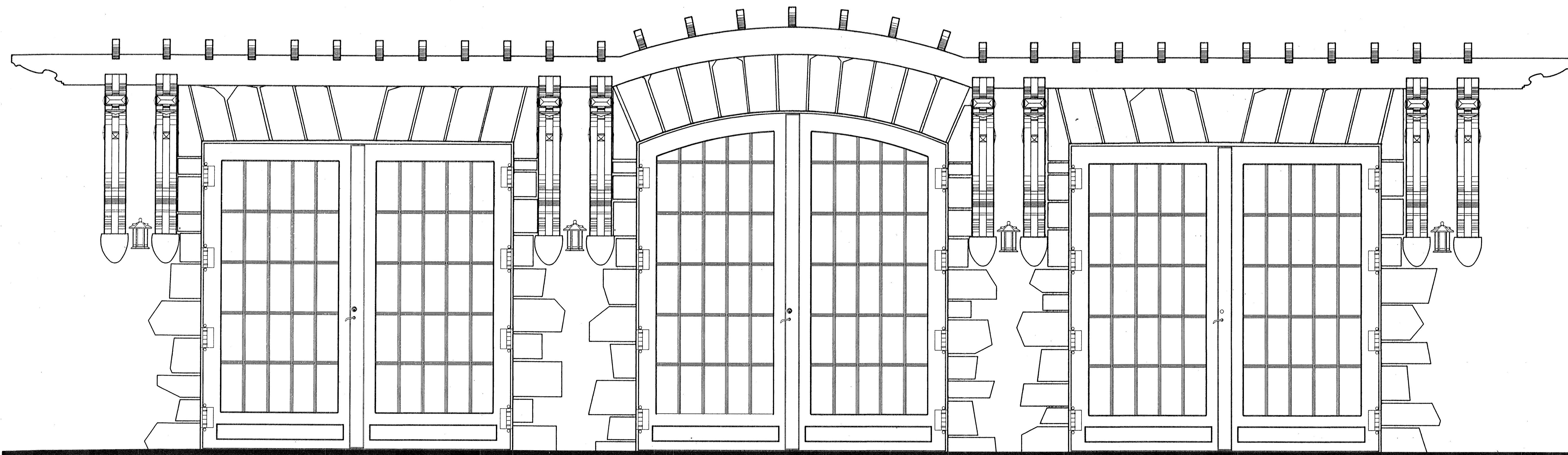
GENERATOR ROOM VENT
 NOT TO SCALE



CORNERSTONE OF THE ORIGINAL POWERHOUSE
 NOT TO SCALE



INTERIOR STAIR
 /SCALE 1"=1'-0"
 0 0.5 1 0 0.25m 0.5m



NORTH FACADE
 /SCALE 3/4"=1'-0"
 0 0.5 1 0 0.25m 0.5m

SELECTED DETAILS
 /SCALE VARY