WILLIAM PATERSON UNIVERSITY
RAUBINGER HALL, BLDG. NO. 13
ELEVATOR NO. 1.
WAYNE, NJ

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The "General Conditions of the Contract for Construction" of the American Institute of Architects Abbreviated Form of Agreement between Owner, **(William Paterson University)** and Contractor, AIA Document A107, latest edition shall form a part of this specification except as otherwise herein provided.

1.2 DESCRIPTION OF WORK

A. Include all labor, materials, equipment and appliances required for the furnishing, installing, and testing, complete and ready for operation in a manner satisfactory to the Consultant, all the work specified herein.

1. **One (1) direct acting, (In-ground), hydraulic passenger elevator, Elevator No. 1.**
2. Car enclosure, including floor covering and car doors, hangers and operating devices for car doors and landing doors.
3. Signals and trail cables for signals and communication system.
4. All controls and signal equipment.
5. Inter-communications system and two-way hands-free.
6. Clean entire shaft, including wash down of all rails, etc..
7. Pit and machine room, G.F.I. duplex receptacle's.

1.3 RELATED WORK OF OTHER SECTIONS

A. The following work related to the work of this Section is specified in other Sections of the Specifications:

1. Hatchway enclosures, pits and machine rooms.
2. Feeders with main line switch, in elevator machine room and auxiliary feeds to panels as required.
3. Hatchway outlets for car lights and signal outlets in elevator machine room.
4. Elevator machine room lighting.
5. Suitable storage space for tools and materials brought into the buildings by the Elevator Contractor to be used during construction.
6. Finish painting, except as otherwise specified.
7. Electric power for testing the elevator equipment.

1.4 INTENT OF SPECIFICATIONS

A. The entire installation shall be as herein specified.

B. The type, duty, etc., of this elevator shall be in accordance with the data hereinafter specified.

C. Wherever in these specifications the words **"provide", "furnish" and "install"** means supply and deliver only or similar term is used in the sense of furnishing apparatus or materials, it shall mean that the Contractor for this work shall supply, deliver, unload, unpack, assemble, install and connect such apparatus or materials to which it is referred, except as may otherwise be specifically defined.

D. Bring to the attention of the Consultant immediately any changes in the size or location of the material or equipment which may be necessary in order to meet field conditions, or in order to avoid conflict with the equipment of other Sections. Obtain the Consultant's acceptance before such deviations are made.

E. It is the intent of these specifications to provide a complete system, and all necessary labor and materials, whether or not specifically mentioned herein, shall be included and left in good working order, ready for operation.

F. Locate all equipment and accessories in such a manner as to provide easy access for proper service and maintenance.

1.5 CHASES, CUTTING AND PATCHING

A. The cost of cutting and patching of walls, partitions, ceilings and floors necessary for reception of work shall be borne under this Section.

B. When it becomes necessary to cut finished materials, provide proper protection as to protect the surrounding areas, (hallways, apartments, etc.).

C. Any damage to personal property caused by the contractor’s work shall be repaired, cleaned, etc. **and all costs shall be paid for by the Contractor.**

1.6 STANDARDS

A. Materials specified by reference to a specific standard such as the American Society of Testing Materials, Underwriters' Laboratories, American National Standards Institute, Federal Specifications, a trade association standard, or other similar standard shall comply with the requirement in the latest revision thereof, in effect at the time of bidding, except as limited by type, class or grade, or modified in such reference.

1.7 DEFINITIONS

A. All terms in the specifications have the definition given in the Safety Code for Elevators, Escalators and Dumbwaiters as approved by the American National Standard Institute, **latest edition, including all revisions and changes authorized by the Sectional Committee on Elevator Safety Code to date of these specifications. Hereafter in these specifications, the abbreviation "ANSI Code" shall be understood to refer to this Code.**

1.8 NOTICE TO BIDDERS

A. Before submitting proposals, examine the specifications relating to the work and become fully informed as to the extent and character of the work and the relation of the work to the work of other Sections.

1.9 SPECIAL TREATMENTS

A. The Consultant will accept no exposed fasteners and no manufacturers' logos or trademarks on any material or equipment provided in these specifications.

1.10 PAYMENT SCHEDULE

A. Monthly progress payments shall be submitted on AIA forms G702 and G703 with 2% retainage.

B. All invoices are to be submitted to the Consultant for his approval.

1.11 DESCRIPTION OF ELEVATOR SYSTEMS

A. Passenger Elevator

Quantity	One (1).
Capacity	1500 pounds.
Speed	100 feet per minute.
Travel	Existing.
Floors	Ground & Fourth,(4th), **Rear Opening.** 1, 2 & 3, **Front Opening.**
Number of Landings	Five, (5), **Two, (2) Rear Opening, Three, (3) Front Opening.**
Operation	Simplex Collective w/wo Independent Service.
Special Operations	Fire Emergency Service Phase I & II, Handicapped Features, Intercom Independent Service, two-way Hands-free communication.
Buffers	New, Spring with related support steel
Car Enclosure	Remodel, $20,000.00 allowance.
Landing Doors	Reuse Existing, new hangers, tracks,etc.
Signals	Call acknowledging lights, car position indicators, car travel lanterns, hall position indicators.
Pump Unit	Ground Floor.
Communication Equipment	Two-way Intercommunication system and outside Hands-free communication system. **As outlined in the latest A17.1 code, section 2.27.1 thru 2.27.1.1.6..**
Power Supply	Existing.

1.12 LAWS AND ORDINANCES

A. All current local and State laws and regulations, Occupational Safety and Health Administration Rules, ADA requirements, A117.1, ASME, ANSI, and National Fire Protection Association's recommendations, governing or relating to any portion of this work are hereby made a part of these specifications; responsibility for compliance to their provisions is included.

B. Inform **W.P.U.** of any work or materials which violates any of the applicable laws and regulations before proceeding with the work.

1.13 APPLICABLE CODES AND SPECIFICATIONS

A. Only the current editions and revisions of referenced codes ASME A17.1 & A117.1 and specifications shall be applicable for the work of this Section.

B. All construction, workmanship and materials, all factors of safety used in designing all structural and working parts of the equipment, and unless herein specifically modified or otherwise shown on the drawings, all top and bottom clearances and the construction and operation of all safety devices shall be in full accordance with the requirements of ANSI Code. In addition, all such equipment and clearances shall fulfill the rules, regulations and codes of all local bodies having jurisdiction.

C. Where the requirements of the ANSI Code are more severe than local rules, regulations and codes, the ANSI Code shall govern.

D. Factors of safety, buffers, guide rails, top and bottom terminals stopping devices, emergency stopping devices are described in the ANSI Code, except as to special project requirements.

E. In addition, the equipment shall conform to certain special safety requirements as given in these specifications.

1.14 EXAMINATION OF EXISTING CONDITIONS

A. Visit and carefully examine those portions of the site and/or present buildings affected by this work so as to become familiar with existing conditions and difficulties that will attend the execution of the work, before submitting proposals.

B. Submission of a proposal will be construed as evidence that such examination has been made and later claims for labor, equipment or materials required because of difficulties encountered, which could have been foreseen had such examination been made**, <u>will not be recognized.</u>**

1.15 DAMAGE TO PROPERTY

A. Restore to its original condition without extra payment any of the **W.P.U.** property that shall become damaged due to the negligence of any employees or agents of the Contractors. Such repairs shall meet the acceptance of the **W.P.U..**

B. Take proper care and protect all portions of the work until its acceptance. Any and all portions of work liable to damage under this or other Sections or by freezing or inclement weather must be thoroughly and securely protected by a substantial boarding or covering until not further required. It shall be removed from the premises only when its removal is directed by the **W.P.U.**

C. Protect all plated and polished material and trimming against damage.

1.16 WORK IN EXISTING BUILDING

A. The proposal for work in the existing building shall be predicated on the performance of the work during regular working hours. when so directed, however, install work in overtime and the additional cost charged therefore shall be only the "premium" portion of the wages paid.

B. All scrap and debris, except, as otherwise specified, shall be removed form the building and **disposed of by the Contractor.** When requested by **W.P.U.**, move equipment to a storage place on the premises and leave as property of **W.P.U..**

1.17 DELIVERY OF MATERIALS AND EQUIPMENT

A. Store materials and equipment where directed by the **W.P.U.** Any damage caused by any overloading of the structure shall be repaired at no additional cost to the **W.P.U.**. Include the hoisting of all materials and equipment and assume all responsibility for such hoisting equipment.

1.18 WARRANTY

A. Provide special project warranty, signed by contractor, installer and manufacturer, agreeing to replace/restore defective materials and workmanship of elevator work during warranty period. “Defective” includes, but is not limited to operation or control system failures, performance below required materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

a. The warranty period is 12 months, starting on date of final acceptance of elevator work, as evidenced by the <u>Consultant’s approval in writing.</u>

1.19 SHOP DRAWINGS AND SAMPLES

A. **<u>Submit four (4) hard copies, (E-MAILS ARE UNACCETPABLE)</u>** of the following shop drawings, and obtain written acceptance, **by the Consultant,** before ordering or installing any equipment or materials.

1. State of New Jersey, Department of Community Affairs Elevator Permits.
2. Machine room layout
3. Hydraulic pump unit
4. Hydraulic jack unit & PVC liner
5. Oil Cooler System.
6. Oil Scavenger system.
7. Signal fixtures
8. Controller information with manufacture doors
9. Communication systems
10. Hatchway and car door equipment
11. Roller Guides
12. Cab drawings

B. Shop drawings of equipment shall consist of manufacturer's scale drawings, cuts or catalogs, including descriptive literature which shall indicate the construction, including material and physical dimensions, and complete operating data.

C. Submit for acceptance samples requested. The samples shall be properly tagged and shall remain in the **W.P.U.** possession until final acceptance of the work.

1.20 WIRING DIAGRAMS

A. **The Contractor shall furnish two (2) complete sets of wiring diagrams**, showing the electrical connections, functions and sequence of operation of all apparatus connected with the work; and all data and instructions necessary for the proper maintenance and repair of all equipment. All items that do not apply directly to this installation shall be omitted from the final diagrams, and these diagrams should reflect all field and/or shop changes.

1.21 MAINTENANCE

A. Provide for a period of twelve (12) months after completion and acceptance of all equipment, **evident by the Consultant's final report, full maintenance/service of the equipment.** This maintenance shall include systematic examinations and adjustments and lubrication of all elevator equipment. The Contractor shall also repair or replace electrical and mechanical parts of the equipment whenever this is required and shall use only genuine standard parts produced by the manufacturer of the equipment concerned. Renewals or repairs necessitated by reason of negligence of misuse of the equipment or by reason of any other cause beyond the control of the Contractor or his supplier, except ordinary wear and tear, shall not be the responsibility of the Contractor.

B. All work under this maintenance provision shall be performed by competent personnel under the supervision and in the direct employ of the Contractor. Work shall be done **24 hours, 7 days a week.**

C. **At the completion of the modernization and acceptance, the free- service/maintenance as outlined in 'a' above will become effective.**

PART 2 - PRODUCTS

2.1 ACCEPTED MATERIALS

A. Materials and equipment shall be new, of makes and kinds specified herein, without exception. Where one brand, make of material, device or equipment is specified, the products of the manufacturers listed in **"ACCEPTED MANUFACTURERS"** shall be regarded as acceptable when, in the opinion of the Consultant , it is a recognized equal considering quality, workmanship, economy of operation, and suitability for the purpose intended.

2.2 ACCEPTED MANUFACTURERS

A. All materials shall be in strict accordance with the quality, style, performance and sizes hereinbefore specified. Manufacturer's names and catalog numbers are given in the specifications for the purpose of establishing a standard of quality, style, size and type and shall not be construed to exclude equipment or material of other manufacturers.

B. When materials and equipment are purchased from the manufacturer specified or listed hereinafter, submit complete verification product data specifications with each copy of shop drawings.

1. WIRING

a. B.I.W. Cable Systems Inc.
b. Siecor Republic Wire & Cable
c. Draka Traveler Cable

2. POWER UNITS

a. Leistritz

b. Canton
c. Cemcolift
d. ITI Hydraulic's

3. JACK CLYINDERS

a. Leistritz
b. Canton
c. Cemcolift
d. ITI Hydraulic's

4. PUMPS

a. Leistritz
b. IMO Industries
c. ESCO Elevator Products
d. ITI Hydraulic's

5. CONTROLLERS

a. G.A.L. Galaxy
b. Smartrise Engineering
c. Elevator Controls

6. LEVELING DEVICE

a. Claddagh Electronics
b. G.A.L. Galaxy
c. Smartrise Engineering

7. SIGNAL FIXTURES

a. G.A.L.
b. Monitor Controls
c. Innovation Industries

8. HANGERS AND TRACKS

a. G.A.L.

9. DOOR OPERATOR

a. G.A.L.

10. ROLLER GUIDES

a. Elsco

11. CAB ENCLOSURES

a. ECI-EDI
b. National Cab
c. Liberty Elevator Cabs
d. Cab-Tech Elevator Design

2.3 TYPE OF EQUIPMENT

A. **The direct acting plunger for this elevator shall be replaced in its entirety**, as herein after specified. **Provide a non-proprietary power unit**, storage tank and magnetic control valves. Power unit and associated control equipment shall be in a machine room.

B. **Provide a non-proprietary pump** that shall deliver the oil directly into the cylinders at the necessary pressure and in sufficient quantity to lift the fully loaded elevator at the specified speed. The tank shall act as a storage tank only and the oil shall be pumped from the tank into the cylinder on the "Up" trip and shall be returned into the tank on the "Down" trip.

2.4 ELEVATOR CYLINDER & PLUNGER

A. **The cylinder and plunger for this elevator shall be removed in its entirety and the following provided**.

1. Hydro-excavate/clean out the existing jack hole.

2. Install a Schedule 40 PVC waterproof casing with a 6" wide PVC water-stop ring to be cast in the pit floor. Cap the waterproof casing until ready to be used. No casing shall be installed without advance notification to the Consultant. Any installation made without inspector present will be rejected.
PVC LINER TO PROJECT AT LEAST 6" ABOVE THE PIT FLOOR.

3. Design and construct the jack units in accordance with the applicable requirements of the ASME Code. It shall be of sufficient size to lift the gross load at the rated speed to the height specified and shall be factory tested to ensure adequate strength and freedom from leakage. No brittle material, such as gray cast iron, shall be used in the jack construction.

4. The jack unit shall consist of:

a. A plunger of heavy seamless steel tubing turned smooth and true to +/- .15 inches tolerance, and with no diameter change greater than .04 inches per foot of length.

b. A stop ring electrically welded to the plunger to prevent plunger leaving its cylinder.

c. Internal guide bearing.

d. Cylinder head with removable packing gland to facilitate replacement of packing.
e. A drip ring below cylinder head to collect oil.

f. A bleeder valve to release gases from the system.

g. Install the jack units plumb.

6. The jack unit shall be designed for direct acting hydraulic application.

2.6 OIL SCAVENGER PUMP

A. Provide a positive displacement, rotary scavenger pump. the pump shall have a discharge pressure of 200-psi maximum and the capacity of 10 gallons, per hour.

B. The pump shall be self-priming and self-lubricating. The pump shall be equipped with a 110-mesh screen strainer.

C. The pump housing shall be constructed of brass with stainless steel internal parts.

D. Mount oil return pump on the pit floor and connect it to the jack unit head and the oil tank, utilizing plastic tubing.

2.7 MACHINE ROOM EQUIPMENT

A. Pump Motor

Provide an alternating current induction motor, maximum speed of 1800 RPM, 120 starts per hour, continuous rated, 50°C temperature rise.

B. Power Unit

1. **Provide a non-proprietary submersible self-contained power unit.** It shall include: a structural steel outer base, including tank supports; a 16 gauge oil tight drip pan; a floating inner base so that there is no metallic contact for mounting the motor pump assembly; sound isolation panels to enclose the unit and reduce airborne noises.

2. **The power units shall be designed to hold an additional fifty (50) gallons more than required (a heat dissipation reservoir).**

3. Provide a reinforced overhead oil reservoir with a tight fitting tank over the oil control unit.

   a. Included in the reservoir shall be an oil fill strainer with air filter and oil level gauge assembly, and a self-cleaning 40-micron strainer in the suction line.

4. Design the pump for oil hydraulic elevator service. It shall be of the positive displacement gear; piston or vane type inherently designed for steady discharge with minimum pulsation and will give smooth quiet operation.

5. The oil control unit shall be of the manufacturer's own design but shall include relief, safety check, start and slow down valves.

   a. Use lowering and leveling valves for drop away speed, lowering speed, leveling speed and stopping speed to insure smooth down starts and stops.

   b. Provide a valve for manual lowering of the elevator car in event of power failure and for use in servicing and adjusting the elevator mechanism.

   c. Design the tank shut-off valve for isolating oil in the power unit tank to ensure each of servicing and adjusting the elevator mechanism without removing oil from the tank.

   d. All valves shall be accessible for adjustment. All adjustment shall be made without removing the assembly from the oil line.

   e. Provide a temperature control device in power unit for hydraulic oil to maintain optimum level of operation.

6. Manufacturer the unit to operate under 400 psi working pressure.

7. **Provide manufacturer's standard oil cooler sized and designed to maintain a maximum oil temperature of 125 degrees F. in a machine room conditioned to operate at a maximum ambient temperature of 95 degrees F.**

8. Where elevator is located in unconditioned space, provide a thermostatically controlled heater in the oil tank to maintain proper operating oil temperature.

9. **When the oil reservoir thermostat registers 50°F, the car shall "exercise" (run up and down without opening its doors) until the oil temperature reaches to 75°F.**

2.8 MUFFLER

A. Provide a blowout-proof muffler, or an isolating coupling in the pipeline between the pumping unit and the cylinder head of the elevator.

2.9 PIPING

A. **The existing piping couplers, valves, etc. shall be removed** and **new piping provided** between tank, operating valve and cylinder, complete with necessary valves and fittings of the elevator. All piping and fittings shall be steel or wrought iron, socket welded and flanged type of sizes required and shall withstand a test pressure of 400 pounds per square inch. In addition to valves required for normal operation, provide a gate valve in supply line to cylinder in the pit.

B. **Relocate the oil line to the back side of the hoistway, Away from the ground floor entrance to the pit.**

2.10 CONTROLLERS

A. The elevator controller provided shall be a **non-proprietary microprocessor controller** that will comply with ANSI/ASME 17.1 elevator safety codes. The controller shall provide built in on board LCD diagnostics with a plain English display. All input/output signals shall be coded with an LED readout indicating call registration, burned out lamps, car position, elevator status and mode of operation, and all circuit registration indicators. All diagnostics shall be accessible without requiring the need to attach external tools or troubleshooting devices. Controllers that do not provide LED readout on all input and output signals, do not provide plain English diagnostic display, or require the hook up of external diagnostic tools are not acceptable.

B. All safety relays provided on the controller shall be DC voltage relays to improve low voltage relay latching. The controller shall not allow the car to run or operate in the event of any short circuit or ground fault. The controller shall not permit the car to run if any door or hoistway interlock is not latched in the correct manner. In addition, while on inspection or hoistway operation, the car shall not run or operate if any ground faults are detected even if all hoistway door locks and contacts are closed and latched.

C. The controller shall be programmed to park the car at the main floor, but shall contain a disconnect switch mounted on the controller to disconnect this feature.

D. Provide reduced voltage (solid state) type of starting for the pump motor**.**

E. Provide this controller with the manufactures' cover/door.

2.11 CAR LEVELING DEVICE

A. Provide this elevator with an accepted car leveling device that shall automatically bring the car to a position level +/- 1/4" with any floor, regardless of the load in the car or its direction of motion. The device shall correct over-travel and under-travel. Correction shall be in small steps without surges to eliminate tripping hazard.

B. Leveling to IP 8300 or approved equal.

2.12 CAR SLING AND PLATFORM

A. The car platform shall be retained and reused.

B. The car sling shall be retained and reused.

C. Finished floor shall be black V.C.T. tiles with steel studs.

D. Provide this elevator car platform with a sheet steel toe guard, the full width of door opening and extending downward from the car sill a distance of approximately 21”, with the lower edge curved inward.

E. Provide on top of this car an inspection station.

F. Provide this elevator with suitable receptacles fitted with wire lamp guards **on top of the car and beneath the car platform.** Provide a suitable plug receptacle on top and bottom of the car.

G. Provide **each car entrance** with a one piece non-slip aluminum saddle/sill.

2.13 RAILS

A. The present guide rails shall be retained and reused. **All guide rails shall be cleaned, of all oil and grease,** all bracket and rail bolts shall be tightened, all joints adjusted and filed.

2.14 SHAFT CLEANING

A. The entire shaft of each shaft elevator from the pit floor to the overhead concrete slab shall be thoroughly cleaned of all debris, lint , grease, dust, etc.

2.15 ROLLER GUIDES

A. Provide this elevator with 3" roller guides and base on the top and bottom of the car frame for each guide rail. Each roller guide shall consist of three (3) rubber tired wheels to run on the three (3) finished rail surfaces. The wheels shall be equipped with ball bearings and shall be held against the rail surfaces by adjustable springs, all contained on a metal base. The roller guides shall run on dry guide rails.

B. Car roller guides are to be Elsco model D.

2.16 TERMINAL STOP DEVICES

A. Provide upper and lower normal terminal stopping devices that shall be arranged to automatically stop the car from speed specified within the top clearance and bottom over-travel independent of the operating device, final terminal stopping device and the buffers.

B. Provide final terminal stop devices that shall automatically stop the car from speed specified within the top clearance and bottom over-travel independent of the operation of the normal terminal stopping device with the buffers operative.

C. Final terminal stopping devices shall be through bolted to the rails.

2.17 CAR BUFFERS

A. The present car spring buffers shall be replaced in it's entirety.

B. Provide new pit support steel for the new spring cushion buffers.

C. Provide a switch in the pit, arranged to interrupt the power supply independently of the regular operating device to permit safe access to pit for servicing.

D. Provide a G.F.I. duplex receptacle in the pit.

E. Provide a pit lighting system.

F. Provide a pit access ladder.

2.18 CAR POSITION INDICATOR

A. Provide a car position indicator consisting of a readout two inches high, (2") with directional arrows and located at the top of the car operating panel to indicate the car position to the passengers.

B. Readouts in the car station shall be two inches planar, neon gas discharge displays, alphanumeric type, neon red color with 130 degree viewing angle or approved equal.

2.19 HALL POSITION INDICATORS

A. Provide a hall position indicator for this elevator consisting of a readout one inch (1”) high with direction arrows and locate in **each hall station at each floor** to indicate the car position to the waiting passengers.

2.20 CAR SIGNAL AND OPERATING PANEL

A. Provide a panel selected from Contractor's stock designs, stainless steel and surface mounted.

B . The following items shall be included on the panel unless otherwise specified:

1. A complete set of **vandal-proof (positive stop)** pushbuttons corresponding to each floor served, with "call registered lights" in the button in each car station. Provide floor numerals in the button.

2. The open door button.

3. The safety switch. (Emergency stop switch), (keyed operated).

4. The fan switch, (two speed).

5. The car light switch.

6. The Independent key switch.

7. The inspection/access key switch.
8. Emergency light with battery and trickle charger.
9. Emergency light test button.
10. Fireman's return service cabinet.
11. Fireman's Phase II operation to be engraved in the panel.
12. Cutout for grille for hands free emergency telephone.
13. Two inch high, (2") floor indicator with directional arrows..
14. "NO SMOKING" to be engraved in one inch (1") letters.
15. "RAUBINGER HALL, ELEVATOR NO. 1" to be engraved in one inch (1") letters.
16. Capacity to be engraved in 3/4" letters.
17. **All switches, except the emergency switch, shall be key-operated and behind a keyed cover.**
18. **Provide all provisions, that are required by the latest A17.1 code, section 2.27..**

C. The above items which do not pertain to the operator-less system shall be ineffective when on operator-less operation.

D. The car signal panel shall be located, as required by Code and shall include the markings adjacent to each button, switch, etc. The Braille indications shall be engraved in the plate. Applied plates will not be accepted.

E. Plate to be secured by the Ace type locks and properly hinged to prevent bowing.

2.21 CAR PUSHBUTTONS

A. All car pushbuttons shall be **vandal-proof (positive stop)** with legible floor designation in the button "with call registered lights in the buttons". The circuit set up by the pressing of a signal button on the car control panel shall be reset or extinguished when arriving at the designated floor.

2.22 SAFETY SWITCH, (Emergency Stop Switch), (Keyed Operated)

A. Provide a safety switch which shall be of a distinct color from the other switches and pushbuttons and shall be so located, etc., as not to become confused with the other switches. The operation of the safety switch shall cut off all power and ring a 6" diameter bell under the car platform.

2.23 DIRECTIONAL LANTERN

A. Provide a vandal-proof directional lantern **in both car door jambs, for both car doors,** with double lights. The lantern shall be connected into the control and signal system so that the proper light will be illuminated as a car approaches to stop at a floor in answer to a call.

B. Provide in each lantern a single stroke bell and connect to ring the number of times as required by Code when lights are energized.

2.24 LANDING PUSHBUTTONS - FLUSH MOUNT

A. **Provide landing pushbutton call station of the flush mount design and shall be of the vandal-proof type, (positive stop), with arrows engraved in the button** with "call registered lights in the button" as hereinbefore described. Button mechanism shall be of substantial construction for expected use. Contacts shall be of the rubbing type of silver or construction metal and shall be arranged so as to equalize pressure and prevent undue compression of the springs. Buttons shall be of the short throw type and be 1-1/4" outer diameter.

B. **Provide all labor and material, to install the new hall buttons back boxes at the proper ADA height.**

C. **Provide a 1" readout with directions arrows in each landing pushbutton.**

D. Provide required signage on each hall station, as outlined in "Appendix O" of A17.1 code.

E. Cover plates to be stainless steel.

2.25 ELEVATOR COMMUNICATION SYSTEM

A. Provide all equipment, accessories and materials complete and in strict accordance with the specifications **and the A17.1 code, section 2.27.** All materials and/or equipment necessary for proper operation of the system not specified or described herein shall be deemed part of this specification.

B. Provide facilities for originating call and establishing two-way communication from the elevator cab to the machine room, **intercom.**

C. Provide facilities for complying with the requirements of the hands-free communication as outlined in the ADA law.

D. Provide a trickle charger and battery as a part of the communication system. In the event of a power failure, the battery shall be able to provide for full communication for a period of two (2) hours.

2.26 CAR DOOR HANGERS AND TRACKS

A. Provide hangers for **each car door and the hatchway doors** of the heavy duty sheave type, consisting of two ball bearing sheaves not less than 3-1/4" diameter, enclosed in heavy steel housings. The track shall be of high carbon steel not less than 2" x 1/2". Sheave wheels for the car door hangers shall be made of, or tired with, a suitable sound reducing material other than rubber. Sheave wheels for hatchway door hangers shall be made of steel tired suit suitable sound reducing material other than rubber. All sheave wheels shall rotate in a grease packed precision ball bearing. Each hanger shall be equipped with two (2) ball bearing up thrust rollers not less than 1-1/2" diameter with eccentric adjustment.

2.27 HATCHWAY DOOR AND CAR DOOR CONTACTS

A. Provide each elevator hatchway door and the car door with a electric switch which will prevent the operation of the elevator unless the car door is closed and all hatchway doors are locked in the closed position.

B. These switches shall be positive in operation and must be so located and designed as to be protected from mechanical injury and the possibility of short circuits.

2.28 ELECTRIC DOOR OPERATORS

A. **Provide a non-proprietary medium speed electric door operator for both car doors** capable of operating a hoistway door and car door simultaneously from the closed position to within three (3) inches of full-open position (or vice versa) at a speed of approximately two and one-half (2-1/2) feet per second. The closing speed shall be slightly slower than the opening speed. The movement of the hatchway and car doors shall be controlled simultaneously by the normal operation of the elevator controls. The doors shall operate smoothly and without slam in both opening and closing directions. Each hatchway and car door shall be cushioned in its final movement in each direction of travel. Electric power shall be used in the opening and electric or spring power may be used in the closing movement.

B. All levers operating the doors shall be constructed of heavy steel members and all their pivot points shall have ball or roller bearing of not less than one (1) inch outside diameter or bronzed bushed bearings of ample size with positive means of lubrication. In case of interruption or failure of the electric power from any cause, the mechanism shall be so designed that it shall permit manual emergency operation of both the hatchway and car doors and the hatchway doors shall continue during emergency operation to be self-locking. The door operators shall operate in conjunction with, or incorporate in their design, or be equipped with all interlocks or safety switches herein specified.

C. **Provide a 8" Z-bar reinforcement on "each car door" and locate between the new nylon guides.**

D. Provide a door protection unit, for each car door.

2.29 HATCHWAY ENTRANCES

A. The existing entrances shall be retained and reused, but the doors shall be provided with new hangers and tracks as hereinafter specified, **new nylon bottom door guides** and reinforced to accept power operation. **A reinforcement shall be installed at the center of each panel and to be located between the new bottom guides.** Such reinforcement shall be fabricated of twelve (12) gauge stainless or galvanized steel and shall have a minimum length of eight (8) inches and minimum height of two and one fourth inches (2-1/4") for single panel sliding doors. Multiple panel doors shall be equipped with such reinforcement equal in length to the bottom guides and a minimum height of 2-1/4". The reinforcement shall engage the corresponding member by not less than three eighths (3/8"),

B. Provide drop key access holes and ferrules in each hatchway door.

C. Provide Braille jamb plates at every landing (locate at ADA height).

2.30 HOISTWAY ACCESS SWITCH

A. Install a cylindrical type keyed switch at top and bottom terminal in order to permit the car to be moved at slow speed with the doors open to allow authorized persons to obtain access to the top of the car and to pit. This switch shall be keyed alike to the car "inspection" switch inside cab panel.

B. Locate the switch in the terminal hall stations.

C. This switch is to be of the continuous pressure spring-return type, and shall be operated by a cylinder-type lock having not less than a five (5) pin or five (5) disc combination with the

key removable only in the "OFF" position. The lock shall not be operable by any key that operates locks or devices used for other purposes in the building and shall be available to and used only by inspectors, maintenance men and repairmen.

2.31 CAR ENCLOSURE

A. The sum of $20,000.00 shall be allowed to remodel this car enclosure.

B. The net allowance for this car enclosure is to be exclusive of any handling charge, applicable sales and/or use taxes, car door hangers, interlocks, exit contact locks, platform or flooring, car door sill, car installation or any operating equipment, and such items are to be included by the elevator contractor.

C. The net allowance covering this car enclosure of a design and **material shall include** ventilation, lighting, **car door,** base, wainscoting, handrails, entrance columns and transoms, as required and all necessary cutouts.

D. **Provide one (1) complete set of protective pads for this elevator.**

PART 3 - EXECUTION

3.1 OPERATION

A. Provide this Elevator for "Simplex Collective" operation as follows:

1. The elevator shall operate from a single riser of pushbuttons with "call registered lights" at the landings. "Up" and "Down" pushbuttons shall be provided for the intermediate landings, and a single button at the terminal landings set in a flush mounted case.

2. Provide a key-operated switch for this elevator for selecting "Independent Service".

3. The operation of this elevator shall be such that the momentary pressing of one or more buttons shall send the car to the designated landings for which the buttons have been pressed in the order in which the landings are reached by the car, irrespective of the sequence in which buttons have been pressed and shall illuminate the proper car lantern.

4. A key-operated switch shall be provided in the car station and be marked "Independent Service" and shall operate as outlined herein. When this switch is thrown to the "Independent Service" position, it shall cancel all car calls for that car. Doors shall not close until a car button is pressed or until the key-operated switch is opened. Opening of the switch shall restore the car to normal operation.

5. Provide a solid state micro scan unit on this elevator. This system shall contain a minimum of 32 infrared beams strategically placed at intervals along the leading edge of the car doors, creating a detection screen in the elevator entrance. The micro scan unit shall be insensitive to dust, moisture and vibration and to be encased in an aluminum section. It shall close the doors, automatically, momentarily after the last entering or leaving passenger, and shall distinguish between stops made for a car call and stops made for corridor calls. The electronic device shall operate at both terminal and intermediate floors to prevent the car and hatchway doors from starting to close if a person or sizable object is in the doorway. It shall cause the doors to stop and reopen if, while closing, a person or object enters the doorway.

6. A time limit relay shall be provided, designed to hold the car at the landing at which it has stopped for an adjustable predetermined period of time, unless hoistway door is held open, before it will again start automatically in response to other calls.

7. An key operated emergency stop switch shall be provided in this car to interrupt the power supply, ring a 6" diameter bell under the car platform and independently of the regular operating device. The opening of the stop switch shall not cancel the registered calls and after this switch is again closed, the car shall continue to answer its calls. The emergency alarm bell shall be connected to the emergency stop switch.

8. **After this elevator has answered all calls, the controller shall be programmed to home the elevator to the first, (1st) floor.**

B. As required, operation of elevators under fire or other emergency conditions shall be provided in accordance with ANSI A17.1 Latest Edition, Rule No. 2.27.3.2. **Also, the Contractor shall connect the new smoke detection system into the new control system.**

3.2 EMERGENCY AND SERVICE KEYS

A. Provision shall be made by this Section for Fire Department emergency keys as required by Code.

B. Provide drop key access holes and ferrules in each door panel at every landing.

C. Provide all necessary keys to **W.P.U.**

3.3 PAINTING

A. At the completion of the work, the machine room floor shall be **"thoroughly cleaned"** and shall receive one (1) coat of a quality deck enamel.

B. At the completion of work, the pit floor shall be **"thoroughly cleaned"** and shall receive one (1) coat of quality deck enamel.

3.4 ELECTRIC WIRING

A. Provide all wiring except trail cables in rigid standard weight or thin wall conduit with steel outlet boxes or wiring troughs, except that a small amount of flexible conduit may be used where not subject to moisture or imbedded in concrete.

B. Rigid conduit shall be galvanized and of the proper size to comply with the National Electric Code requirements. All wiring shall be installed in accordance with the National Electric Code and such local regulations that may apply.

C. Provide traveling cables between car and hatchway that shall be flexible and so hung to relieve strains in the copper conductors. **Cables shall have the required number of shielded pairs for "voice communication", and coaxial cables for C.C.T.V. cameras.**

The shielded pairs for "voice communication" and the shall be terminated in the car station in the cab and the elevator machine room and "shall be properly tagged".

The coaxial cable for C.C.T.V. shall be terminated in a junction box on "top of the cab" and the "elevator machine room" and "shall be properly tagged".

D. All wiring material used shall have flame retarding and moisture resisting outer covering and shall contain the label of approval of the Underwriters' Laboratories. Metal boxes, troughs and ducts shall be of a design to comply with the National Electric Code.

E. Interlock wiring shall comply with A17.1 codes.

3.5 PERMITS AND CERTIFICATES

A. Give necessary notices, file drawings and specifications with the departments having jurisdiction, obtain permits or licenses necessary to carry out this work and pay all fees therefore.

B. Arrange for inspection and tests, including Controlled Inspections, of any or all parts of the work if so required by authorities or utility companies having jurisdiction and pay all charges for same.

C. Pay all costs for and furnish to the **William Paterson University,** all certificates necessary as evidence that the work installed conforms with all regulations where they apply to this work.

3.6 TESTS

A. Include tests specified and/or required under laws, rules and regulations of all Departments having jurisdiction.

B. All parts of the work and associated equipment shall be tested and adjusted to work properly and be left in perfect operating condition. Correct defects disclosed by these tests without any additional cost to the **William Paterson University.**

END OF SPECIFICATION