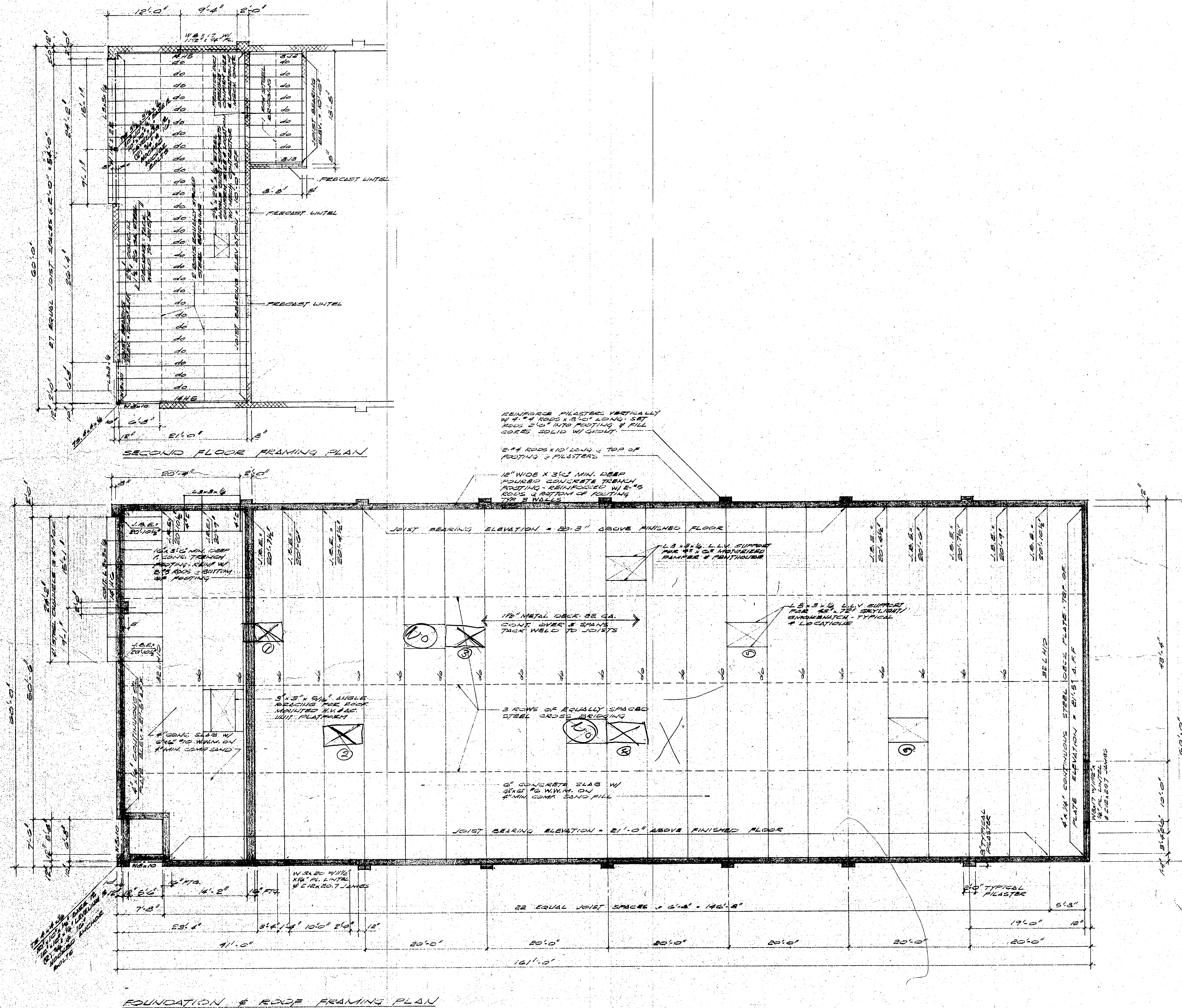




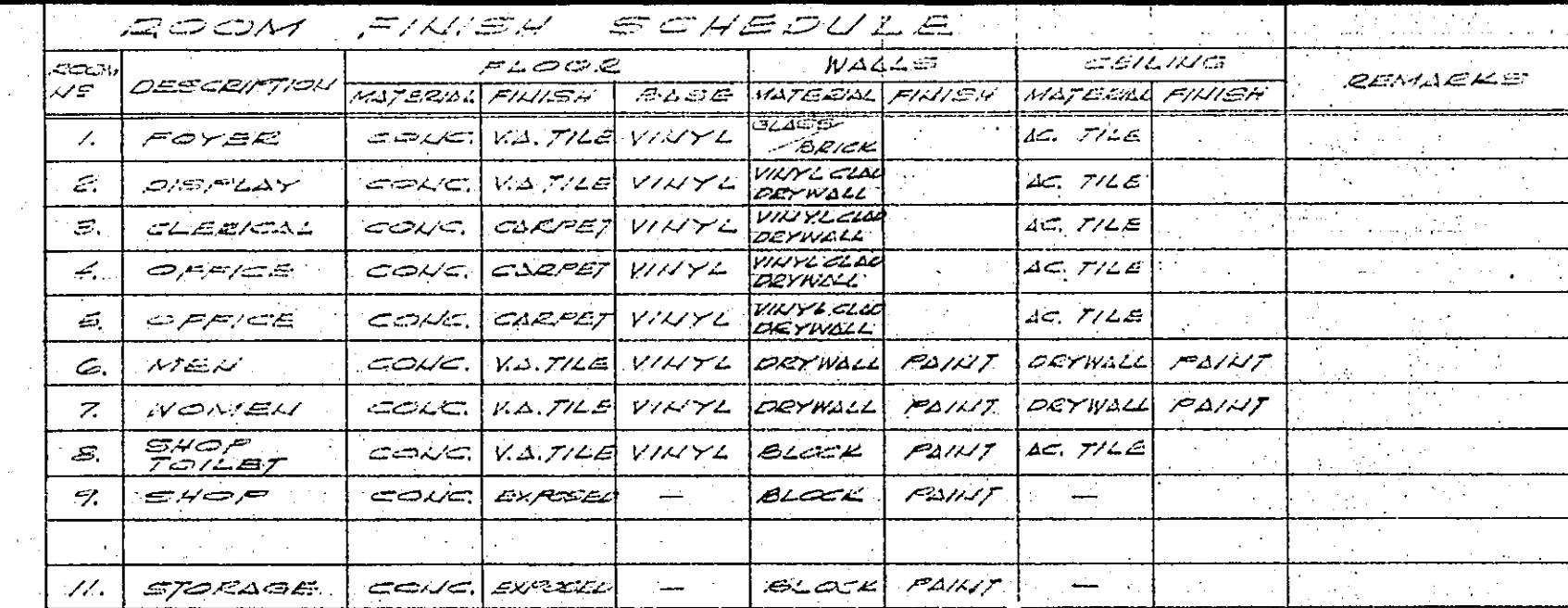
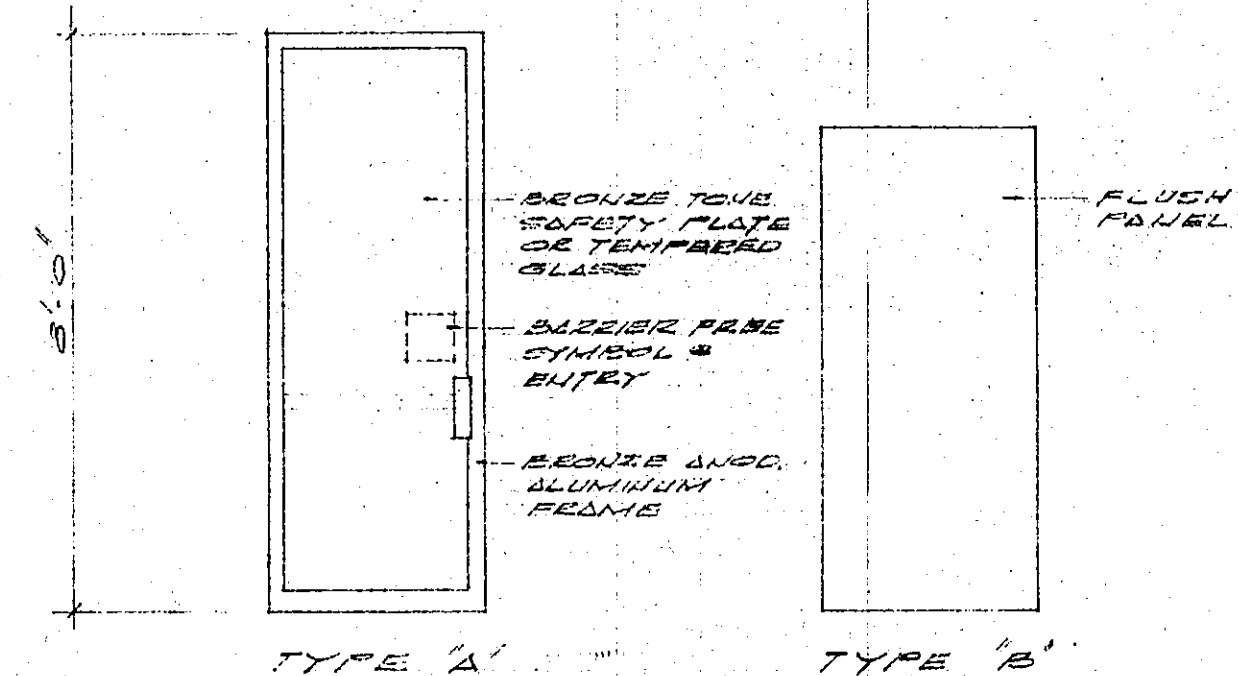
DESIGN LOADS (ROOF)	
LIVE LOAD :	50 PSF
DEAD LOAD :	20 PSF
TOTAL LOAD :	70 PSF
JOIST CAPACITY :	
ALLOWABLE LIVE LOAD :	250 PLF
ALLOWABLE TOTAL LOAD :	410 PLF
FLOOR LOADS	
OFFICE :	50 PSF
SHOP :	125 PSF
STORAGE AREA :	125 PSF

DRAWN BY
DATE STARTED
CHECKED BY
ISSUED BIDS & PERMITS
APPROVED FOR CONSTR.
DATE
BY
REVISIONS

PROJECT
FOUNDATION & ROOF FRAMING PLAN
SECOND FLOOR FRAMING PLAN

TITLE
SEYMOUR H. MANDELL
ARCHITECT
17220 W. 12 MILE
SUITE 100
SOUTHFIELD, MICHIGAN 48075
597-5271

NORTH
10-42
SHEET



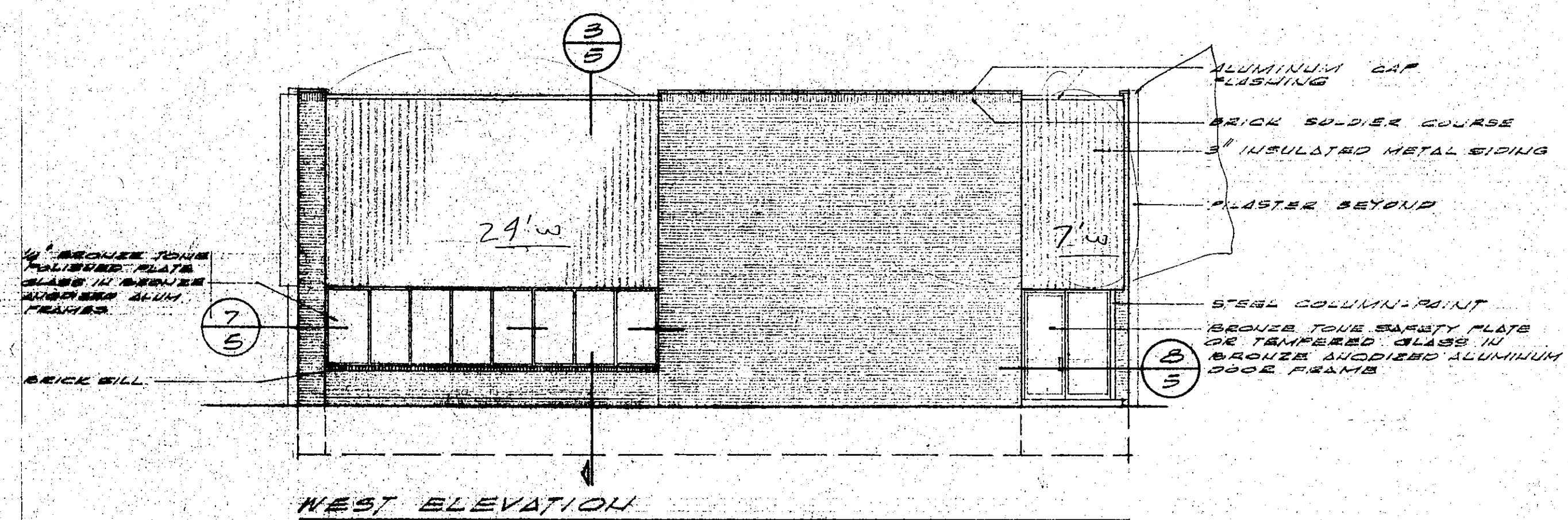
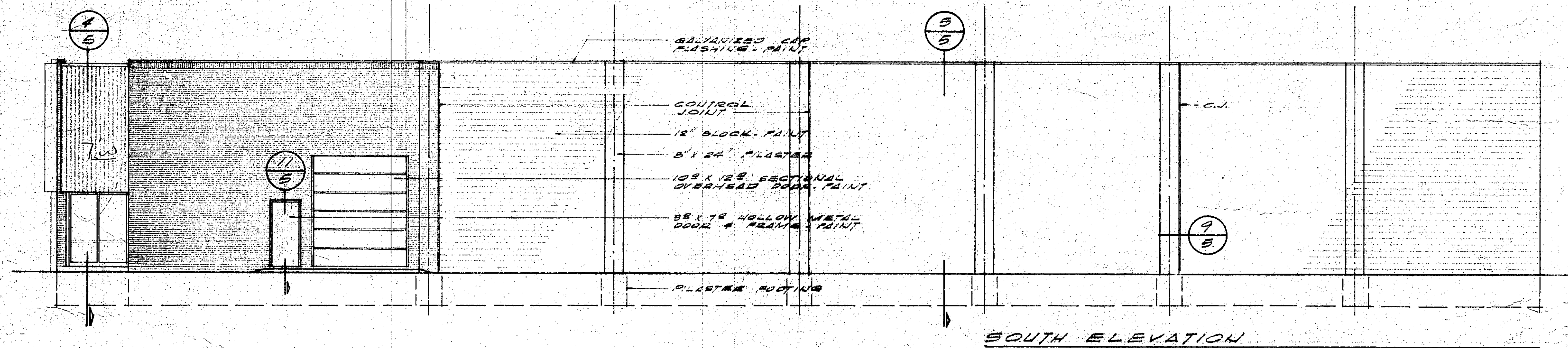
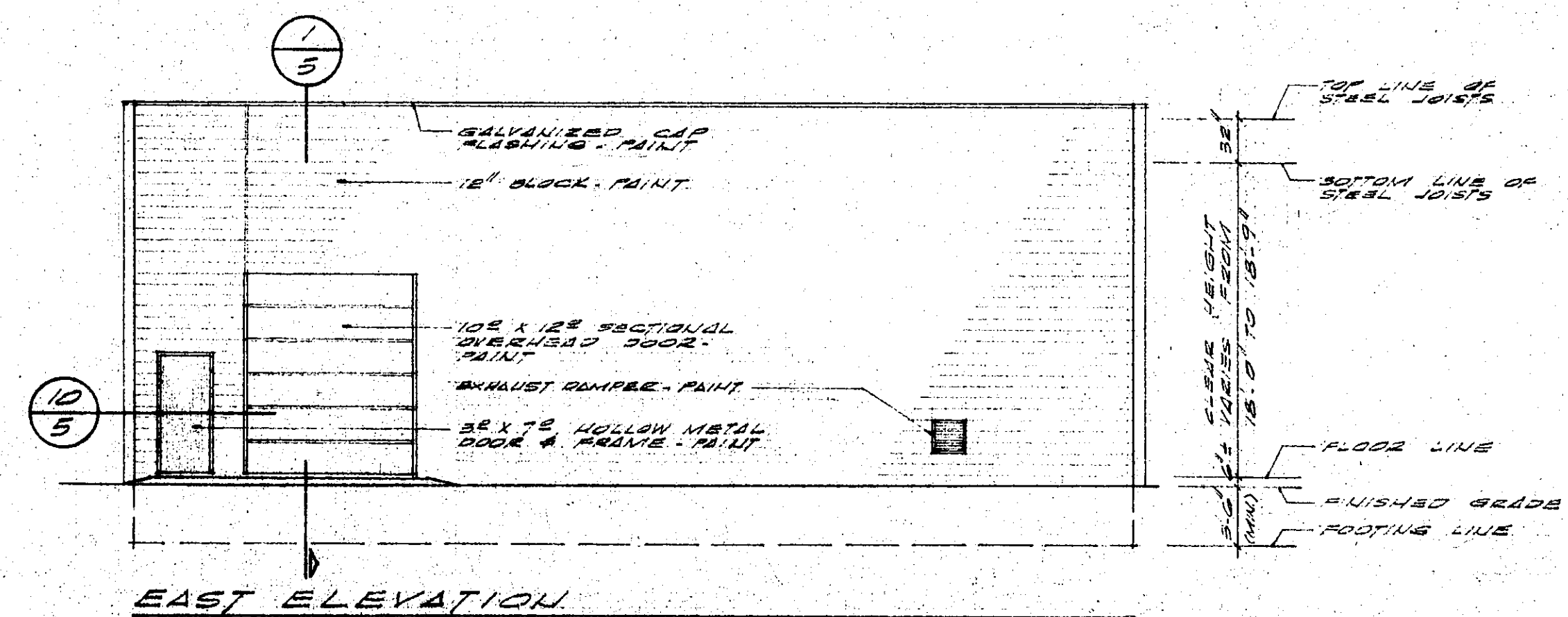
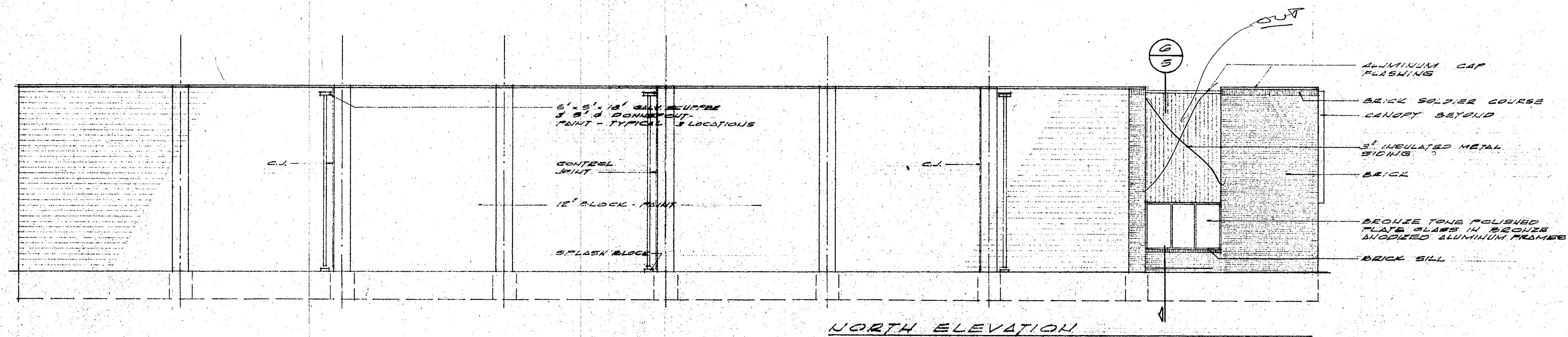
NOTE:
ALL INTERIOR FINISHES SHALL
HAVE FLM® SFEAD RATINGS
NO GREATER THAN CLASS III

ALL FLOOR SURFACES TO
BE NON-SLIP

DOOR SCHEDULE									
NO.	SIZE	MATERIAL	FINISH	MATERIAL	FINISH	THRESH.	LABEL	REMARKS	
1.	36" x 54" 1/2	ALUM.	BRONZE	ALUM.	BRONZE	ALUM.		TYPE "A", WEATHERSTRIP METAL GLASS, RAIN-VAL.	
2.	36" x 54" 1/2	ALUM.	BRONZE	ALUM.	BRONZE			TYPE "A", GLASS TYPE "A" GLASS WEATHERS	
3.	36" x 66" 1/2	WOOD	STAIN	WOOD	STAIN		A	TYPE "B" GLASS, MESSAGE SET	
4.	36" x 66" 1/2	WOOD	STAIN	WOOD	STAIN			TYPE "B", MESSAGE SET	
5.	36" x 66" 1/2	WOOD	STAIN	WOOD	STAIN			TYPE "B" MESSAGE SET	
6.	24" x 66" 1/2	WOOD	STAIN	WOOD	STAIN			TYPE "B", GLASS, RUFF-LOCK	
7.	36" x 66" 1/2	WOOD	STAIN	WOOD	STAIN			TYPE "B" GLASS BUT-NO-LOCK, UNDER LOCK	
8.	36" x 66" 1/2	YELLOW METAL	PAINT	METAL	PAINT			TYPE "B", GLASS GLASS, MESSAGE	
9.	36" x 72" 1/2	YELLOW METAL	PAINT	METAL	PAINT			TYPE "B", WEATHERSTRIP GLASS, MESSAGE	
10.	36" x 72" 1/2	YELLOW METAL	PAINT	METAL	PAINT			TYPE "B", WEATHERSTRIP GLASS, KEY LOCK	

[illegible]

NOTE: 1. GROUT HEIGHT OF BARRIER FREE WATER CLOSURE 17" A.F.F. 2. BARRIER FREE LAVATORY MOUNTED WITH 3 CLEAR TOILET, LEVER ACTION FAUCET. MAX. WATER TEMP. = 120 °F.



LIGHTING FIXTURE SCHEDULE

CODE	DESCRIPTION	WATT	VOLTS	MANUFACTURER
A	2" x 4" 4 TUBE LAY-IN 120 120 LITHONIA FLUORESCENT FIXTURE W/ REFLECTOR LENS	120	120	2 SL 440 A/2
B	RECESSED INCANDESCENT 150 120 HALO FIXTURE 1" TALL HOUSING W/ LENS & SHIM EMERGENCY	150	120	H7-402
C	WALL MOUNTED INCAN. 150 120 HALO FIXTURE	150	120	HALO
D	3" LONG 2 TUBE OPEN 120 120 LITHONIA FLUORESCENT FIXTURE W/ REFLECTOR, SHIM HUNG	120	120	LITHONIA
E	EXIT LIGHT	35	120	LITHONIA

H.V. & A.C. CONTROLS

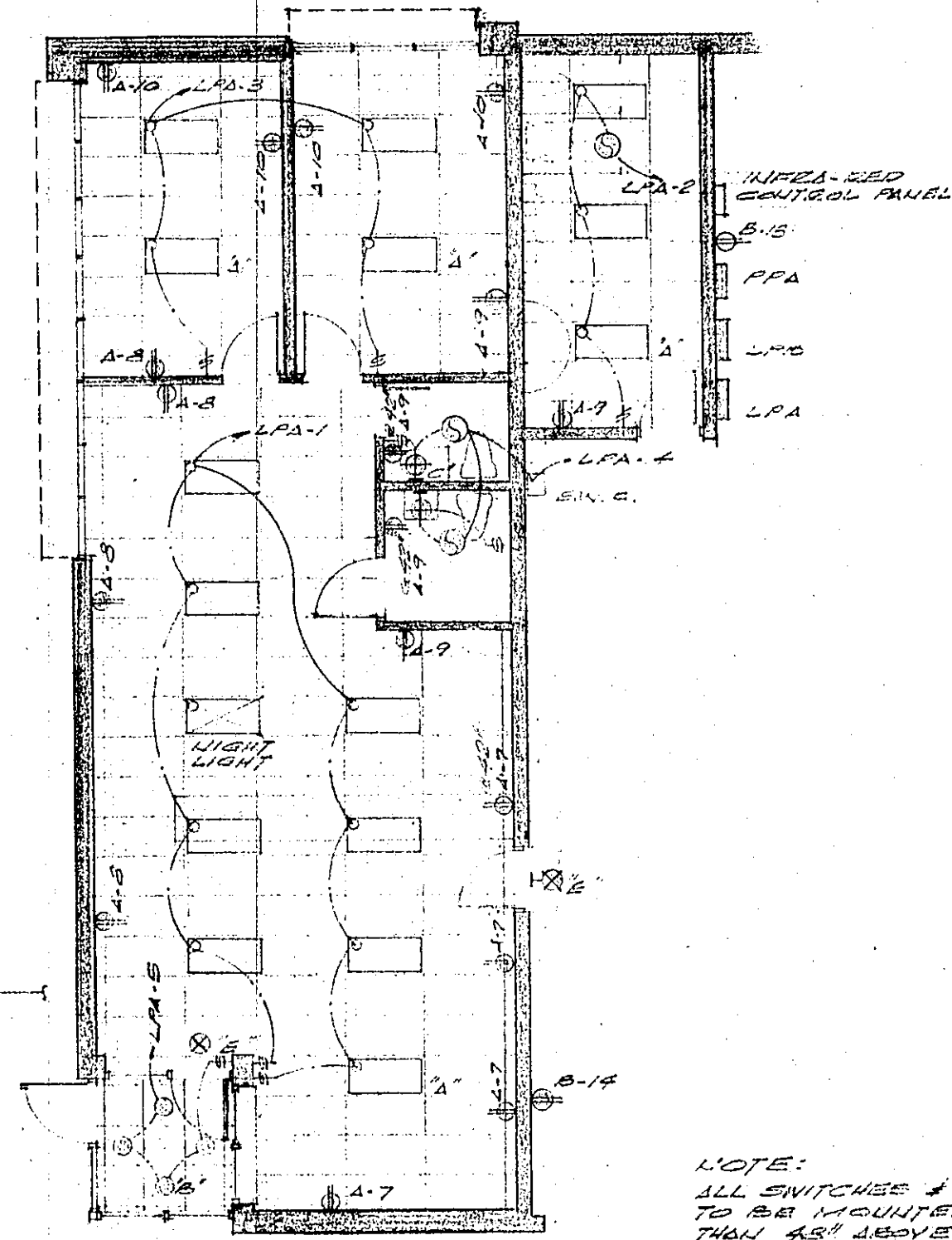
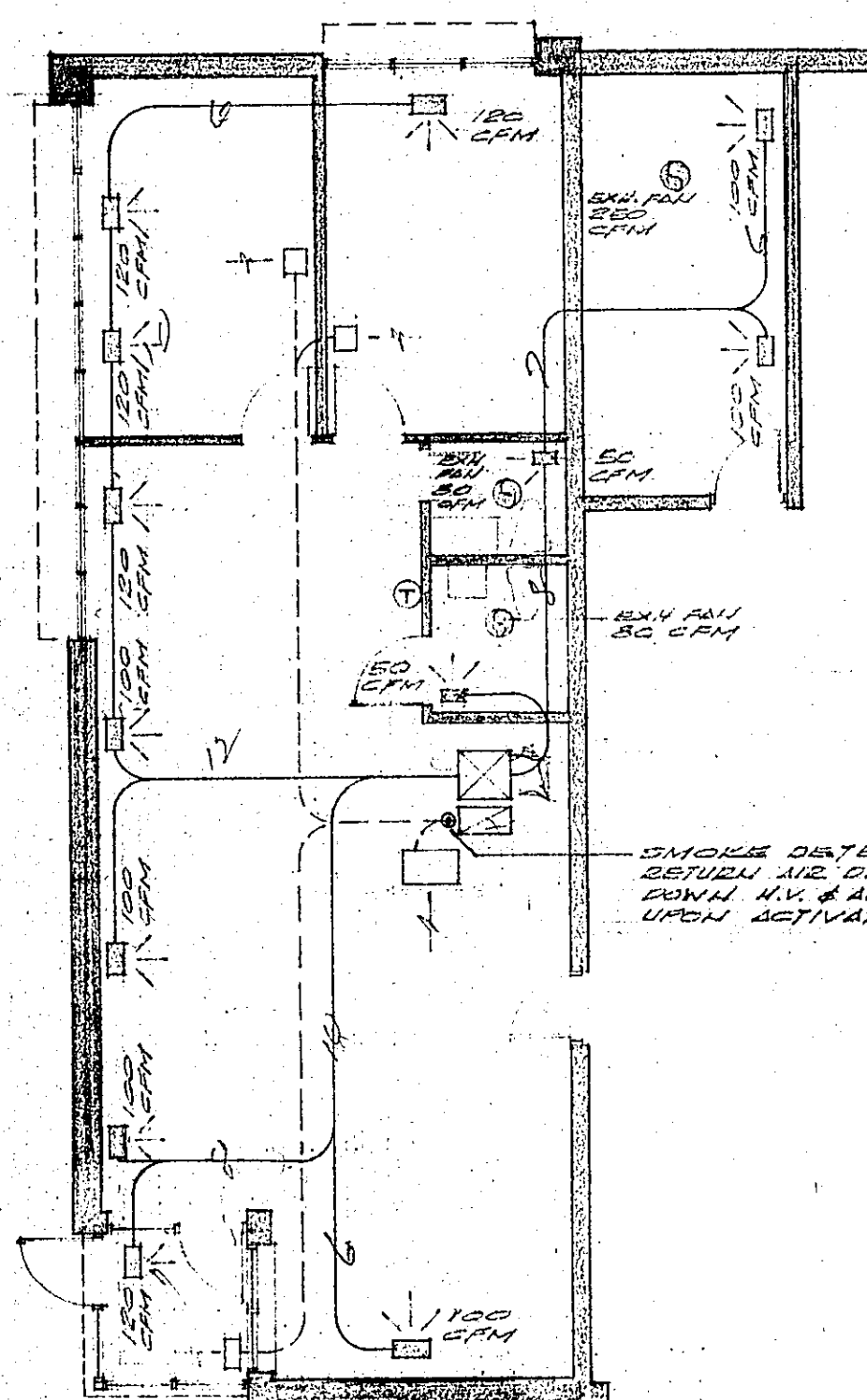
PROVIDE A COMPLETE SYSTEM OF CONTROLS TO PROVIDE THE FOLLOWING OPERATION: PROVIDE A REMOTE START TO CONTROL TEMPERATURE. SUMMER - WINTER SWITCH FOR AUTOMATIC TEMPERATURE. DURING DAY CYCLE OF OPERATION, FAN SHALL RUN CONTINUOUSLY AND UNIT SHALL PROVIDE HEAT OR COOLING AS THE STAT DEMANDS. DURING NIGHT CYCLE, FAN SHALL RUN INTERMITTENTLY WITH STAT DEMAND. ORDINARY OPERATION TO PROVIDE 25% FRESH AIR MAKE-UP.

H.V. & A.C. UNIT

DOOR MOUNTED H.V. & A.C. UNIT TO BE INSTALLED IN ROOM 101. 575 C.I. VACUUM GAS REFRIGERANT. 150,000 B.T.U.H. INPUT. 112,500 B.T.U.H. OUTPUT. 45,000 B.T.U.H. COOLING CAPACITY. 1000 CFM. 250V. 60 CYCLE THREE PHASE OPERATION. INSTALL PER MANUFACTURER'S SPECIFICATIONS. COMPLETE WITH FAN, COIL, HEATING COILS, FAN MOTOR, OUTSIDE AIR MAKE-UP DAMPER WITH ECONOMIZER CYCLE AND CONTROLS.

INFRARED HEATING

HEATING SYSTEM CONSISTS OF 3 BURNERS. 250,000 B.T.U.H. EACH. ONE VACUUM PUMP. 1/2" I.D. TUBING. STANDARD EXHAUST GAS SOLID THERMOSTATS (A). CONTROL PANEL (FURNISHED). SET SYSTEM 5' 11" O" ABOVE FINISH FLOOR WITH TAILPIPE FITTING DOWN 1" IN 20' O". TYPICAL VACUUM PUMP. GAS PIPING 5" I.D. FOR NATURAL GAS.



SET	DESCRIPTION	WATT	VOLTS	DESCRIPTION	SET
1	LIGHTING	450	200	SHOP TOILET	2
3	LIGHTING	450	200	OFFICE TOILETS	4
5	LIGHTING	600	1000	EXT. J.E.	6
7	RECEPT.	800	800	RECEPT.	8
9	RECEPT.	1000	800	RECEPT.	10
11					12
13					14
15					16
17					18
19					20

SET	DESCRIPTION	WATT	VOLTS	DESCRIPTION	SET
1	LIGHTING	1102	1152	LIGHTING	2
3	LIGHTING	1102	1152	LIGHTING	4
5	LIGHTING	1152	1152	LIGHTING	6
7	LIGHTING	1152	1152	LIGHTING	8
9	EXTERIOR L.T.S.	950	950	EXTERIOR L.T.S.	10
11	EQUIPMENT	600	800	RECEPT.	12
13	RECEPT.	800	800	RECEPT.	14
15					16
17					18
19					20
21					22
23					24

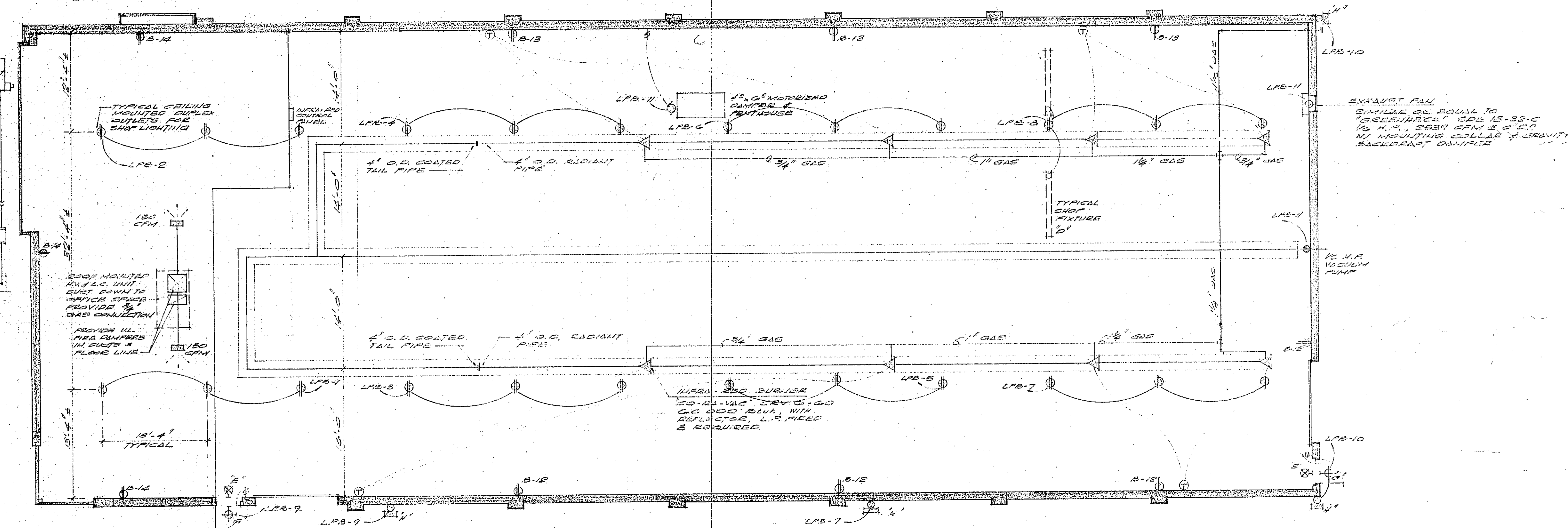
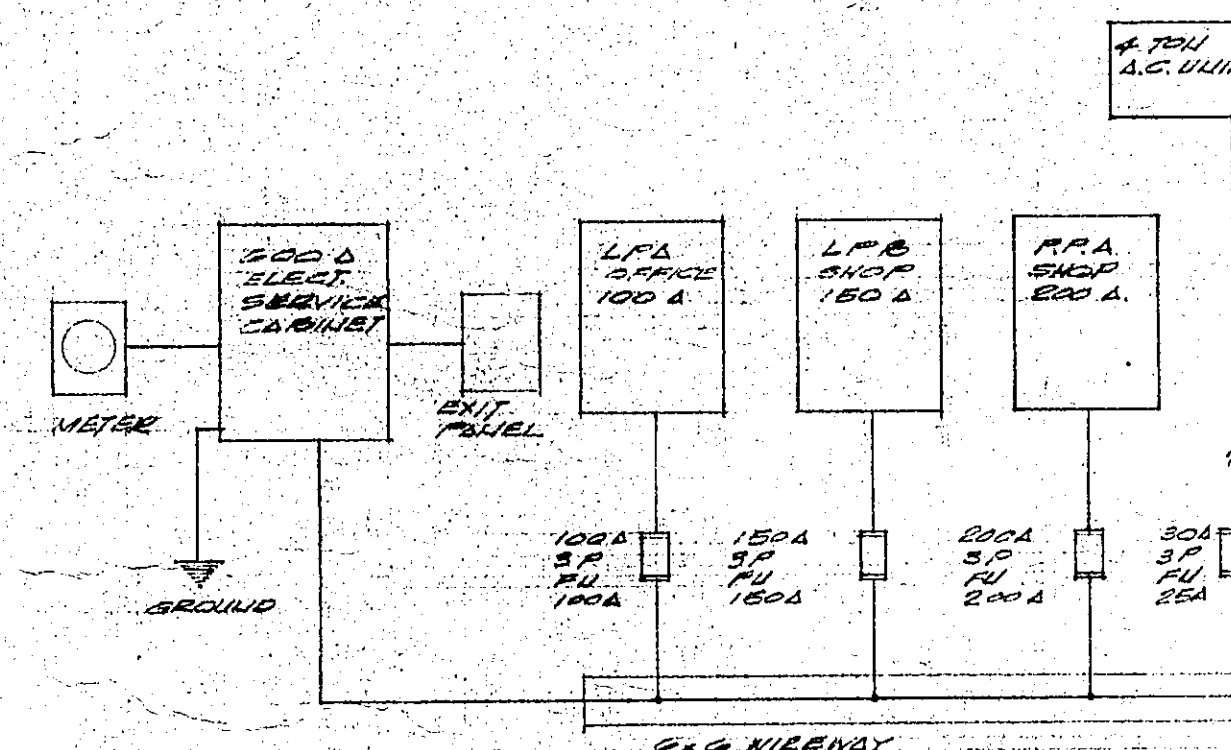
LOAD STUDY

L.P.A.		
LIGHTING	4540	
+ 25% F.	5675	
RECEPTACLES	3422	
	8700	5.7 KVA

L.P.B.		
LIGHTING	11112	
+ 25% F.	2777	
RECEPTACLES	3000	
	16895	16.9 KVA

4 TON A.C. UNIT		2.5 KVA
		32.1 KVA

F.P.A. CIRCUITING TO SUIT ON-SEAS REQUIREMENTS.



NOTE: CONFIRM NUMBER & LOCATION OF SHOP LIGHTING FIXTURES WITH OWNER PRIOR TO INSTALLATION.

DRAWN BY
 DATE STARTED
 CHECKED BY
 ISSUED BIDS & PERMITS
 APPROVED FOR CONSTRUCTION
 DATE
 BY
 REVISIONS

PROJECT
 PROPOSED BUILDING
 100000 S.F.

TITLE
 MECHANICAL & ELECTRICAL PLAN

SEYMOUR H. MANDELL
 ARCHITECT
 ENGINEERS, PLANNERS, AND CONSULTANTS
 17250 W. 12 MILE
 SUITE 100
 SOUTHFIELD, MICHIGAN 48075
 557-5271

FILE NO.
 76-4203
 SHEET
 116
 SHEET 5 OF 5
 DRAWING
 MAR 29 1977

GENERAL NOTES

- GENERAL:** The General Conditions of the A.A.A., latest edition, shall govern the work of all contractors, subcontractors, and materialmen.
- INSURANCE:** Each contractor shall be responsible for liability and comprehensive insurance and for work damaged by improper workmanship. Certificates of Insurance shall be filed with the Owner and Architect for each party's respective benefit. Insurance shall be as follows:

Personal Liability	\$200,000/person
Property Damage	\$500,000/accident
Property Damage	\$150,000/accident
- FIELD CONDITIONS:** The General Contractor and each subcontractor shall be fully responsible for field checking all existing conditions and for fitting their work to existing and new work. Notice must be immediately given to the Architect where there are inconsistent or conflicting dimensions on the drawings and for where there is conflict in the work of the individual trades and/or where there is a conflict between work shown on the drawings and conditions found in the field. Each contractor assumes full responsibility for his work where he fails to check such conditions and/or give notice to the Architect of discrepancies therein.
- INSURANCE:** Owner shall pay and maintain fire and extended coverage insurance on the work which inures to the Owner's benefit. Each contractor and subcontractor shall insure their individual materials and equipment brought to the job for purposes of executing work. The Owner shall maintain general comprehensive fire and extended coverage insurance on the building and property and shall issue certificates with and for the protection of the General Contractor and Architect.
- DAMAGE:** Each contractor shall be responsible for damage or injury to the Owner through improper workmanship and shall repair or pay for the repairs necessary to correct the work of other trades or materialmen. Where said damage is not properly and promptly corrected when ordered, the Architect may direct others to perform said work and have the reasonable cost of such work backcharged against the contract of the offending party.
- TEMPORARY ELECTRICAL SERVICE:** The Electrical Contractor shall provide and pay for temporary service during the construction phase of the work. Coordinate service work with the Detroit Edison Company and the Architect.
- TEMPORARY CONVENIENCES:** The General Contractor shall direct where temporary convenience facilities will be provided and, if necessary, will maintain a portable toilet facility.
- TEMPORARY WATER:** The Plumbing Contractor shall provide and pay for the installation of temporary water. Coordinate service requirements with the Owner.
- TEMPORARY HEAT:** Once the building is enclosed, the Owner shall direct the requirements for any temporary heat for the project and will assume all costs for said temporary heat unless otherwise noted in the individual contractor's job orders. Until such time as the building is enclosed, each trade shall provide their own temporary weather protection and such other devices as are required for execution of their work.
- CLEAN UP AND TEMPORARY PROTECTION:** Each individual subcontractor shall be responsible for clean up and temporary protection of the work which they have contracted for. If such work need be performed by others, then the individual trades shall be charged for such services.

SPECIAL CONDITIONS

The Owner, General Contractor, each individual Subcontractor, and Materialman agree to save the Architect harmless as a result of any injury or damage that may occur to any individual or property during construction as a result of acts or omissions by the said Owner, Contractors and/or Materialmen in the performance of their work.

All erection and construction procedures shall be executed in such manner as to fully protect the structure, all other trades working on the project and the surrounding areas from hazardous conditions.

All work will proceed following all local, state and federal safety codes, statutes and recognized standards.

All procedures of construction and erection which are undertaken without the express written approval of the Architect are the sole responsibility of the Owner, Contractor, Subcontractor and/or Materialmen executing same and are to be acknowledged as being undertaken without the Architect's knowledge or consent.

Lastly, it shall be the responsibility of each contractor to provide certificates of Workmen's Compensation and Public Liability Insurance naming both the Owner and the Architect as the proper parties to said certificates, and the keeping of said certificates shall be a condition precedent to acceptance of any work performed on the project.

SHOP DRAWING NOTE

Shop Drawings shall be submitted to the Architect for approval in reproducible form for all Structural, Mechanical, and Electrical trades. Shop Drawings will show the general arrangement and detail for all work to be installed. Additionally, Shop Drawings shall show the location and specifications for all materials, equipment and equipment specified and/or intended to be used for the project. Modifications, additions and deletions shall be made and approved by the Architect. Approval of Shop Drawings and approval of Shop Drawings and/or waiver of requirements for said submission shall be at the Architect's discretion; however, failure of the Architect to submit reviewed Shop Drawings to the Contractor and/or Subcontractors shall not be construed to be a waiver of any requirements or conditions otherwise required for complete performance of the work designated under the Contract.

GENERAL SITE NOTES

- Building shall have survey take-out prior to excavation. Contractor shall be responsible for setting building as indicated on plan, for setting finish floor elevation, and for setting footing elevations. Building shall be parallel and perpendicular to the North Property Line.
- All building construction and public and private utility construction to be in strict accordance with applicable codes, rules and regulations of local, county, and state and utility company and other governing bodies.
- Concrete walks shown on site plan shall be 4" thick, with 6" x 6" @ 10 W.M. on 4" minimum compacted sand. Provide concrete control joints as indicated, with 1" cast-in-place expansion joints at 24' maximum spacing. Walk along asphalt paving shall be formed with integral curb as detailed on plans. Provide 1" thick expansion joint material at all areas concrete walk abuts building. All public and private sidewalks shall be ramped as required to meet Michigan Barrier Free Design Standards.
- New paving within the right-of-way shall be Department of Highway Standards.
- Each subcontractor shall be responsible for any and all damages to existing utilities caused by his operations, whether intentional or not. The location and depth of all utilities shall be shown in accordance with the best information available, but cannot be guaranteed as to completeness or accuracy.
- All building sanitary sewer lead and disposal methods shall be in accordance with Board of Health regulations. Obtain permits for this work and be responsible for all final inspections on installations.
- Prior to any excavation, the contractor shall telephone MISS DUG (647-7344) for the location of underground gas and cable facilities and shall also notify representatives of other utilities located in the vicinity of the work.
- The site is to be cleared and leveled to proper grade. Soil is presumed capable of 3,000 p.s.f. bearing at 3' below finish grade. The sub-soil is considered to be free of excessive ground water, rock, underground obstructions or other latent soil conditions leading to the imposition of unusual construction requirements. Vegetation and topsoil is to be stripped from all areas to be covered by building and pavement. Topsoil is to be spread out on the remaining site area where required.

COMPACTED FILL SPECIFICATIONS (WHERE APPLICABLE)

FILLING OPERATION: Fill material shall consist of bank run sand and gravel which must be free from vegetable matter and other deleterious substance, and shall not contain rocks or lumps having a diameter of more than six inches (6").

PLACING: Fill shall be placed in layers which, when compacted, shall not exceed nine inches (9"). Each layer shall be spread evenly and shall be thoroughly blade mixed to insure uniformity. All traces of organic or loose materials shall be removed from the filling area, prior to commencing the operation.

COMPACTING: Each layer of not more than nine inches (9") shall be compacted with an approved compacting machine, acceptable to the Architect, and a sufficient number of passes of the machine must be made to obtain a density of at least 95% of the maximum density as determined by the "Modified Proctor Test", A.A.S.H.O. Test No. T-180. Moisture content of the fill must be maintained at, or near the optimum moisture content determined in the test.

SEASONAL LIMITS: No fill material shall be placed, spread or compacted while it is frozen or thawing, or during unfavorable weather conditions. When the work is interrupted by heavy rain, filling operations shall not be resumed until the moisture content and density of the previously placed fill are as specified.

COMPACTION CONTROL: The contractor shall secure and pay for the services of an approved testing laboratory, to test and report on the quality of the fill. Before filling is started, a sample of the material to be used must be submitted to the laboratory for approval, and determination of the maximum density and optimum moisture. A minimum of two (2) field density tests must be made in each lift of fill, and satisfactory results obtained before filling is resumed. Any fill not meeting the requirements of these specifications must be removed or reworked at the contractor's expense, before proceeding. Five copies of the test reports must be submitted to the Architect for his approval.

ASPHALT PAVING

Furnish all labor, materials, and equipment required to install all asphalt paving work, including base and striping in accordance with plans and specifications. All asphalt paving work shall follow or be governed by Michigan Department of State, Highways and Transportation (MDSH) current standards and specifications for the work described.

Asphalt paving shall consist of providing a 1 1/2" thick asphaltic concrete surface course, over 1" thick asphaltic concrete binder course, as per MDSHT Section 4.12, using 100% crushed aggregate, size 25A aggregate for binder course and size 31A for surface course; over a prime, compacted 6" thick aggregate base course of size 22A crushed stone concrete or slag, as per MDSHT Section 3.01, constructed in two compacted 3" layers; over a prepared subgrade (rough grading by others).

Bid alternate for one lift 2 1/2" asphalt topping on 6" base.

This contractor shall further provide pavement striping and marking as shown on plans. Yellow stripes, 4" wide; paint to be similar or equal to Standard Detroit Paint's "Traffic and Marking Paint."

GENERAL STRUCTURAL NOTES

- Concrete, unless otherwise noted on the drawings, shall develop a minimum compressive strength of 4000 psi at 28 days. Concrete bar reinforcement shall be new billet steel conforming to the "Standard Specification for Deformed Billet Steel Bars for Concrete Reinforcement" ASTM A-615, Grade 40. Concrete work shall conform to the ACI standard "Building Code Requirements for Reinforcing Concrete" (ACI 318-71) and ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI 315-65). Concrete Slabs: Refer to plans for slab thickness requirements. Steel Trowel Finish all interior slabs and seal with Master-Seal. Provide control joints at 20' spacing. Exterior slabs shall be light broomed finished with expansion joints at 30' o.c. maximum and 6'-0" maximum spacing for control joints. Provide 6" x 6" - 6/6 W.W.M. in all 6" slabs and 6" x 6" - 10/10 W.W.M. in all 4" or 5" slabs for interior work.
- Provide 2 - #5 additional bars each side and each face of all unframed openings in concrete walls and slabs. Extend bars 30 bar diameters beyond edge of opening.
- Provide corner bars at all outside corners of intersecting walls. Corner bars shall be of the same size and spacing as horizontal reinforcement and shall lap 30 diameters with the horizontal reinforcement.
- All building footings and trench foundations are designed based upon a minimum allowable soil bearing pressure of 3000 psf. If suitable soil capable of safely sustaining this capacity is not found at the elevations indicated, the engineer shall be notified and the foundations shall be changed in elevation and/or size as determined by the engineer.
- Structural steel shall conform to the requirements of ASTM A-36. Shop details, fabrication and erection of structural steel shall conform to the requirements of AISC "Specification for Design, Fabrication and Erection of Structural Steel for Buildings" and AISC "Code of Standard Practice for Steel Buildings and Bridges." Prime paint all steel prior to job shipment.
- Structural steel shop connections shall be welded or bolted with high-strength bolts and structural steel field connections shall be bolted with high-strength bolts unless otherwise noted on the drawings or approved by the Architect. High-strength bolts shall conform to the requirements of ASTM A-325. Structural steel connections shall be made with a minimum of two 3/4" high-strength bolts or welds capable of developing a minimum of 10,000 lbs., unless otherwise noted on the drawings and specifications and/or approved by the Architect.
- Welding of structural steel shall conform to the requirements of the AISC "Specification for Design, Fabrication and Erection of Structural Steel for Buildings" and the AWS "Structural Welding Code."
- Refer to mechanical, electrical and architectural drawings and consult with all affected sub-contractors for locations and sizes of required openings, and cast in items in concrete work. All openings required but not shown on structural drawings shall be shown on drawings for approval.
 - Duct Openings: Steel contractor to provide 3" x 3" x 1/4" steel angle bracing for duct openings through roof for air conditioners, make-up air units, exhaust fans, etc. Confirm size and spacing of opening framing members with mechanical contractors.

- Where applicable, provide two courses of solid masonry units under column, beam and joist bearing, or fill cores of masonry with concrete unless otherwise shown.
- Minimum compressive strength of masonry units on net area shall be 2000 psi for 8" units and 2500 psi for 12" units. The contractor shall furnish evidence supporting this requirement.

- Provide block truss with #9 wires (standard joint reinforcement) for all masonry walls at 16" o.c. Install in accordance with manufacturer's recommendations.
- All steel joists and bridging shall be as specified by "Steel Joist Institute" for open web joists. A minimum of two inch of weld on either side of bearing plate shall be used for all joists to connect with structural steel.
- All joists bearing on masonry walls to have 2-3/4" diameter x 1'-3" long anchors grouted into wall.
- Steel beams and joists bearing on masonry wall shall have 6" minimum bearing in place.
- All grout shall be puddled in place.
- Block cells containing vertical reinforcement shall be solidly filled with grout, in not more than 4'-0" vertical intervals.
- All bolts, anchors, etc., inserted in masonry walls shall be solidly grouted in place.
- Where metal deck is bearing on masonry walls provide 3" x 3" x 8" continuous steel angle anchored with 1/8" x 1" x 1'-3" at 48" o.c. masonry anchors. All anchors shall be solidly grouted in masonry.
- All steel beams bearing on masonry walls shall have 5/8" x 8" x 8" bearing plates placed over 13" grout bed and having 2-3/4" diameter x 1'-3" long anchor bolts grouted into walls, unless otherwise shown.
- Where masonry walls tie into steel column furnish 1/8" x 2" x 24" strap anchors at 16" o.c.
- Design live loads; roof (snow) 30 psf; second floor storage 200 psf.

MASONRY

All labor, materials, equipment and services necessary for, or incidental to, the completion of all masonry work are a part of this contract, including furnishing and installing all brick (brick to be selected by owner under an allowance of \$90/M, concrete block, stone sills, precast masonry lintels, etc., as shown on the drawings; the installation of loose lintels, pressed metal door frames, bearing plates for steel structural members, through wall louvers, interior equipment or other items, all to be supplied by others with installation instructions to masonry contractor; furnishing and installing masonry reinforcement, flashings, membranes, etc., as outlined below; and pointing and cleaning at completion of job. Refer to structural notes for further information.

All materials shall conform to current A.S.T.M. standards for respective uses, except as otherwise noted. Block units shall be light weight, steam-cured for 28 days (minimum) of size and type necessary for work indicated. Mortar joints to be 3/8" thick, uniform in all directions. Mortar to be high strength to meet A.S.T.M. and Portland Cement Association specifications. Lay masonry work plumb, true to line with level, and accurately space courses. Unless otherwise noted or required, fill solidly with mortar around frames and other built-in items. Build in flashing course, dampproofing materials, membrane or metal flashings as indicated or required to obtain a water tight wall. Brick ties shall be sixteen gauge corrugated galvanized steel for bonding in masonry and dovetail anchors for anchoring to slots in concrete where required.

Wall reinforcing in horizontal joints shall be standard truss type, similar or equal to "Our-O-Wall", welded steel construction. Width of reinforcing shall be as required for wall thickness shown on the plan, reinforcement to be placed in alternate courses. At corners, cut inside rod and bend to proper angle. All installation to be per manufacturer's specifications. Do not extend truss-type reinforcement through control joints.

Point holes in all joints at completion of work. Clean brick with a dilute solution of commercial muriatic acid (not to exceed 10% by volume) and with water as required. Provide minimum two (2) year warranty on all labor and materials at the completion of the project.

BUILT UP ROOFING

This contractor shall furnish and install all labor, materials, and equipment required for a complete installation of roof insulation, built up roofing, and flashing work, complete with all accessories and incidentals. In accordance with the drawings and specifications, Roofing installation shall comply with "Underwriters Laboratories, Inc. Construction No. 2", and all materials shall be selected so as to maximize fire resistance rating of construction, ~~GRADE C OR BETTER~~

At all areas where roof insulation is required, install one inch of rigid (perlite) board insulation in one layer to provide a "C" factor of .36. Insulation shall be similar or equal to Johns-Manville "Fesco." Installation in strict accordance with manufacturer's specifications, using fire-retardant adhesives.

Built up roofing shall be 15-year bonded type (3-ply over base felt) construction designed and installed in accordance with manufacturer's material design and installation specifications, approved manufacturers being Johns Manville, Celotex or G.A.F., using recommended tar and aggregate (gravel) roofing system, in strict accordance with manufacturer's application instructions. Aggregate to be either gravel or slag; 400 pounds/square of gravel or 300 pounds/square of slag.

Provide a written two (2) year warranty against all labor and material defects to owner upon completion of job.

All base flashings shall be 20-year type reinforced asbestos, similar or equal to Johns-Manville Spec. No. FE-1. Cant strips shall be 4" high fiberboard at 45 degree angle, and shall be installed at intersection of built up roofing with all vertical surfaces. All areas of metal cap flashings at block parapet walls shall be 26 gauge galvanized steel to be installed on wood nailers provided by others. Use aluminum cap flashings in areas of brick. Roofing contractor shall be responsible for flashing and roofing installation up to mechanical unit platforms on roof (platform to be supplied and installed by others). This contractor shall furnish and install scuppers and downspouts as per plan, scupper shall be 5" x 5" x 18", 26 gauge galvanized steel, downspouts to be 5" round, 26 gauge galvanized steel, double banded to masonry. Scupper installation to be completely flashed and mastic sealed to assure water tight construction.

CAULKING

Caulking includes, but is not limited to, all joints between door frames and masonry, masonry and steel, aluminum or other dissimilar materials as detailed, caulking under metal thresholds, and metal sills; joints around interior grilles, convectors, cabinets, or fixtures; and other locations as required; caulking of all plumbing fixtures; piping and osakum filling required for caulking work; all other locations where caulking is indicated or required to make all exterior work watertight. Caulking compound material shall be similar or equal to G. E. Silicone. Color to be similar to that of adjacent surfaces or plumbing fixtures, or as selected by Architect.

GLASS & GLAZING: Unless otherwise noted, all glass to be 1/2" thick clear polished plate glass similar to P.P.G. & L.O.F. Storefront sash shall be dark bronze anodized aluminum frames, glass stops, etc., similar to PLTTCO, Kawneer or approved equal. This contractor to furnish aluminum entrance doors complete with exterior pull, interior push bar, closer and weatherstripping. Glass in entrance doors to be safety plate or tempered. This contractor shall provide a bronze aluminum stile mounted on interior of full length windows at 2'0" above floor line. Refer to plan notes for other glass area specifications.

HOLLOW METAL DOORS AND FRAMES: Shall be first quality as manufactured by Guss Steel Products, Fenestra or approved equal.

FINISH HARDWARE

Provide all labor, materials, and miscellaneous equipment necessary for complete hardware installation. At Architect's request, a complete hardware schedule shall be prepared and submitted prior to order of hardware. Hardware shall be similar or equal to the following:

Hinges - Stanley, Parker
Closers - Norton, Sargent, L.C.N.
Exit Devices - Door-a-matic, Sargent
Latch Sets - Schlage
Lock Sets - Schlage
Push and Pulls - Sargent

All doors for openings requiring U.L. labels shall have hardware meeting U.L. requirements.

Final selection of hardware style and finish shall be made by owner and/or Architect. Master key schedule to be determined by owner prior to lock installation. All work shall be under hardware allowance as noted on the plans.

CEILINGS

Labor, material, and equipment required to furnish and install all acoustical ceilings, complete with suspension system, framing accessories and incidentals.

Suspended grid system shall be cold rolled steel members, electro-galvanized, bondersized, and finish in baked enamel white to match tiles, complete with wall mouldings. Suspension wires shall be No. 9 gauge zinc coated, annealed steel wire hangers, installed as per grid manufacturer's specifications. Lay in acoustical panels to be 24" x 48" x 5/8" (nominal) white fissured finish mineral acoustical tiles, with Class "A" flame resistance as per Federal Specification SS-A-181b, similar or equal to that manufactured by Armstrong or Owens-Corning.

Suspended grid shall be laid out as shown on reflected ceiling plan. Follow mechanical and electrical drawings for size, number and location for electrical fixtures and registers, and coordinate same with respective trades. Ceiling contractor shall provide lay-in white plastic egg-grate type return air panels in ceiling as shown on plan.

RESILIENT FLOORING

Labor, material and equipment required to furnish and install all resilient flooring and base mouldings, including tile, base, adhesives, surface preparation, and cleaning of all work.

Resilient flooring tile shall be similar or equal to that as manufactured by Armstrong Cork Company, vinyl asbestos tile, 12" x 12" x 1/8" tiles, of marbled or chip pattern as selected by owner. Vinyl base to be installed in all areas to be 1/8" thick, 4" high coved homogeneous vinyl. Prepare and repair all surfaces for installation and install with adhesives as per manufacturer's recommendations. Clean all excess adhesive from surfaces as work progresses, and clean and wax all surfaces as per material manufacturer's specification upon completion of job.

TOILET ROOM ACCESSORIES: Provide wood blocking for toilet accessories in wood frame walls.

Description	Manufacturer Model No.
Soap Dispenser	Parker No. 10L
Paper Towel Dispenser 12-1/8 x 26-1/16 semi-recessed	Parker No. 601 SR
Paper Towel Dispenser 11 1/2 x 14-3/4 x 4" surface mounted	Parker No. 69A
Toilet Paper Dispenser	Parker No. 1217 P
Coat Hook	Parker No. 1226 P
Robe Hooks with Bumper	Chrome Finish
Grab Bars 12" diameter 42" & 33" lengths	Similar or equal to Parker No. 28
Mirrors	Parker No. 3020 P See interior elevation for size MIRRORS IN BATHROOMS SHALL TO BE MOUNTED 50" H.P.

HOLLOW METAL TOILET PARTITIONS

Partitions shall be flush type floor mounted as manufactured by Sany Metal Products, Hills Company or American Sanitary Partition. Installation shall be in accordance with manufacturer's specifications, complete with door hardware, coat hook, and bumper of chrome finish. Color as selected by owner and/or architect.

PAINTING AND FINISHING

Furnish all labor, material, scaffolding, and other equipment necessary to complete interior and exterior painting according to the drawings and those specifications. This shall include, but not be limited to, painting of all unfinished masonry, wood, unfinished metal, drwall, and such mechanical equipment as is hereafter specified. This contractor shall carefully review other specifications to acquaint himself with materials to be pre-finished, or to be furnished with shop or prime coats and needed finish coating in the field.

Base bid to include lump sum bid for all painting work for building. All painting work shall be qualified as to method of application, either sprayed or brush/roll, and contractor shall bid alternate for other means of application. Use first number as manufactured by Standard Detroit Paint Co., Devco Reynolds, or approved equal.

SCHEDULE OF PAINTING

Drywall	One coat latex primer-sealer; one coat flat alkyl
Drywall (toilet room)	One coat primer-sealer; one coat flat enamel
Drywall (locker room)	One coat primer-sealer; one coat enamel semi-gloss
Interior Block	One coat primer-sealer; one coat enamel semi-gloss
Exterior Block	Two coats flat masonry paint
Wood Shelves, Counters, Doors and Trim (unless otherwise noted to be stained)	One coat enamel undercoater; One coat enamel semi-gloss
Interior Metal and Hollow Metal Doors and Frames	One coat ferrous metal primer; touch-up of shop coat; one coat gloss enamel
Exterior Metal	One coat ferrous metal primer for bare steel and touch-up of shop coat. One coat galvanized metal primer for galvanized surfaces. One coat semi-gloss enamel
Wood doors, Trim,	Pre-stain with two coats transparent wood stain.

PROPOSED BUILDING
AND REELECTE CONSTRUCTION

MECHANICAL NOTES

The Mechanical and Plumbing Contractor shall be governed by all General and Special Conditions. He shall familiarize himself and coordinate all work with requirements of the Electrical trades. He shall execute on the intent of the mechanical drawings and specifications, using the best trade practices so that the performance of all systems shown will function to the purpose intended. Where systems shown or specified can be improved upon by practical modification, qualification of bid will be considered. Make all qualifications in writing.

All utility installations shall meet the standards of and be coordinated with the municipal, county, and/or state agencies governing, or private utility company requirements.

Each trade and/or sub-trade shall maintain an accurate "as-built" record of all work. Said drawings shall be delivered to the Architect at completion of the job.

The mechanical trades will supply all flashings, sleeves and inserts required for their work. Where "built-in" requirements exist, the general contractor shall coordinate the work with the trades effected.

Clean-up shall be the responsibility of each trade.

The mechanical trades shall be responsible for all of their own trenching, compacted backfilling, removal of spoil, etc.

All motorized equipment mounted on floors or roofs shall have vibration and sound isolators to meet good trade practice.

Pipe hangers and supports shall meet standards of U.S.A.S. Code for pressure piping and shall be UL approved.

At completion of work, complete sets of written operating instructions and owner instruction shall be given on the entire network of systems; include all manufacturer's drawings, control diagrams, maintenance instructions, warranties, etc.

CODE COMPLIANCE:

Where applicable, and pertaining to all material and equipment usage, both manufacturers and installers shall see that products and installation procedures comply with the following: H.F.P.A. and N.B.P.U. 90A Standards; State and local fire prevention and Fire Marshal codes and regulations; OSHA and MIOSHA Standards; BOCA Code as adopted by local community; Detroit Plumbing Code Standards or local code, whichever is most stringent; where not otherwise controlling the State of Michigan Construction Code Commission Rules, Regulations and Codes; State Handicapped Rules and Regulations.

H.V. C.A.C. EQUIPMENT: See Plan for Equipment Specifications.

Diffusers and Ductwork: Provide a complete system of supply and return air ductwork, including supports, insulation of supply ducts with fiberglass and vapor barrier, and manually operated dampers as required for complete regulation of system. All work to be regulated by the standards of the ASHRAE Engineering Guide as to size, gauge and construction of ductwork. Supply air shall not exceed 800 fpm in duct and leaving air velocity at the face shall not exceed 250 fpm unless otherwise noted; return air ducts shall be sized for no greater than 300 fpm at register openings and shall have dampers to enable control of air through the system. Diffusers and registers shall be sized as shown in schedule and plan and shall be similar or equal to Hart & Cooley "Royallaire" anodized aluminum finish. Bid alternate for pressed metal, painted registers. Use in "unfinished" areas.

Mechanical Contractor Service to include cartage, uncrating, setting and placement of equipment. Also includes tests, check and adjustment of equipment after installation, obtaining of all mechanical and/or special permits, obtaining inspections on all work and at end of job to submit a one-year warranty and service policy and a five-year compressor warranty. Provide owner with operating instructions and equipment manuals.

Work by Others - Coordinate

Electrical wiring including weather disconnects, final hook-up and power wiring shall be by electrical contractor; special disconnects at equipment, starters and control wiring by mechanical contractor.

Steel supports for roof mounted equipment shall be by structural steel contractor unless prefab curved equipment is used. Steel contractor to install inside angle bracing under steel deck at all locations where mechanical equipment is roof mounted.

PLUMBING: Make work complete in every detail after being fully acquainted with job requirements and include all water service to building; waste leads from building; gas piping distribution; domestic hot and cold water and all waste, safe waste and/or other waste systems.

a. Valving: All fixtures and all branch piping runs to fixtures shall have control valves for complete regulation of the system. Each branch piping system shall be individually valved. Valves shall be brand name and standard for the installation intended.

b. Special Fittings: Provide all necessary vacuum breakers, backflow preventers, hose traps, hose valves, air vents, clean outs, hub outlets, compression chambers and fittings for complete job.

c. Vents: Vents through roof shall be flashed and counter flashed with 6# lead or approved alternate.

d. Rose Bibbs shall be 3/4" non-freeze, keyless, brass finished.

e. Faucet: Use Delta on all lavatories.

f. Hot Water Heater: See Plan.

g. Fixtures and Schedules: Refer to drawings. Fixtures shall be similar or equal to Kohler, American Standard, or approved equal.

PIPE AND FITTING MATERIAL SCHEDULE

Service and Location	Pipe Material and Weight	Type Joint	Fittings Material
Sanitary Drains underground inside building	Cast iron soil pipe service weight CS-168-59 with factory applied asphaltum or tar-pitch coating inside and outside	Hub and spigot and lead caulk or Resilient type ASTM C-425	Corresponding to pipe in material, strength, CS designation and coating
Storm Drains inside building	Clay sewer pipe extra-strength ASTM C200	Resilient type ASTM C-425	Corresponding to pipe in material strength and CS designation
Sanitary soil, waste and vents and storm above ground inside building	Cast iron soil pipe service weight CS-168-59	Hub and spigot and lead caulk or no hub	Corresponding to pipe in material, strength and CS designation
	PVC piping with joints and straps to meet local code	Stainless Steel	
Sanitary Sewers outside of building	Galvanized steel pipe standard weight ASTM A120 up through 4" and A53 over 4"	Screwed	Durham cast iron, recessed, drainage type USAS B16.12
	Vitrified clay sewer pipe ASTM C200 extra strength	Resilient type ASTM C425	Corresponding to pipe in material, and ASTM designation
Storm Sewers outside of building	Vitrified clay sewer pipe ASTM C200 extra strength	Resilient type ASTM C425	Corresponding to pipe in material, strength and ASTM designation
Above ground cold water supply 2 1/2" size and larger	Reinforced concrete pipe as follows: 10" and over ASTM C76 Class III reinforced	Modified grooved connect with rubber gasket	
	Galvanized steel pipe standard weight ASTM A120 2 1/2" through 4" and A53 over 4"	Screwed, 5" size and under	Galvanized malleable iron flat banded pattern 150 LB. USAS B16.3
Above ground cold water under 2 1/2" size and all domestic hot water	Copper water tube hard drawn, type L ASTM B88	Solder	Cast iron 125 class USAS B16.22
	Copper water tube type K ASTM B88		
Gas supply underground	Black steel pipe, Schedule 40, ASTM A53 Grade-B with protective coating	Welded	Steel welding type long radius S.W.P. 150 LB ASTM A234, USAS B 15.9
Gas supply, above ground	Black steel pipe, 1 1/2" size and under, Schedule 80, over 2 1/2" Schedule 40, ASTM A53 Grade B	Welded 1 1/2" size and over, screwed under 1 1/2" size	Steel welding type long radius 150 LB. ASTM A234, USAS D 16.9, black malleable iron banded pattern 150 LB. USAS B 16.9 for screwed fitting

ELECTRICAL

GENERAL: Electrical work shall be governed by the General and Special Conditions of the Contract and A.I.A. Form A-201, latest edition. All work to meet local, state and national Electrical Codes. The electrical and mechanical drawings and the general building plans and specifications, form a part of this specification.

WORK INCLUDED: The work consists of providing a complete electrical installation, ready for the operation by owner, including:

1. Complete entrance service installation from Detroit Edison Company pad mounted transformers or pole (contractor and architect to coordinate with Detroit Edison Company).
2. Complete service panels, disconnects, raceways for all systems control.
3. Complete power wiring of all motors.
4. Complete wiring of all mechanical contractor supplied starters and disconnects.
5. Complete wiring and distribution system for electric heating, ventilating and air conditioning units.
6. Provide power for all mechanical contractor supplied control systems.
7. Complete lighting and receptacles distribution and branch wiring system, including lighting fixtures and lamps.
8. Complete telephone raceway system, including outlets and main, Michigan Bell Telephone Company power.
9. Circuits and wiring for clocks, mechanical equipment, water coolers and all miscellaneous items of equipment noted in the drawings.
10. Complete testing of cables and circuit wiring at completion of job.
11. Provide one year guarantee on all material and workmanship to run from date of final inspection.
12. Provide temporary Electrical Service.

WORK BY OTHERS: Control wiring for heating and air conditioning system by mechanical contractor.

SCHEDULE OF MATERIALS: A schedule of materials shall be submitted (listing all equipment and materials proposed for the project).

SHOP DRAWINGS: Submit six (6) sets of cuts of (lighting fixtures, panels, wiring devices and other items of electrical equipment for approval before equipment is purchased. Approval of manufacturer's drawings, however, shall govern design, intent and detail only.

DRAWINGS AND MEASUREMENTS: The drawings show the general details to be made or less diagrammatic. The drawings are not intended to be used for roughing in measurements or to serve as shop drawings.

COORDINATION: All phases and requests for conduit in walls, as required for accommodation of this work, will be provided by the General Contractor, but this Contractor shall be responsible for accurate location of same. All conduits shall be concealed in walls or ceilings except in equipment rooms and unfinished areas where conduits may be exposed.

This Contractor shall do all necessary excavation and backfilling in connection with his work. All backfill shall be with sand and shall be covered solidly in place. Backfill shall be completely free of cinders, stones or any other sharp edged foreign matter.

WIRING: Wiring must be run continuously from outlet to outlet. All wire used shall be type "RHW" or "THW" as noted on drawings for branch or power circuits and type "THW" for branch lighting circuits. No wire smaller than No. 12 AWG shall be used on lighting or power circuits over 250 feet and over 100 feet in length from panel to the center of the load. All wire shall be 90°C or 105°C Use #8 for 40 amp and #6 AWG for 50 amp circuits. All wiring in 2 and 3 wire shall be stranded. All wire shall be as manufactured by Amconco, or approved equal.

FUSES: Shall be "Fusetrons" by Bussman Manufacturing Company.

CONDUITS: Conduits shall bear stamp of Underwriters' Inspection Bureau and shall conform to all State and City laws. Not more than the end of one (one) right angle bend shall be allowed in any conduit run, where exposed, and no more than 10'-0" for

MOTOR HORSEPOWER RATING: This Contractor shall know all motors and verify from motor name plate data, the exact size of fuse and thermal overload elements required in accordance with recommendations of the motor.

LIGHTING AND RECEPTACLE PANELS: Lighting panels shall be as sized and noted on plan. Circuit breakers shall have thermal magnetic trip, magnetic motor, quick-break and shall be 1/2" size. Minimum access shall be recessed cabinet hinged door complete with flush catch and lock and key. Lighting and receptacle panels shall be as manufactured by Bussman Electric Company, Square D, Westinghouse, or approved equal.

DISTRIBUTION PANEL: Distribution panel shall be sized and noted on plan. Building "Ward-Break", Square D, or equal.

SAFETY DISCONNECT SWITCHES: Safety disconnect switches shall be normal duty, "Quick-Break", horsepower rated, toggle or non-toggle, as indicated. Switches shall be type "Q" as manufactured by Bussman, Square D, Westinghouse, Trumbull Electric, or approved equal.

GROUNDING: Grounding as required by the National Electric Code. Ground neutral of electrical system. Ground all cabinets, motor frames, chassis, conduit systems, etc.

WIRING DEVICES AND MATERIALS: Wiring devices and materials for all switches, controlling individual lights or lighting circuits shall be 20 ampere, quiet operation, equal to Hubbell #1121 through #124.

Steel outlet boxes (if pattern selected to the special requirements of each outlet, securely fastened in place in an approved manner.

Fixture outlets shall consist of a pressed steel outlet box not less than 1-5/8" deep and a W.D. machine threaded fixture stud. All ceiling outlet boxes shall be equipped with ears for cover screws. For receptacle outlets, Contractor shall provide steel outlet boxes of proper pattern to be equipped with grounding type duplex receptacles. All special outlets shall be equipped with approved receptacles to match the equipment to be used.

Weatherproof duplex receptacles shall be 3 wire grounding type 20 amp, specification grade, and shall be approved equal to Hubbell #5311 and #5362 (mount in FS box).

TELEPHONE CONDUIT SYSTEM: Telephone conduit system shall be subject to the approval of the Michigan Bell Telephone Company.

All conduit for system shall be installed as per lighting requirements. No conduit run shall have more than the equivalent of 25-90° bends. If necessary, to keep within this limitation, an additional pull box shall be installed after coordinating size and location with the Telephone Company engineer.

No conduit less than 3/4" shall be used. Provide bushings at all box connections and use only standard factory bends or long sweeps. All wall and baseboard outlets boxes shall be standard. All plates shall be standard telephone plate with a bushed hole, .040" satin finish stainless steel.

PLATES: Plates for receptacle, telephones, switches, etc., outlets in finished areas shall be .040" satin finish stainless steel or vinyl clad walnut tone in areas of wood paneling. Mounting heights and location subject to review with Architect and/or Owner or as plan noted.

LIGHTING FIXTURES: Lighting fixtures shall be installed complete. All fixtures shall bear the Underwriter's label and shall be installed according to manufacturer's instructions and recommendations.

All ballasts shall be Probation Class, High Power Factor Type, General Electric, Bonus Line, or approved equal, bearing the ULX, L.D.M. and C.I.L. tested and approved labels. All ballasts shall be "UL" sound rated. This contractor shall furnish lamps for all fixtures.

MOTOR STARTERS: The Electrical Contractor shall install starters for all motors except those which are an integral part of packaged equipment, as follows:

For all single phase motors either magnetic or manual across the line type starters with thermal overload protection as required. For all three phase motors magnetic across the line type starters.

Starters for automatically controlled motors shall be provided with "load" "off" "run" selector switches in cover. Starters for manually controlled motors shall be provided with "start" "stop" pushbuttons in cover, or with remote pushbuttons if so indicated on the plans. Verify auxiliary contacts, etc., required with Mechanical Control Sub-Contractor. Three phase starters to be combination type wherever disconnect switches are required.

PROJECT	PROPOSED BUILDING AND MARBLEITE CORPORATION KNOX, MICHIGAN
TITLE	SPECIFICATIONS
DATE	1977
REVISIONS	1. 7/1/77
FILE NO.	70-423
DATE	7/1/77
BY	REVISIONS
APPROVED FOR BIDDING	
THROU: HOS & HOS 1172	
DATE STARTED	
DRAWN BY	