ENCLOSURE “C” TO LEASE # BY AND BETWEEN , as Lessor, and THE STATE OF MICHIGAN FOR THE DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS, as Lessee.

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DIVISION O - INTRODUCTORY INFORMATION

0.1 **Scope:** It is the purpose of these outline specifications to set forth the minimum general requirements for the completed facility as well as to clarify points of particular interest to the Lessee.

Actual design, construction, and performance of the building, building systems, site and ground utilization, etc. are the responsibility of the Lessor. The Lessor shall obtain the services of an independent architect/engineer to provide the construction drawings and specifications pursuant to the Lessee's requirements. The architect/engineer shall be responsible for presiding over and generating periodic progress meetings, minutes of meetings, and periodic on-site construction inspections to verify the provisions of the drawings and specifications.

0.2 **Construction Documents:** The Lessor shall submit to the Department of Management and Budget, Office of Facilities, Real Estate Division (DMB), and the User Agency three (3) sets of complete construction drawings and specifications bearing the seal of a licensed architect or engineer in the State of Michigan, for review and approval. While the approved drawings and specifications will become a part of the Lease, in the event there is a discrepancy between these outline specifications and the Lease, and the approved construction drawings, the outline specifications and the written lease document shall prevail. The Construction Documents shall be approved by the Lessee before remodeling or new construction is started. Approval of these documents does not waive the Lessor's responsibility to comply with the provisions of the Lease and Outline Specifications.

Construction drawings shall include a complete architectural site plan indicating boundary and/or topographic surveys, demolition, erosion plan, grading, lighting, utilities, building location, sidewalks, parking lot, drives, curbs, fences, signs, landscaping, and other site considerations.

Construction specifications shall follow the AIA/CSI format and shall provide details and data not provided in the Outline Specifications.

All design considerations shall be based on the Lessor's knowledge of the intended use of the Leased premises. The Lessee's process of plans and specifications review and subsequent approval does not relieve the Lessor from any responsibility to provide an end product that is safe, comfortable and functionally satisfactory to serve as an office facility for the Lessee.

The Leased premises shall be designed in such a manner as to insure an economical and efficient use of space, adequate natural light, ventilation, circulation patterns and code compliance. All systems shall be programmed to be year 2000 compliant. The concept drawing attached to the Lease is only one acceptable schematic design solution.

DIVISION 1 -GENERAL REQUIREMENTS

1.1 **Regulatory Requirements:** Construct this Leased premises in accordance with all Federal, State and Local Building Codes which includes BOCA or U.B.C., Michigan "Barrier Free Design" Law, MIOSHA, Life Safety Codes, "Michigan Uniform Energy Code (MUEC)," and provisions for Public Law 93-112, Section 504. Completed building and site must also comply with ADA Rules. All new construction and major renovation projects shall be accomplished consistent with Leadership in Energy and Environmental Design (LEED) guidelines and standards, and shall score a minimum of 26 points on the LEED scorecard established by the United States Green Building Council.

1.2 **Permits:** The Lessor or its representative shall obtain all necessary building, zoning, and other permits as required for the complete construction of the Leased premises.

1.3 **Temporary Facilities and Controls,** such as water, electricity, toilets, heating and telephone, are the responsibility of the Lessor.

1.4 Project Directory: The Lessor shall provide a Leased premises directory listing the following as applicable to the Leased premises, add other pertinent information if necessary. List by firm name, person in charge, address and telephone number: project name, owner (if different from Lessor), architect/engineer, etc.

1.5 Final Construction Documents: Prior to start of construction the Lessee shall be furnished free of charge, five (5) copies of prints of the final approved drawings and specifications. The Lessee may secure additional copies of drawings and specifications from the Lessor at the usual charge for reproduction and handling.

1.6 Compliance: Construction shall be done in strict accordance with approved plans and specifications. The Lessee reserves the right to make periodic inspections of the construction to ascertain whether construction and workmanship are as represented by approved drawings, and that the Leased premises is also representative of practices of construction that are reasonable and customary in the industry.

All existing buildings shall be structurally sound (certified by licensed civil engineer, if required), and meet all minimum design standards of this outline specification. Build into the floor plan layout all pipe chases and duct chases required to meet the mechanical design criteria, including vertical duct chases where low ceiling heights in existing buildings do not allow ventilation ducts above the ceiling.

To facilitate inspections of critical items, a certain reasonable number of "stop points" will be identified as required at a Pre-Construction Meeting, to be chaired by an authorized representative of the Lessee. Construction of the item(s) to be inspected will not proceed until the Lessee has inspected and approved the work to that point. The Lessee must be given at least two (2) work days notice of when "stop points" will occur and inspection will be made within one (1) work day after stop points are reached, otherwise, construction can proceed as planned. The Pre-Construction meeting will be called by the Real Estate Division Property Analyst and moderated by an authorized representative of the Office of Facilities representative.

Periodic site inspections will be made by the Lessee or by a licensed architect/engineer hired by the Lessee for this purpose. This does not relieve the Lessor from providing architect/engineer inspections during the construction phase.

If any materials or workmanship provided are other than as indicated on drawings, or specified, the Lessee may direct that the portion of the work that is not satisfactory be removed and replaced or otherwise corrected, at no additional cost to the State.

Any reference to a specific brand and/or model is intended to establish quality, operating characteristics, size, or type. Products of equal or better quality, operating characteristics, or type are acceptable. The entire burden of establishing equality of alternate brands, types, sizes, etc., shall rest with the Lessor and the Lessor shall provide proof of "equal or better" upon request by the State.

New construction and renovation projects shall be done in an energy efficient manner incorporating but not limiting the selection of applicable energy conservation measures to the following technologies and practices:

- Use daylighting technologies wherever possible to reduce lighting energy. Avoid over-lighting by designing appropriate light levels for each space by function it serves (e.g. hallways, conference rooms, etc).
- Use 32 or 28 watt T-8 lamps with electronic ballasts for majority of indoor applications. Eliminate use of HID lighting where possible.
- Replace incandescent lamps with equivalent lumen compact fluorescent lamps.
- Use dimmable ballasts wherever possible.
- Use lighting controls for indoor and outdoor lighting (EMS, motion sensors or photo cells.
- Control solar heat gains and glare with window glazing containing appropriate solar heat gain coefficients and insulating factors for building orientation.

- HVAC will be controlled by an energy management system; use occupancy settings for HVAC where applicable.
- Air handlers should be equipped with variable frequency drives to control fan motor speeds.

1.7 Progress Schedule and Subcontractors: Within ten (10) days after the Preconstruction Meeting, the Lessor shall submit to the Lessee a copy of a proposed bar chart construction schedule, a list of all subcontractors, and shop drawings and catalogues specified below. The Progress Schedule shall include the following:

The anticipated date of commencement and completion of the various operations to be performed under the Lease, including submission of samples and other information requiring prior approval of the Lessee, which directly control the key operations.

The estimated time required for fabrication or delivery, or both, of controlling materials and equipment required for the work.

The "schedule" shall be predicated on the completion of all the work on or before the date specified.

After being accepted by the Lessee as satisfactory, the schedule shall be strictly adhered to by the Lessor, subject to approved change order(s) to the Lease.

1.8 Project Meetings: Regularly scheduled remodeling or construction Progress Meetings shall be held at the job-site or a mutually agreed upon location between the Lessor, and the Lessee. The Lessor shall include general contractors and sub-contractors as necessary. A first meeting shall be held prior to commencement of actual remodeling or construction (a Preconstruction Meeting referenced above) and held monthly thereafter until the Leased premises is completed. The meeting schedule may be altered when mutually agreeable between the Lessor and the Lessee. The Architect/Engineer retained by the Lessor shall record minutes of meetings and coordinate distribution of submittal, etc.

1.9 Required Submittals: Prior to commencement of construction, the Lessor shall submit two copies of all Shop Drawings and Manufacturers' Catalogue information for all construction items proposed for use by the Lessee’s authorized representative. These drawings shall include complete schedules for finishes, doors, floors, ceilings, hardware, plumbing fixtures and accessories, HVAC equipment and accessories, etc. Shop Drawings and Manufacturer's Catalogue information shall be checked and approved by the Lessor's Architect/Engineer.

Monthly written Construction Progress Reports and site inspection approvals shall be prepared by the Lessor's Architect/Engineer and copies submitted to the Lessee. Construction tests such as soil borings, concrete mix designs, and other pertinent field verifications shall be submitted to the Lessee prior to construction.

Upon Substantial Completion of construction and within 30 days of final acceptance, the Lessor shall submit to the Lessee the following:

One complete set of reproducible As-Built Drawings corresponding to the approved construction drawings.

One copy of the final approved Floor Plan in the form of a computer disc(s) compatible with Autocad software.

One complete set of permanent operations manuals, instructions, and manufacturers' repair and maintenance information for all systems and equipment. These items shall be bound in a ring binder.

One reduced size composite floor plan (11" x 17") designating all emergency valves, switches, controls, locations of equipment that will require periodic maintenance, etc. Provide the Lessee's

designee with training to understand and familiarize occupants with building controls and systems locations/operations, etc.

1.10 Change Order and Field Bulletin Procedures: Any changes in construction requirements that occur after the final approval of design and construction documents shall be initiated by a bulletin from the Lessor's Architect/Engineer requesting prices for changes proposed. Either the Lessor or the Lessee may make requests for changes consistent with Article III of the Lease.

Requests for bulletin change shall be complete with drawings and/or other supporting documentation.

The Lessor shall submit a detailed breakdown of costs to Lessee through DMB's Real Estate Division, after review and approval by the Lessor's Architect/Engineer.

The Lessee, through DMB's Office of Facilities, will review and recommend the adequacy of pricing only to DMB/Real Estate Division and the Lessee.

The Lessee will advise DMB's Real Estate Division in writing: (1) if it wants the changes made, and (2) that it has the funds to pay for the proposed changes.

All changes are to be included in the As-Built Drawings regardless of whether the request is initiated by the Lessor or by the Lessee and regardless of whether a cost is associated with the change.

All changes or deletions which result in a change of construction expense shall be provided on the basis of an itemized breakdown of the actual cost plus 20% for overhead and profit for work done by the Lessor or its general contractor. On work performed by a subcontractor, the Lessor or prime contractor is allowed a 7-1/2% handling charge. The subcontractor will then receive the 20% addition for overhead and profit.

Payment for such changes, additions or deletions shall be made as a lump-sum adjustment with the first monthly rental payment.

All change orders shall be issued in writing by the DMB's Real Estate Division, on a construction change order notice all as required by Article III of the Lease. **The Lessor will be responsible for the cost of any unauthorized changes.**

1.11 Contract Close Out:

Substantial Completion: The Lessor shall notify the Lessee when the work will be Substantially Complete and ready for inspection and preparation of a list of minor replacement, correction, adjustment and touch-up items. All concerned parties shall attend the Substantial Completion. The Lessor shall complete all work required by the date set for final acceptance by the Lessee. Provide a pest control application for the elimination and/or control of insects and rodents one-week before opening.

Final Cleaning: The Lessor shall remove from the Leased premises all surplus building material and rubbish; clean or reclean entire work to normal level for "first class" maintenance/cleaning of building projects of a similar nature; and remove non-permanent protection and labels, polish glass, clean exposed finishes, touch up minor finish damage, clean or replace filters of mechanical systems, remove debris and broom clean non-occupied spaces, sanitize plumbing/food service facilities, clean light fixtures and replace burned out/dimmed lamps, sweep and wash new paved areas, police yards and grounds, and perform similar cleanup operations needed to produce a "clean" condition. No payments will be authorized until final cleanup is accomplished and inspection is made by the Lessee.

DIVISION 2 - SITE WORK

2.1 General: New sites shall be attractively landscaped. Existing construction sites will be evaluated on an individual basis. The landscaping shall be shown on the architectural site plan submitted to the Lessee for approval prior to construction. Design landscape structures keeping in mind the likelihood of damage by powered snow removal equipment. Use hardy tree and shrub stock native or adapted to site complying with the recommendations and requirements of ANSI Z60.1. Design for low maintenance. Protect planted areas against damage including erosion and foot traffic by providing and maintaining proper safeguards.

Provide sufficient Concrete Sidewalks (5' wide, 4" minimum thickness with wire mesh or fiber reinforcement on compacted sub-base) from parking area, or other areas as identified, for easy access to building.

Provide a reinforced Concrete Trash Container Pad on a compacted sub-base (concrete as described in Division 3) on site for accommodation of trash pickup. Enclose pad in chain link fencing or in other enclosures as required by local ordinance, to conceal the trash container without obstructing access by trash collection equipment.

For new construction, the Lessor shall obtain the services of a Soils Engineer to provide subsurface investigation of the building site, including standard penetration tests and soil analysis for toxic waste. Resultant data shall be given to the Lessor's architect/engineer for use in preparing the construction drawings and specifications. Copies of the reports shall also be provided to the Lessee prior to the Lessee's approval of the construction drawings. Comply with appropriate portions of “Standard Specifications for Construction 1990 Edition” of the MDOT.

Earthwork design shall provide positive drainage on the site. Slope all grades and exterior slabs away from building foundations. Where applicable, work shall conform to State of Michigan Soil Erosion and Sedimentation Act of 1972 as amended (PA 347). Provide for controlled compaction of backfill which supports structure, parking, or walks according to ASTM D1557.

Exterior building identification signs and numbers shall be provided and installed to direct the public to this building from main thoroughfares. Selection and locations shall be approved by the Lessee.

"Parking", "Handicapped Parking", and "Van Accessible" signs shall be provided and installed prior to occupancy. Locations shall be confirmed by the State on site plan as provided by the Lessor. Signs and installation shall be in compliance with BFD and ADA standards.

Provide accessibility to all entrances/exits for the physically handicapped.

All new site work shall be free of any toxic soil contamination.

The Lessor shall remove from the premises all surplus building material and rubbish, and dispose of it in a legal manner. Burning on site is prohibited.

2.2 Paving and Surfacing: Provide Asphaltic Concrete Paving or Portland Cement Concrete Paving for new construction and for unacceptable existing construction in accordance with referenced portions of “Standard Specifications for Construction 1990 Edition” of the MDOT.

Asphaltic Concrete Paving shall consist of:

a) Minimum 6" sand-gravel sub-base: MDOT 22A
b) Bond or tack coat asphalt emulsion: MDOT SS-1h or MDOT MS-2a.
c) Bituminous Leveling Course: MDOT Mixture 1100L
   Coarse aggregate shall be 20A
   Minimum thickness of leveling course shall be 3" (75 mm)

d) Bituminous Top Course: MDOT Mixture 1300T
Coarse aggregate shall be 20-AAA
Minimum thickness of top course shall be 1-1/2 (38 mm)

e) New bituminous pavement and existing bituminous pavement shall be prepared and sealed with a coal tar emulsion sealer. Application of sealant must be as recommended by the manufacturer.

Portland Cement Concrete Paving shall consist of:

a) Minimum 6” sand-gravel sub-base: MDOT 22A
b) Reinforcement: 6” x 6” (W1.4) wire mesh
c) Minimum compressive strength: 4000 PSI in 28 days.
d) Minimum cement content: 6 bags
e) Minimum air-entrainment: 5%
f) Maximum slump: 4 inches
g) Minimum thickness: 5 inch depth.

Lot shall be striped to designate "No Parking" areas and to accommodate the minimum parking indicated in the lease. One of the handicapper spaces shall be "van accessible" as described in the ADA rules. Paint all lines and stripes using one coat yellow or blue Sherwin Williams “Pro-Mar Traffic Paint” as appropriate at a rate of one gallon for every 350 lineal feet of four inch (4") wide stripe following State's approval of the parking layout as provided by the Lessor.

Provide curbs, guardrails, curb cuts and wheel stops to meet Barrier Free Design requirements, and ADA rules at reasonable access points to the sidewalks and building.

DIVISION 3 - CONCRETE

3.1 Cast In Place Concrete shall meet the following specifications:

“Specification for Structural Concrete For Buildings”, ACI 301, except as modified herein.

Cement shall be gray Portland Cement conforming to ASTM C-150 Type 1.

Aggregate for all concrete shall conform to ASTM C-33 lightweight aggregate.

Reinforcing Steel shall conform to ASTM A-615 Grade 60 and A-305.

Welded Wire Mesh shall conform to ASTM A-185.

No admixtures containing calcium chloride shall be permitted.

All concrete shall have a minimum compressive strength of 3,500 PSI in 28 days except where noted, conforming to ASTM 39-83a.

All concrete exposed to weathering shall be mixed with an air entraining type Portland cement or admixture. Air entraining admixtures shall conform to ASTM C-260.

For new construction, concrete slabs on grade shall be 4" thick with wire mesh or fiber reinforcing over a graded 4" sand bed, firmly compacted by mechanical means to insure a solid base with no voids or hollows. Provide a six mil (0.006") Visqueen vapor barrier on the compacted sand base. Visqueen shall be lapped 6" minimum and taped at all seams. Pour slab uniformly on the vapor barrier.

Seal new floor slab against dusting using a first quality commercial sealer. Application of sealer must be as recommended by manufacturer. Sealed floor must be capable of accepting pressure sensitive carpet adhesive.

DIVISION 4 - MASONRY

4.1 **All Concrete Block** shall conform to ASTM Specifications C-90, grade N-1, medium weight units for interior walls above grade and normal weight units below grade.

Solid load bearing stone aggregate concrete block shall be used for walls in contact with earth.

Hollow load bearing slag aggregate block shall be used in exterior walls for back-up.

Solid (no voids) load bearing stone or slag aggregate block, to match walls in which they are installed, shall be used to enclose columns, to build chases and recesses, and for certain bearing conditions.

All foundation walls below grade shall be poured reinforced concrete or concrete block with reinforcing.

4.2 **Face Brick:** All exterior walls shall be of face brick construction or similar durable, aesthetically attractive materials befitting of a State government facility. Face brick shall be of modular size and of smooth texture meeting ASTM C216, Grade SW, Type FBX. The colors and design shall be approved by the Lessee. If pre-engineered metal framing is used, structural supports are to be enclosed within the exterior walls. Construction, mortar, joint reinforcement, and anchor and tie systems shall be in accordance with the Brick Institute of America and the Masonry Institute of Michigan standards and recommendations.

4.3 **Mortar:** All mortar shall conform to ASTM C-476 and shall have a compressive strength of 1800 psi in 28 days.

4.4 **Control Joints:** Exterior masonry walls shall have control joints spaced at 30' maximum on centers. The exterior walls shall be designed to withstand a horizontal wind pressure of 20 lbs. per square foot for buildings of less than 30 feet in height.

4.5 **Dampproofing:** All above grade masonry to be damp proofed shall be thoroughly cleaned before the application of the finish sealant. Sealant shall be a non-silicone, clear penetrating saline compound equal to Hydrozo, Inc. "Environseal 40".

DIVISION 5 - METALS

5.1 **Steel Joists,** if used, for new construction shall be as defined by the Steel Joist Institute. Bridging shall be diagonal and otherwise in accordance with the Steel Joist Institute specifications.

5.2 **Structural Steel Rolled Shapes, Tubing And Plates** shall conform to ASTM A-36. Mill certificates shall be furnished by the contractor.

5.3 **Rolled Steel** shall conform to the ASTM standard specifications, Steel for Buildings, serial designation A195. Steel not otherwise specified shall be mild steel.

5.4 **Miscellaneous**
Anchor bolts shall conform to ASTM A-307.
Connection bolts shall conform to ASTM A-325.
Welding electrodes shall conform to ASTM A-233 Class E-70.
Shop paint shall be No. 769 damp proof red primer by Rust-Oleum.

5.5 **Steel Roof Decking** for new construction shall be 22 gauge, wide rib, 1-1/2" deep, VULCRAFT TYPE B, which is fabricated from ASTM A611-72 (1979), grade C cold-rolled structural quality sheet steel. Deck shall be phosphate coated and have manufacturer's standard prime painted finish.

5.6 **Miscellaneous Metal** items shall use the best commercial quality for purpose of items specified, free of defects impairing strength, durability, finish or appearance. Materials shall be formed truly and

uniformly to required shape, size, sharp lines, and smooth surfaces. Separate dissimilar materials with caulking, bituminous paint or gasket as approved.

DIVISION 6 - WOOD AND PLASTICS

6.1 Material Standards (General):

Sills	Foundation grade, pressure-treated Southern Pine or Douglas Fir.
Wood Studs	Stud grade Southern Pine or Douglas Fir.
Steel Studs	20 Gauge galvanized screw studs with 20 gauge track top and bottom.
Posts and Beams	Southern Pine No. 1 Dense KD 2050 for Douglas Fir Select Structural 1900f.
Concealed Sheathing	Standard exterior grade with exterior glue APA CDX, 5/8" plywood or 3/4"OSB.
Exterior Wood Trim	Redwood or Cedar, select Heart grade, rough-sawn
Wood Preservative	Ammonical copper arsenite (ACA) for Douglas Fir or chromated copper arsenite (CCA) for Southern Pine.

6.2 Cabinet Work: All millwork and installation shall conform to the performance standards of the Architectural Millwork Institute. Finish wood materials to receive stain or transparent finish shall be "Custom" grade. Laminated plastic shall be high pressure plastic laminate complying with NEMA Standard Specifications for General Purpose Grade (HGS/Grade-10 .050") with selection from solid colors or wood grains. Casework hardware shall be equal to Knape & Vogt Manufacturing Company products.

Counter tops and splash shall be finished in plastic laminate. All other surfaces shall be oak or oak veneer stained and varnished to match doors and other woodwork. The counter face shall be finished at the floor with a suitable heavy duty vinyl or wood base board.

Provide laminate counter tops with 4" backsplash on sink cabinets in employee Break room, large conference room and public restroom. Provide approximately 8 feet of double door wall and base cabinets over counter in lunchroom and conference room as shown on block plan. Cabinet work shall be oak or oak veneer stained and varnished to match doors and other woodwork. All cabinet work shall meet Michigan Barrier Free and ADA requirements for handicapper accessibility.

Cabinets shall be complete with hardware, drawers, dividers, and adjustable shelves. Drawers shall be suspended on steel slides with ball bearing type nylon rollers for ease of operation. Drawer slides shall have a 100 lb. load rating.

6.3 Shelving: Provide shelving in the janitor closet for storage of cleaning and paper supplies. Wood shelving shall be 25/32" No. 2 common kiln dried ponderosa pine as per grading rules of the Western Pine Association. Shelving shall be supported on cleats of the same material.

Provide a 12" x 36" plastic laminated shelf in the public restroom near the exit no higher than 40" from the floor.

6.4 Chair Rail: Provide varnished oak chair rail of grade #1 (nominal 1" x 4") at 32" on center off the finished floor in conference rooms and in the lobby.

6.5 Plywood Backing: Furnish and install 3/4" plywood backing where required so modular furniture can be mounted to walls. Generally two walls in each floor-to-ceiling offices will each require a minimum of 18 lineal feet of such reinforcement. Exact locations for the backing will be identified by the Lessee on preliminary drawings provided to the Lessor.

6.6 Rough Hardware: Furnish all necessary nails and screws and all items generally classed as "rough hardware" including bolts, washers, anchors, straps, etc. that are required for proper assembly.

6.7 Wood Trusses, for gabled or shed roofs, shall be prefabricated, engineered, and include bridging, bracing, and anchorage.

The manufacturer shall be a company specializing in the manufacturing of prefabricated wood trusses, with three years minimum of experience.

Design: Trusses shall be designed under direct supervision of Professional Engineer licensed in State of Michigan. Shop Drawings shall be signed and sealed.

Pitch of trusses shall be 4/12 or greater. Trusses shall be installed per local building code and in no event greater than 24 inches on center with a minimum of 5/8" thick oriented strand board roof sheathing. Sheathing shall be installed perpendicular to the trusses and shall include plyclips installed between the roof trusses.

DIVISION 7 - THERMAL AND MOISTURE CONTROL

7.1 Performance and Submittals: (Existing facility will be evaluated on an individual basis) Exterior wall from floor to roof deck shall have an R-factor of 15 or greater. Roof system shall have an R-factor of 30 or greater. The rest of the building envelope shall meet or exceed the requirements of ASHRAE 90-81. An analysis of the exterior building envelope showing construction materials and methods of assembly and coefficients of transmission (U/BTU/h ft. F) demonstrating compliance with this specification shall be submitted to the State prior to construction.

The Lessee is to be given notification to conduct an on-site inspection after insulation is installed and before wall finish process is started. Inspection will be made by the Lessee within two (2) business days of receipt of notification.

Provide Sound Transmission Class of not less than 45 in all floor to ceiling interior walls. The Lessee is to be given at least 48 hour notification to conduct an on-site inspection after insulation is installed and before wall finish process is started. Inspection will be made by Lessee within two (2) work days of receipt of notification.

Prior to the start of construction on a new building, submit architectural and construction documents to the Lessee showing details for proposed roof construction, weatherproofing and waterproofing with proposed method of sealing all roof penetrations. All roof cuts or penetrations shall be made and sealed by the roofing subcontractor on both new and existing buildings. Existing buildings may require a tear off and similar roof details.

7.2 Floor Slab/Foundation Insulation: For new construction, the floor slab/foundation shall have Dow "Styrofoam SM" 2" x 2'-0" rigid insulation installed vertically at the interior face of all exterior walls and extend horizontally 2'-0" beneath the floor slab. The Lessee is to be given notification to conduct an on-site inspection after insulation is installed and before floor slab is poured. Inspection will be made by the Lessee within two business days of receipt of notification.

7.3 Wall Insulation: Batt Insulation for exterior walls of the building shall be mineral or glass fiber conforming to Federal specifications HH-I-S21 and ASTM C665. Flame spread shall not exceed 25, ASTM E84. Batts shall be rated at R-11 or better.

Sound Attenuation Batt Insulation for interior walls shall be 3" thick, USG Thermafiber conforming to ASTM C655, and Fed. Spec. HH-1-521E, Type I or II.

7.4 Deck Insulation: For new construction and re-roofing, all deck insulation shall be isocyanurate rigid foam insulation with aluminum foil or fiberglass facers which meets Federal Specification HH-I-1972/1 and Factory Mutual Report Serial No. J.I. OG4A7.AM. Tapered isocyanurate rigid foam insulation board shall provide a minimum slope of 1/8" per foot. All insulation board shall be installed in compliance with the latest manufacturer's written instructions.

7.5 Roof Construction: Low-Slope Roofing: For new construction, provide a four ply, coal tar bitumen, build-up roofing system by the Koppers Company, Inc. with a 20-year Classic Guarantee for all materials and labor, or an approved 60 mil EDPM membrane fully adhered insulated roofing system.

For low-slope roofing over 1/2”/ft. on existing buildings, provide a two-ply modified bitumen sheet roofing system, SBS Base/SBS Premium, by Firestone Building Products Co., with manufacturers 15 year total system warranty for all materials and labor. Minimum total thickness shall be 230 mils. Base sheet shall be a minimum of 80 mils. Top surfacing shall have continuous layer of white mineral granules and minimum thickness of 130 mils.

Gabled Roofs or Shed Roofs: Asphalt shingle roof assemblies shall be provided over the trussed roof rafters and roof sheathing specified in Division 6.

Underlayment shall be No. 30 asphalt saturated, organic felt, ASTM D-225. Edge strip shall be a 28 gauge prefinished, galvanized, steel or aluminum edge strip in selected color.

Starter strips, valleys and flashing joints at dormers and other changes in direction/material shall be WR Grace “Ice and Water Shield”. Nord Bitumi “Nordshiels” or GAF “Weather Watch”.

Valleys shall be No. 90, mineral surfaced, roll roofing, ASTM D-249, with color to match shingles.

Asphalt shingles shall be Class "A" fire and wind resistance, self-sealing shingles of 250 lb. minimum weight per square. Shingles shall be approximately 17" x 40" with a 7-1/2" exposure, equal to GAF "Slateline" fiberglass reinforced shingle, with a 30 year Warranty. Hip and ridge cap shingles shall match in color and texture.

Prefinished, aluminum gutters and downspouts shall be provided to conduit storm water away from the building. Provide precast concrete splash blocks at each downspout.

7.6 Roof Scuttle: Provide ladder access and a metal roof scuttle, type "S-20" as manufactured by the Bilco Company to flat or low slope roof areas, if any. Also provide Bilco "Ladder Up" safety post. Secure to top two rungs of the ladder. Existing buildings may already have accessibility to the roof.

7.7 Caulking: Butyl rubber caulking compound for exterior use shall be one part polymerized rubber compound, gun consistency, conforming to Federal specification TT-C-598 Grade 1.

Acrylic caulking compound for interior use shall be one part, 100% liquid polymer, acrylic base compound, non-sagging, non-staining, gun consistency.

Polysulfide base compound for exterior use shall be a one component sealing compound complying with the requirements of USIA A116.1, Class B (non-sagging) and Federal specification TT-S227B, Types I and II. Containers shall bear the Thiokol Chemical Corp. "Tested and Approved" seal or shall be accompanied by a manufacturer's certificate stating that the compound complies with this standard.

7.8 Prefinished Standing Seam Metal Roofing is approved if it meets the standards for a 20-year warranted system. Color shall be selected by Lessee.

DIVISION 8 - DOORS AND WINDOWS

8.1 Exterior Doors and Frames: (Existing facility will be evaluated on an individual basis.) Doors and frames at new main entrances shall be aluminum entrances or storefront material equal to systems designed and engineered by Kawneer Company, Inc. or Tubelite Division, Indal, Inc. Finish is to be dark bronze (M10-C22-A44).

All exterior doors and frames, except at main entrance, shall be custom hollow metal construction provided with heavy duty commercial grade hardware. Door face sheets shall be commercial quality,

roller leveled, cold roll, 16 gauge steel with 18 gauge stiffeners at 6" on center. Provide polystyrene or urethane insulation core filler. All exposed steel surfaces shall be cleaned, bonded and coated with a baked on zinc chromate based prime paint. Frames shall be prefabricated combination buck, frame, and trim type. Mitered joints shall have locking tabs at frame rabbets and backboards. All interior door frames shall be furnished with rubber bumpers. Provide 14 gauge door frames for exterior openings and 16 gauge door frames for interior openings. Reinforce, drill, and tap doors and frames for fully-templated mortised and concealed hardware. Doors are to be 36" wide.

All exterior doors shall be weather-stripped, have commercial quality aluminum threshold of low profile (beveled) design not to exceed 1/2" high. Bevel angle shall not exceed 30^0. Staff and main entry doors shall be protected from water by a canopy. Other exterior doors shall be protected from water by metal flashing over the door heads.

8.2 **Interior Doors:** All interior doors shall be 1-3/4" thick, commercial grade, solid core, wood construction, stained and varnished. Face veneer shall be selected grade red oak of standard commercial thickness not less than 1/28" before sanding. Doors and frames shall bear UL labels as required by code. Similar commercial plastic laminate faced or hollow metal may also be provided.

All interior doors, except as outlined below, should have side lites (12”-15” glass panel running length of door frame – as shown on furniture plan) and be equipped with blinds.

Interior doors for the following rooms shall have a lite in the door – South door between lobby and office area and counselor offices # 4, #9 and #16.

Interior doors for the following rooms shall be a solid door – Restroom, Mechanical Room, Storage Room and Tele/Data Room.

8.3 **Windows: I**nstall 36” windows as shown on the block plan; this includes replacing the smaller existing windows with 36” windows of one of the following styles:

Outswinging casement, heavy commercial, prime windows with screens and thermal break construction, as defined by the American Architectural Manufacturers Association, Publications GS-001 and 101. Window designation shall be HC-40 at exterior locations shown on the floor plan. Provide all window components, and installation accessories. Finish is to be dark bronze (M10-C22-A44).

Metal Windows shall be Custom Window, Series 8500; EFCO Corporation, Series 2700; Modu-Line Windows, Inc., Series 225; or Peerless, Inc., Series 1600.

Wood Windows shall be Commercial prime windows with exterior cladding, as defined by AAMA Publications GS-001 and NWWDA I.S. Standards. Windows designation shall be DP-40.

Wood Windows shall be Andersen Corporation, Perma-Shield; Pella Commercial Division, Clad; or Weathervane Windows, Inc., Clad.

8.4 **Glazing:** All exterior windows shall have sealed, low emissivity, insulating glass units which are manufactured by members of SIGMA and IGCC. Sealed insulating glass shall meet ASTM E774, Class B. Glass shall be hermetically dual sealed, inert gas filled, double pane units with exterior 3/16" bronze float glass (IoE on second surface), 1/2" air space, and interior 3/16" clear float glass. Insulated panels, if used, shall be 1" laminated panels equal to Mapes Industries architectural panels with a porcelain fused-on finish.

Wired or clear fire-rated glass shall be Underwriters Laboratories, Inc. approved. Safety glass shall be tempered or laminated, and shall meet ANSI 297.1 standard. Security glazing shall be 0.775”, polycarbonate, laminated glass equal to Lexgard Laminate MP-750.

8.5 Hardware: Hardware shall conform to applicable requirements of the BOCA building code, and for fire rated doors and frames, with appropriate sections of Chapter 5 of ANSI/NFPA 101. Hardware shall be made to blueprint template and be furnished to door and frame manufacturer. Hardware shall be supplied through an Architectural Hardware Consultant to properly handle, detail, and service hardware in a satisfactory manner.

Hinges shall be provided with stainless steel pins, oil impregnated bronze bushings, or concealed ball bearing units. Swing out doors shall have nonremovable pins. Interior doors shall receive 12" high kick plate which protects within 1" of both sides and the bottom.

Exterior locksets shall be heavy-duty cylindrical type with a minimum 2-3/4" backset and 9/16" throw latchbolt. All lock cylinders shall be Schlage, “EXT D53PD RHO 626”, and must be designed or protected so they cannot be grasped by any wrenching device. All door handles shall be of heavy duty lever type, except to hazardous areas. Doors to hazardous areas such as the telephone/data equipment room, the janitor closet, the electrical closet and the basement shall have knurled knobs. Knobs shall be brushed stainless steel finish, and be a minimum of .050 thick. Cylinder cones and keys will be provided by the Lessee.

Exit devices shall be steel (dull chrome US26D finish), and be UL approved. Devices required on fire-rated doors shall be UL listed as fire exit hardware. Outside trim shall be fastened by means of concealed lugs and through-bolts to the active case.

All exterior doors shall be equipped with closers. Door closers shall have key valves for back check, speed, and latching. Degree of opening shall be maximum possible without causing interference or damage to door or trim. Closers shall be lockable in the full-open position. Closers shall be fastened to doors with sex bolts.

Hinged exterior doors, except fire doors, shall require no more than 8.5 lbs. of force for opening or closing. Fire doors shall have the minimum opening force required by the Fire Marshal.

Main entry door and vestibule door shall be equipped with Gyro Tech System 500 electric push button operators for the handicapped. Operator push switch plates shall be of 6-1/4" dia. with embossed wheelchair symbol.

Main entry door and back entry door shall be equipped with employee access system (push button style, multiple code type).

Provide a door release at the reception window/counter to allow receptionist to buzz guests and/or visitors into the office area; both doors from the lobby to the office area should be tied to the same release button.

All lockable interior doors (Manager’s office and Tele/Data Room) shall have Schlage AL Series. A keying plan for interior door locks will be furnished by the Lessee. Special keying will be required for the Computer Room. Lessor shall supply two keys per lock, and two master keys.

All toilet room doors shall be provided with door closers and ball bearing type hinges. All mechanical door closers on interior doors shall be operated by a maximum lateral force of 5 lbs. pressure as measured at the door handle or push plate.

Provide and install construction locks in cylinder cores on all exterior doors. Convert to cores for tenant use after building control has been turned over to the Lessee.

DIVISION 9 - FINISHES

9.1 Ceiling Systems: Ceiling systems must conform to fire, acoustics, maintenance and light reflection requirements. Gypsum Board ceiling suspension systems shall have 16 gauge, 1-1/2" main channels

with 25 gauge 7/8" furring channels. Acoustical panel ceilings shall comply with ASTM E1264 Classifications and metal suspension systems with applicable ASTM C635 requirements. Suspend lighting fixtures independent of ceiling. Provide edge moldings, trim and acoustical sealant as required. Exposed face shall be white enamel. Grid spacing shall be 24" x 24".

Lay in panels shall have an NRC range of .55 to .65, STC range of 35-39, light reflectance of LR-1, flame spread of 0-25 (ASTM E84) and nominal size of 24" X 24" X 5/8". Minimum ceiling height to be 9' nominal except in small rooms or limited areas which may be 8'.

Provide unfaced mineral-fiber Sound Attenuation Blankets over ceiling systems where required to meet room to room sound transmission requirements.

Provide painted, 5/8" gypsum board or veneer plaster ceilings in vestibules and restrooms.

Provide means of access to ceiling system for maintenance of equipment or repair of system.

9.2 Wall Systems: All interior walls, except restrooms, shall be 5/8" gypsum board. 4" vinyl base shall be applied to all walls. Metal studs, floor and ceiling track shall be 20 gauge galvanized steel. Painted surfaces shall receive one coat of primer and two coats of finish. A complete room finish schedule shall be submitted for approval by the Lessee prior to construction. Colors shall be selected by the Lessee.

Exterior wall insulation is to be covered from floor to roof deck with 5/8" gypsum board. Gypsum Board above the ceiling line may be unfinished.

Walls in restrooms shall be finished with Glazed Wall Tile extending from floor to ceiling. Tile shall be standard grade meeting ANSI 137.1.

9.3 Floor Systems: Flooring in the lobby and vestibule area, public restroom, Break room, by the back entrance, and 2'-3' in front of the sink area in the large conference room shall be DuraCeramic by Congoleum or Natural Stone Carpet (suggested vendor Floor by Design in Lowell).

Carpeting is to be used throughout except as otherwise identified. All carpet shall be "Guardian Plus" by Collins and Aikman, or "Discovery" by Lees, anti-static, commercial grade carpet tile in 24" x 24" modules. Adhesive shall be C-14 pressure sensitive by C. & A., or equal. Carpeting shall be supplied by the lessor. It cannot be made available through a State contract. Complete specifications of any substitutes must be submitted to the State prior to construction, and must meet the following minimums:

Construction-	Level Loop
Pitch-	351
Pile units per inch-	10
Pile units per sq. inch	130
Pile height average-	.135"
Face yarn weight-	20 oz.
Yarn size-	1245/2
Fiber content-	100% CF Antron nylon with static control

Vinyl Composition Tile with a 10 year warranty shall be installed in the Tele/Data Room and Storage Room. Rubber Wall Base products shall comply with FS SS-W-40, Type 1. Colors shall be selected by the Lessee.

9.4 Painting: All exterior surfaces and materials requiring paint shall be prime coated plus two coats of Sherwin Williams Pro-Mar alkyd flat exterior finish, or Sherwin-Williams SWP exterior gloss paint.

All porous exterior surfaces (e.g. unpainted wood) shall be sealed with two coats of Thompson's Water Seal following the manufacturers application instructions.

Interior surfaces requiring paint shall be prime coated plus two coats of Sherwin Williams Pro-Mar Latex Eg-Shel Enamel. Concrete block walls shall receive one coat of Sherwin Williams Pro-Mar Block Filler and two coats of Sherwin Williams Pro-Mar Latex Eg-Shel Enamel.

Interior and exterior finishes and color selections shall be approved by the State. A schedule of colors and finishes shall be prepared by the Lessor and approved by the Lessee.

DIVISION 10 - SPECIALTIES

10.1 Interior Signs: Install lettering/signage on entry door and building mounted and roadside signage. Install individual room signs (approximately 3”x 10”) for each office with a sliding name plate for ease in changing when necessary. State to provide list of initial signs. Actual mounting heights and exact location shall be verified in the field by the State. Interior lettering and panels signs shall be provided and installed per the User Agency. Actual mounting heights and exact location shall be verified in the field by the State. Provide samples of cast acrylic sheet and plastic laminate for initial selection of color, pattern and texture. Provide handicap signs at restrooms and entrances as required.

10.2 Operable Partitions: Provide and install folding panel partition wall system in the Large Conference Room. Panel system shall consist of two parallel walls independently suspended, with lockable seal-tight sliding latch. Units shall be overhead track supported that allows for positive alignment. It shall be suspended by nylon-tired double steel ball bearing rollers and hanger pins. Each panel shall have a vinyl sweep strip top and bottom for perimeter seal. Interior surfaces shall have a continuous blanket of foil backed insulation of two pound density. The panels shall have a laboratory sound rating of STC-45 or better. It shall be constructed totally of non-combustible materials that are scratch, tear and peel resistant. Components of system shall be totally replaceable and repairable by regular maintenance personnel. Nominal heights of panels to be 9'-0". An adjustable mounting bracket is necessary. Panel wall shall be installed by manufacturer or authorized representative. Track headers, support and vertical clearances shall be provided to meet weight factors and tolerances as specified by manufacturer, and be installed so they do not interfere with ceiling grid or tiles. Additional building support may be required to carry weight of wall. Provide drywall partition from door head to deck above for sound control. Colors to be compatible with interior room color specified, and be chosen by the Lessee.

10.4 Toilet Accessories:

Provide the following restroom accessories in the new public restroom. Model Numbers are taken from the Bobrick Washroom Equipment, Inc. catalog:

a) Toilet Tissue Dispenser No. B-288.
b) Napkin Disposal No. B-354, partition mounted.
c) Soap Dispenser No. B-2112, surface mounted.
d) Paper Towel Dispenser No. B-262, surface mounted.
e) Grab Bars No. B-6206.99X52, concealed mounting.
f) Touch Button Hand Dryers No. B-7017, platinum finish, surface mounted.
g) Framed Mirror No. B-290, wall mounted on concealed hangers, 24" X 36".

10.5 Fire Extinguishers, Cabinets and Accessories: Provide UL-listed extinguishers, cabinets and accessories from a single manufacturer such as J.L. Industries or Larsen’s Manufacturing Company that comply with authorities having jurisdiction.

Extinguishers shall be Pressurized Solid AFFF Type: UL-rated 3-A: 40B, 2 ½ gallon nominal capacity, in stainless steel container with pressure indicated gauge. Provide recessed aluminum cabinets with clear anodic coating.

DIVISION 11 – FURNISHINGS/SPECIAL CONSTRUCTION

11.1 Open Office Partitions: Open-space partitions (modular system furniture) will be furnished, and installed by the State. It will be the Lessor's responsibility to complete the electrical connections from the overhead electrical grid to the power drops (power poles) for the modular furniture (see Division 16, Electrical).

11.2 Vertical Blinds: All windows shall be equipped with vertical blinds, including slider windows at Receptionist stations. The slats are to be 3 1/2“ wide vinyl. Blinds shall have 180 degree rotation and full retract for the flexible adjustment of light intensity. They shall be easy to maintain and repair, and shall conform to interior office design and colors. Interior glass partition walls will require the same window treatment. Locations will be identified by the State. Color selection by the Lessee.

11.3 Reception Windows: Install 2 4-foot locking slider customer/reception windows; one at each receptionist station. Install a 12” wide laminated counter on client side of window at reception, as shown on concept drawing. This counter should be installed at ADA height.

11.4 Transom Windows: Install transom windows as needed for conference and break rooms.

DIVISION 12 – MECHANICAL

12.1 Perimeter Heating System: (Existing facility will be evaluated on an individual basis.)

General: Perimeter hot water heating system shall be divided into a minimum of four independent temperature control zones. Location of the electrical outlets on exterior walls shall be coordinated with the mounting of the baseboard covers.

Design Conditions: The hot water perimeter heating system shall be capable of maintaining 68 degrees during the heating season without reliance on supplemental heat from the HVAC system.

The perimeter heating system shall be sized assuming no interior partitions to impede the transfer of heat from the perimeter heating system to interior spaces. The temperature control system shall be utilized to regulate exterior zone temperatures during normal operation of the perimeter heating system.

Baseboard Units: The building shall be equipped with a hot water baseboard radiation heating system installed around the perimeter of the building. The perimeter hot water heating system shall consist of “Slant Top” style, fin-tube baseboard radiation unit through all occupied spaces along exterior walls. Radiation hangers and enclosure shall be supported by a full wall backplate. Slant top baseboard covers shall extend the full width of each space and shall have corners and end caps manufactured by the same supplier. Baseboard units covers shall be constructed of 14 gauge steel, similar to Sterling Versa-Line Style “S”. Provide a sample of the baseboard unit and cover prior to the start of construction.

Heating Elements: The heating elements within the baseboard shall be made of aluminum fin elements press fit to cooper tube. The size and number of fin elements shall be sized accordingly to the building heating requirements.

Other Elements: In occupied areas with glass curtains walls and vestibules, floor mounted radiant fintube covers or recessed cabinet unit heaters shall be installed. Floor mounted covers shall be similar to Sterling Versa-Line Style “PM”. Recessed cabinet unit heaters shall be similar to Sterling Versa-Line Style “RW”.

Piping and Insulation: Hot water piping system and equipment shall be insulated with fiberglass type insulation or similar insulating materials. Insulation on the supply piping within the fin tube covers may be deleted.

Temperature Controls: Perimeter Heating: At a preset outside temperature, the hot water system shall activate and circulate water through the system. The water temperature shall be regulated on a reset schedule which is dependent on outside air temperature. Each of the independent temperature control zones shall maintain the space temperature setpoint by modulating a control valve.

Unit Heaters and Cabinet Heaters: These units shall be equipped with aquastats that activate the unit fan. Space temperature shall be maintained by modulating a control valve.

12.2 Heating, Ventilating and Air Conditioning:

General Office Area: The building shall be equipped with a combination heating, ventilation and air conditioning system. The system shall have ducted supply and return air. The space above the ceiling shall not be used as a supply or return plenum. The systems shall be sized in accordance with the weather conditions identified in Chapter 13, “Energy Conservation” of the 1996 BOCA Building Code and supplemented by the “Building Code Rules”.

All HVAC equipment shall be commercial or light industrial grade and shall be installed at grade or within mechanical rooms for easy access and maintenance. Roof mounted equipment will not be considered unless all other options have been exhausted, and only when easy access has been provided.

The HVAC system shall be zoned, with units sized and placed as required by heating and cooling loads on the building. Zoning of systems is dependent on the size, shape and orientation of the building. The perimeter heating system shall be divided into a minimum of four independent temperature and control zones. The HVAC system shall be divided into a minimum of four exterior and one interior temperature control zones. Return air shall be taken from the area supplied or adjacent to the area in the same temperature control zone.

The ventilation and exhaust system shall be sized to maintain a positive pressure throughout the building envelope to limit air and dust infiltration.

No HVAC ductwork shall be installed under the floor slab or underground.

Special Rooms and Area: A separate cooling system shall be planned for the enclosed telephone/data equipment room. These rooms shall have auxiliary cooling and humidity control systems to satisfy the load requirements identified by the Lessee. The systems shall maintain temperatures between 68 degrees and 78 degrees and a relative humidity between 30% and 50%. These auxiliary systems shall be capable of maintaining these temperature and humidity conditions 24 hours per day, seven day per week (do not shut-off during unoccupied times).

12.3 HVAC Heating and Reheat System:

Design Conditions: HVAC Heating & Reheat Coils: Hot water heating and reheat coils installed in the HVAC system shall be self draining type with cast iron heads, copper tubes, and aluminum fins. The number of rows and fin spacing shall be optimized to provide the maximum heat with minimum pressure drop. Face velocity across these coils shall be maintained between 500 - 600 feet per minute.

Heating Coils: Heating coils installed in the main air handling unit shall be protected against freeze. Filters shall be installed between the air intake and the coil to keep debris from plugging the coil fins.

Duct Reheat Coils: Duct reheat coils can be stand-alone or incorporated in the variable air volume boxes.

Temperature Controls: Discharge air temperature from the heating coils and reheat coils shall be independently controlled. Discharge air temperature sensors shall control the leaving air temperature from the HVAC unit heating coils. Zone thermostats shall control the discharge temperature from the reheat coils. The Large Conference Room shall be on its own thermostat.

Variations in temperature within each control zone, and between zones, shall not exceed 4 degrees, with the temperature measured from a reference point one foot inside of any exterior wall to the center of the building. The temperature variation from the floor to a height of 30 inches for any employee work station (either conventional desk or open space modular furniture) shall not exceed 2 degrees. Testing shall be made when the exterior temperature has reached a daily low of 20 degrees or more for two days. Controls of the Perimeter Heating System shall be coordinated with the HVAC Heating and Reheat System.

12.4 Ventilation and Exhaust System

General: The system shall be ducted supply and return air. The space above the ceiling shall not be used as a supply or return air plenum.

Design Conditions
Pressurization: The ventilation and exhaust system shall be designed and controlled to provide the necessary quantity of outside air to maintain indoor air quality, to satisfy the combustion air requirements, and exhaust requirements in restrooms, waiting rooms and kitchen areas, while maintaining a positive pressure (0.01 to 0.02 inches of water column) within the building.

Ventilation: Ventilation requirements shall meet the minimum specifications contained in the BOCA Mechanical Code for the occupancy areas. The following values shall be considered a minimum acceptable level.
General Office 20 cfm/person, or 0.2 cfm/sq. ft. of occupied floor (Which ever is greater)
Break room 30 cfm/person
Waiting Room 35 cfm/person

Outside Air and Recirculation: Not more than 67% of the ventilation air shall be recirculated. The remaining 33% or 5 cfm/person shall be fresh outside air.

Exhaust Air: Exhaust air from kitchen areas and restrooms shall meet the minimum specifications contained in the BOCA Mechanical Code for the occupancy areas.

Ductwork: Fabricate ductwork from a minimum 24 gauge zinc-coated (galvanized) steel, lock-forming quality sheets conforming to ASTM A527. Zinc coating thickness: “Commercial” Class G90, except a minimum of 2 oz. per sq. ft. where the metal is exposed to the weather.

Ductwork shall be constructed in accordance with SMACNA “HVAC Duct Construction Standards - Metal and Flexible”, First Edition, 1985.

Insulate concealed ductwork with Owens Corning all service duct wrap type 100 with FRK vapor barrier facing or foil backing. Insulate exposed ductwork with rigid board insulation over mechanical fasteners. Insulation shall meet UL-181. Duct insulation shall be installed on all ductwork in unconditioned spaces, and outside air ducts between the louver and air handling unit.

Flexible ductwork and assemblies shall meet the Class 1 requirements of NFPA 90A and 90B, and labeled by UL with a flame spread of 25 or less and a smoke development rating of 50 or less, in compliance with UL 181. Flexible ducts shall be limited to a maximum length of 5 feet and no section over 2-1/2 feet shall be unsupported.

Duct Accessories: Fire dampers shall be installed in all required locations. Diffusers shall be of the following type and sized to meet demand:
Type #1 Grillmaster #CB 404, curved blade registers. Key operated opposed blade dampers.
Type #2 Grillmaster #RN-PT series round neck perforated diffuser for grid type ceilings.
Type #3 24" x 24" eggcrate return diffusers, for grid type ceiling.

Ventilation Controls: Minimum outside air volumes shall be maintained at all times with minimum limits on outside air dampers. Enthalpy based economizer controls shall be included to provide free cooling during the spring and fall. Continuous air circulation and exhaust shall be provided during occupied hours. Exhaust systems for toilet rooms and janitor closets may be controlled by manual switches connected to individual room light switches.

12.5 Air Conditioning System:

General: The system shall have ducted supply and return air. The space above the ceiling shall not be used as a supply or return plenum.

Each employee in the building will have a personal computer. There will also be peripheral equipment such as printers. The heat generated by this equipment shall be included in the cooling system design calculation. A value of 1,500 Btu's per person shall be used in the design of the HVAC system.

Cooling system can utilize either direct expansion (DX) or chilled water system. The condenser sections for either system shall be air cooled, and sized to reject the maximum heat load with outside air temperatures identified the BOCA Building and Mechanical Codes.

Design Conditions: The HVAC for conditioning system shall be capable of maintaining temperatures in the range of 68^{o}F and 78^{o}F, and dehumidify or humidify to maintain a relative humidity in a range between 15% and 50% depending on the season.

Ductwork: Fabricate ductwork from a minimum 24 gauge zinc-coated (galvanized) steel, lock-forming quality sheets conforming to ASTM A527. Zinc coating thickness: "Commercial" class G90, except a minimum of 2 oz. per sq. ft. where the metal is exposed to the weather.

Ductwork shall be constructed in accordance with SMACNA "HVAC Duct Construction Standards - Metal and Flexible", First Edition, 1985.

Insulate concealed ductwork with Owens Corning all service duct wrap type 100 with FRK vapor barrier facing or foil backing. Insulate exposed ductwork with rigid board insulation over mechanical fasteners. Insulation shall meet UL-181. Duct insulation shall be installed on all ductwork in unconditioned spaces, and outside air ducts between the louver and air handling unit.

Flexible ductwork and assemblies shall meet the Class 1 requirements of NFPA 90A and 90B, and labeled by UL with a flame spread of 25 or less and a smoke development rating of 50 or less, in compliance with UL 181. Flexible ducts shall be limited to a maximum length of 5 feet and no section over 2-1/2 feet shall be unsupported.

Duct Accessories: Fire dampers shall be installed in all required locations.
Diffusers shall be of the following type and sized to meet demand:
Type #1 Grillmaster #CB 404, curved blade registers. Key operated opposed blade dampers.
Type #2 Grillmaster #RN-PT series round neck perforated diffuser for grid type ceilings.
Type #3 24" x 24" eggcrate return diffusers, for grid type ceiling.

Temperature Controls: Variations in temperature within each control zone, and between zones, shall not exceed 4^{o}F, with the temperature measured from a reference point one foot inside of any exterior wall to the center of the building. The temperature variation from the floor to a height of 30 inches for any employee work station (either conventional desk or open space modular furniture) shall not exceed

2°F. Testing shall be made when the exterior temperature has reached a daily peak of 80°F or more for two days.

12.6 Humidity Control System:

Design Conditions:

Season	% RH Range	
Winter	15% - 30%*	*(Reduce to 15% when outside temp. below 20° F)
Spring/Fall	30% - 50%	
Summer	30% - 50%	

Humidification: Electric Steam Humidifier**:** Humidifier shall be a self-contained, electric steam generating type of the size and capacity required. Separate humidifiers shall be installed within each of the HVAC temperature control zones. Each humidifier shall include a water filter cartridge, pressure regulating valve, and solenoid valves on the supply and drain lines. The humidifier shall be similar to Nortec Industries "MP" Series.

Piping: Water supply and drain piping shall be type "L" copper and insulated with "Arma-Flex" nominal wall thickness closed cell foam insulation. Supply piping to the humidifier shall be a minimum diameter, drain pipe shall be sized in accordance with manufacturer's recommendation.

12.7 Plumbing and Drainage System:

General: All supply pipes, fixtures, and drains shall be installed according to manufacturer recommendations and local codes. All faucets, valves and fixtures shall be of water-saving design. Domestic water systems shall be constructed of type "L" copper with sectionalization and isolation valves installed at branch connections. Storm and sanitary piping shall be service weight cost iron or polyvinyl chloride (PVC). Domestic water and interior roof conductors shall be insulated the entire length for temperature control, prevent condensation, and for sound control.

Water Supply and Drain Connections: Provide hot and cold water line feeds and drain connections to the New Public Restroom, Break room, and Large Conference Room.

Restroom Fixtures: Restroom sink and toilet shall be white, commercial grade, vitreous china, and shall be installed in accordance with Barrier Free Design requirements where applicable.

Toilet shall be wall mounted, elongated rims and siphon jet flush action, with top spud for flush valve similar to American Standard "Afwall EL 1.6".

Toilet seat shall be white, heavy duty, solid plastic open at the front and coverless. Seat shall have stainless steel hinges and built-in bumpers similar to American Standard "Royal" (0039375).

Toilet shall be equipped with flush valve hardware similar to Sloan "Royal Flush #110-YB".

Restroom sink shall be self rimming, white vitreous china measuring 20" long x 17" wide x 8" deep, with 4" faucet centers, similar to American Standard "Aqualyn" (0476.028).

Restroom sink shall be equipped with chrome plated, heavy-duty, commercial grade, single control faucets (without pop-up hole) similar to American Standard "Reliant" (2385.278). Each sink shall be equipped with a polished chrome "Grid Drain" tailpiece for vitreous china similar to American Standard (2411.015) and (7723.018) "Offset Grid Drain" for wheelchair lavatories.

Break room and Conference Room Fixtures, If Applicable: Sinks shall be handicapped assessable.

Break room sink shall be self rimming, 20 gauge stainless steel with double basins of equal size similar to Moen "Sani-Sink" (22114). Overall sink size shall be approximately 24" long x 21" wide x 7.5 "deep.

Conference Room sink shall be self-rimming, 20 gauge stainless steel with a single basin similar to Moen “Sani-Sink” (22117). Overall sink size shall be approximately 24” long x 21” wide x 7.5” deep.

Faucet sets for Break room and Conference Room shall be chrome plated, heavy-duty, commercial grade, single control faucets without spray similar to American Standard “Reliant” (4205.600).

Break room sink shall be equipped with an “In-sink-erator” commercial quality 1/2 hp garbage disposal with sound insulation, lifetime lubricated bearings, and stainless steel impellers, grinding chamber and shredder.

Electric Water Cooler: Provide an electric water cooler and drinking fountain combination unit located adjacent to the public restroom. Unit shall be "Barrier Free Design", similar to Halsey Taylor Model BCF-7F. Housing and bowl shall be satin finish stainless steel and shall be installed to meet Michigan Barrier Free Law and ADA.

Floor Drains and Cleanouts: Provide a floor drain in the public restroom as required by local codes. Floor drains in occupied space shall have nickel bronze finish, heel proof grid top with automatic trip primer. Coordinate type of cover with specific floor covering. Floor drains in occupied spaces shall be similar to Zurn Model Z-415. Floor drains in unoccupied spaces shall be similar to Zurn Model Z-507-5.

Cleanouts for roof conductors and drain pipe shall have cleanouts installed at changes in direction and along their length as required by local codes and good engineering practice. The cleanouts located in occupied spaces shall have decorative cover or located behind removable covers. Cleanouts and decorative covers shall be similar to Zurn Model 2-1400.2. Coordinate type of cover with specific wall and floor covering.

12.8 Temperature Control System: Temperature control system may be either direct digital control (DDC) or pneumatic. DDC is preferred unless the owner has other facilities in close proximity utilizing pneumatic controls. The overall system shall provide automatic energy management including but not be limited to such features as automatic setback for nights, weekends and holidays, and automatic variable outside air ratio dampers for economizer or enthalpy control. Thermostat controls shall be located in a locked cabinet in the mechanical room and connected to remote sensors distributed throughout the Leased premises. Humidistats shall be located throughout the Leased premises and provided with locking covers, or located in the return air plenum of the HVAC system.

12.9 Testing and Balancing Mechanical Systems: Independent air and hydronic system balancing tests shall be performed by certified testing firms. Results of these tests shall be submitted to the State as a condition of final acceptance of the Leased Premises. Random testing may be required during acceptance inspection.

DIVISION 13 - ELECTRICAL

13.1 Required Submittals: (Existing facility will be evaluated on an individual basis.) Complete shop drawings and manufacturer’s catalog data shall be submitted to the Lessee and approved by the Lessee prior to start of any construction work. Power and lighting panel configuration shall be complete with schedule of branch panels, separate disconnects, and circuit breakers, based on calculated and estimated motor, resistive and lighting loads. All circuits shall be labeled at the panel and at the outlet/power pole for future reference.

Location of all electrical receptacles and telephone outlets (including power drops for the modular furniture system) shall be designated on a floor plan showing the modular furniture layout provided by the Lessee. Said floor plan shall be available approximately four weeks after approval of construction plans are received.

13.2 Electrical Service: Electrical service for new construction or a renovated existing building shall be 480/277 (or as provided by local utility) Volt, 3-phase, 4-wire or approved equal. Service shall be sized for HVAC and other mechanical system(s) loads, lighting, general building services, and dedicated computer based office equipment loads. Five (5) watts per square foot shall be provided for lighting and general service receptacles and five (5) watts per square foot shall be provided for computer based office equipment. Size of neutral conductor of three phase circuits shall be twice that of phase conductor to accommodate potential harmonic currents associated with computer system electronic power supplies and fluorescent lighting fixtures electronic ballasts.

Dedicated, isolated ground circuits shall be supplied from separate isolated ground power distribution panel(s). General service receptacles shall be supplied from separate receptacle power distribution panel(s). Lighting circuits shall be supplied from separate lighting panel(s). Panels shall have 20% spare capacity and be complete with 10% spare breakers of each size, but no less than one spare.

No more than four duplex receptacles shall be connected to any single 20 Amp dedicated isolated ground circuit or general service circuit. Duplex receptacles should be installed every 8' along interior side of walls in new offices.

13.3 Surge Suppressor: The building's main electrical service shall be equipped with a transient voltage surge suppressor ahead of the distribution panels. The surge suppressor shall be either an Atlantic Scientific Corp ZONEMASTER Model ZMS140-E or ZMS140-F, or an approved equal, appropriately sized for the anticipated building load.

13.4 Workstations: Each employee workstation (office or cubicle) shall be equipped with a minimum of one isolated ground 120 Volt 20 Amp duplex receptacle (orange) supplied by a dedicated 20 Amp, isolated ground circuit, and two standard 120 Volt 20 Amp duplex receptacles supplied by a 20 Amp general service circuit.

Each group of eight (8) workstations will require one (1) isolated ground 20 Amp duplex receptacle (orange) for computer printers supplied by a dedicated 20 Amp, isolated ground circuit. No more than two isolated ground 20 Amp duplex receptacles (orange) designated for printers are to be supplied by a dedicated 20 Amp isolated ground circuit.

13.5 Copy Machines: Each copy machine will require one (1) isolated ground 20 Amp duplex receptacle (orange) supplied by a dedicated 20 Amp circuit isolated ground circuit. No more than one isolated ground 20 Amp duplex receptacles (orange) designated for a copy machine is to be supplied by a dedicated 20 Amp isolated ground circuit.

13.6 Electrical Distribution: Electrical distribution for open office areas shall be through covered wireway(s) above the ceiling. Electrical wiring shall be enclosed as required by code, with junction boxes spaced on a 15'x15' grid. Each junction box is to contain the eight wires to be compatible with the Haworth Power Base furniture. The grid is to include a twelve foot greenfield drop at each junction box on the 15'x15' grid. Each drop is to contain three dedicated circuits with separate neutrals for each circuit: one isolated ground circuit and two circuits with a common ground. Open office area includes all work spaces where more than one employee is stationed.

Space and conduit (if required) shall be provided for telephone/data cabling of sufficient size to accommodate three four-pair, level 5, twisted pair cable to each office, conference room and modular furniture workstation. This raceway shall originate in the Tele/Data room and shall run parallel to the electrical distribution raceway.

13.7 Power/Data/Communication Poles (drops) will be supplied by the Lessee and installed by the Lessor. Installation of power drops, direct, final and complete connection to the modular furniture system shall be the responsibility of the Lessor. All work shall be coordinated with electrical contractor.

13.8 Interior Receptacle/Lighting Requirements: Each office and conference room shall be equipped with a minimum of five (5) 120 Volt 20 Amp duplex receptacles one of which will be on a dedicated, isolated ground circuit. All other walls shall have duplex receptacles at 12'-0" o.c. The overhead electrical grid power drops shall not be used to satisfy this requirement. The power drops are for the modular furniture system only and will be identified on the furniture plan.

A 125/250 Volt 50 Amp range outlet shall be installed in the lunchroom.

Provide duplex receptacles supplied by general service circuits for refrigerator, microwave, vending machines and 220 receptacle for stove at Lessee designated locations. Provide 2-30 amp receptacles for Data Room, these receptacles shall be a L630R (3 wire, two pole) 10 gauge wire. Provide minimum of ten- 110 I/D receptacles for Data Room.

Office space lighting levels shall be in accordance with the latest recommendations of the Society of Illuminating Engineers, or a minimum maintained lighting intensity of 50 foot candles at desktop level, which ever is greater. Task lighting shall not be used to satisfy specified levels for general lighting. Unless otherwise identified, all interior lighting fixtures shall be 2'x4' Metalux fluorescent troffers, or approved equal, installed in a staggered pattern. Each troffer shall be equipped with three General Electric F32T8/SPX35/RS light tubes. Each two (2) troffers shall be equipped with (1) electronic ballast. Ballasts shall be parallel wired to prevent loss of light from both fixtures when one tube fails. Troffers shall be equipped with silver specular reflectors having a minimum reflectivity of 92%. Troffers shall be equipped with parabolic diffusers having a minimum depth of 3". Troffers shall be installed to provide wall-washing light along the entire perimeter of open areas.

Install a minimum of 10 recessed or can lights in the Large Conference Room and a minimum of 4 recessed or can lights in the Small Conference Room, controlled by dimmer switches.

Permanently design corridors and unused space with floor to ceiling walls shall be lighted in accordance with the recommendation of the Society of Illuminating Engineer's Standard.

Provide exit lighting as required by code. Exit signs shall be self-luminous LED type.

Provide battery operated rechargeable automatic emergency egress lighting in interior of building to adequately light all exit areas, stairs, hazardous areas, or other occupied areas. Emergency egress lighting is a safety-related item and compliance to various codes is required.

Task-lighting will be incorporated into the partition system of the building's open plan office areas, except for group interview areas. Task-lighting fixtures will be provided by the State. Installation will be coordinated with the work being performed by the Lessor during construction.

Lighting for each room and office shall be switched individually at the room entrance. Light switching in open areas shall be zoned such that no zone exceeds 1,000 square feet.

Suitable lighting shall be provided over all lavatory and vanity counters.

13.9 Hand Dryers: The public restroom shall have an electric hand dryer.

13.10 Exterior Lighting Requirements: Provide security flood lighting around perimeter of building. Parking lot shall be illuminated to two (2) foot candles at the parking surface. All exterior lighting shall be vandal resistant. All exterior lighting shall be controlled by photoelectric light sensing devices. Separate circuits, special receptacles, outlet boxes or covers shall be provided.

13.11 Communication Requirements: The Lessor shall provide space for telephone equipment with necessary power supplies and/or receptacles. Equipment will be supplied by the Lessee. Installation shall be the responsibility of the Lessee, and may be made during construction in conjunction with other work being performed by the Lessor.

The Lessor shall provide street access conduits for communications and/or data circuits, UL rated fire retardant plywood equipment mounting boards, conduits and/or wireways internal to the building, and dedicated 120 Volt - 20 Amp circuit(s) (isolated ground receptacles) served from the isolated ground power distribution panel. Standard 20 Amp duplex receptacles supplied from the general service power panel shall also be provided. Provide the other requirements for the telephone/data equipment room as shown. All associated costs shall be borne by the Lessor. Back boards on end wall shall be marked “Data Equipment Only” when installed.

Provide conduit for Telephone/Data outlets in masonry walls, fixed partitions and all floor to ceiling offices. This conduit shall be 3/4” bushed at the top and terminated in a 4” square box with a single gang plaster ring. Supply and install suitable cover plates. Power poles may not be substituted to meet this requirement.