

ELEVATORS

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General

In general, follow the guidelines below when specifying elevators and related items. Unless otherwise indicated, these guidelines are not intended to restrict or replace professional judgment.

Consult with the University Project Coordinator for specific requirements.

Related Sections

Tab "Special Instructions to Designers"; Section "Codes and Regulatory Agencies"

University Preferred Manufacturers and Sub-Contractors

Approved installation sub-contractors for elevator related work are listed within this section.

Preferred manufacturers are listed in a separate document, "Architectural Preferred Manufacturers List." Obtain current copy from Project Coordinator.

Design and Installation Requirements

1.0 General Guidelines for Hydraulic & Traction Elevators

1.1 Scope of Work

When project scope consists of elevator modernization or replacement; include the following in project specifications:

Two weeks prior to removal of any equipment, elevator contractor must notify U. of M. elevator dept. at 747-3246. U. of M. elevator dept. will tag any parts to be salvaged. Contractor to remove tagged parts, transport parts to building's loading dock, and notify U. of M. elevator dept. which in turn shall remove salvaged parts from site. All other equipment will become property of contractor who in return will remove same from site in accordance with all codes and regulations.

1.2 Acceptable Elevator Installers

Millar Elevator Co.
3716A Trade Center Drive, Ann Arbor 48108
Dave Flint (313)971-8242

Amtech Reliable Elevator Co.
6511 Lincoln Ave., Detroit 48202
Gerry Virzi (313)872-3001

Detroit Elevator Co
1938 Franklin St., Detroit 48207
Don Purdie (313)259-3710

Schindler Elevator Co.
11853 Belden Court
P.O. Box 9166
Livonia, MI 48151-1166
Dave Roth (313)422-8850

* Note: Above is not a list of elevator manufacturers; it is a list of INSTALLERS only. Elevator INSTALLER must provide the equipment specified. See list of acceptable products.

1.3 Requirements of Regulatory Agencies

A. Perform all work in accordance with applicable codes, the State of Michigan Elevator Code, the National Electrical Code, and the American National Standard Safety Code for Elevators, ANSI A17.1 (latest edition accepted by State of Michigan), as referenced therein and all of the provisions in the University of Michigan's Standard General Conditions dated January, 1995. Give all necessary notices, obtain all State and Municipal permits, pay all fees necessary in connection with the installation, including sales and use taxes as applicable, and make all tests as are called for by the regulations of such authorities. These tests shall be made in the presence of the authorized representative of such authorities and the Owner's representative.

B. Conform to the Americans with Disabilities Act (ADA) Guidelines.

Comply with University of Michigan Barrier Free Elevator Guidelines attached herewith.

1.4 Guarantee

The elevator subcontractor shall guarantee that the materials and workmanship of the apparatus installed by him under this specification are first-class in every respect, and that he will make good any defects not due to ordinary wear and tear or improper use or care, which may develop within one year from the date of final payment.

1.5 Operation and Maintenance Manuals

After completion of the installation, the elevator subcontractor shall furnish four (4) complete sets each of "as-built" wiring diagrams, parts catalogs and job specific service manuals to the Owner. (See 1.21.B)

1.6 Maintenance

A. After completion of the installation, maintenance and 24 hour callback service for the equipment furnished under this specification, shall be provided for a period of twelve (12) months as part of this Contract. This service shall also include regular examination (biweekly; advise U. of M. elevator dept. @ 747-3246 each time after completion of service) of the installation during regular working hours by trained employees of this Contractor, and shall include all necessary adjustments,

greasing, oiling, cleaning, supplies and parts to keep the equipment in proper operation, except parts made necessary by misuse, accidents or neglect caused by others.

B. All maintenance service must be performed by the installers and not by any other services agency. Also, the installer must have an established maintenance and service organization available for performance in the City of Ann Arbor, that can provide regular and emergency service, 24 hours a day, every day of the year and respond to the job site within two hours of a call.

C. The elevator contractor shall be responsible to service and maintain all elevator emergency circuits (including the fire capture circuit, related equipment and sensors) as part of the regular elevator maintenance contract.

1.7 Electrical Requirements

A. General:

1. Refer to items titled "Elevator Machine Room" and "Elevator Hoistway and Pit" for additional requirements. Refer to 1.26 and 1.27.

2. Completely insulated wiring shall be furnished and installed to connect all parts of the equipment furnished by the elevator contractor. Wiring shall conform to the requirements of the latest edition of the National Electrical Code. Include rigid conduit or EMT, at least 1/2" diameter, and short lengths of flexible conduit. Conduit or EMT shall terminate in junction boxes. Conduit, EMT, wiring duct, conduit fittings, enclosures and junction boxes shall be galvanized steel or aluminum.

3. All wiring shall have a flame retarding moisture resisting outer cover and shall be run in metal conduit, flexible metallic tubing, or wire ducts.

4. Execution:

Install all power wiring in raceway systems. No exposed wiring or conduit shall be run in finished areas without prior written approval of owner.

Splice cables and wires only in outlet boxes, junction boxes or pull boxes. (Note - No wire splicing allowed in raceway or wireducts).

Install cable supports for all vertical feeders in accordance with the NEC. Provide Kellum GPIIP type supports which firmly clamp each individual cable and tighten due to cable weight.

All terminal strip connections shall be identified with corresponding reference numbers from cable termination chart and electrical straight line diagrams.

5. Provide two dedicated telephone lines (one for emergency service and one for modem) terminated in a junction box in elevator machine room.

B. Work by Elevator Contractor (Also refer to item A. above):

1. ALL POWER WORK FROM MAINLINE DISCONNECT SWITCHES IN ELEVATOR MACHINE ROOM TO CONTROLLERS AND OTHER ELEVATOR EQUIPMENT SHALL BE PROVIDED BY THE ELEVATOR CONTRACTOR.
2. Traveling cables shall have flame retarding and moisture resisting outer cover. They shall be flexible and suitably suspended to relieve strains in the individual conductors. Provide the required quantity of conductors (including two shielded conductors for telephone per elevator) plus at least 10 percent spares. All wiring between telephone cabinet in car and a junction box in elevator machine room shall be provided by the elevator contractor. Conductors shall be numbered to correspond to numbered terminals at the car and machine room.
3. Terminal blocks shall be coded to identify the circuits. Multi-conductor cables shall have the conductor color coded and numbered.
4. Each elevator car shall be provided with a suitable lamp fitted with a wire lamp guard on top of the car and a GFCI duplex plug receptacle. Refer to 1.11.2 &3, and App. B.I
5. Unless otherwise specified, control wiring shall be minimum size #18 AWG. Wire size shall be large enough so that the voltage drop under inrush conditions will not adversely affect operation of the controls.
6. Electrical Receptacle in Car: Provide duplex GFCI electrical receptacle in car. Locate receptacle approximately 2" above finished floor below car station. Provide matching face plate on receptacle. See also 1.18.G.
7. Phase Protection: Provide 3-phase power monitor for elevator power supply which monitors phase loss, low voltage, phase reversal, phase unbalance, and has an automatic reset.
8. The elevator equipment shall be designed to limit the total harmonic distortion (THD) reflected back into the power system to the following values at any motor speed from 50 to 100 percent.

Equipment input voltage waveform: less than 3% THD

Equipment input current waveform: less than 100% THD

After startup of the system, the University will measure reflected THD. The Elevator Contractor shall provide at no additional cost any additional devices required to meet the above THD limits. See 1.8.D.

C: Work by Electrical Contractor (Also refer to item A. above):

1. Adequate power from the power mains to fused disconnect switch in machine room as required, including necessary fused mainline disconnect switches. Circuit breakers are not acceptable.
2. Wiring and fused disconnect switch for car lighting, monitoring devices and ventilation, located in elevator machine room.
3. Provide a duplex electrical receptacle (3 ft. above finished floor), light and switch in the pit. Provide a duplex electrical receptacle, light and switch within 18" of lock side of jamb in machine room. Provide duplex electrical receptacle near controller and whatever additional electrical receptacles are needed to meet ANSI 17.1 and N.E.C. Codes. Light in the pit shall be operable from bottom hoistway door opening. Provide a single tube continuous fluorescent light fixture strip (full height of hoistway) with guard. This lighting shall be operable from a switch located in the pit and at the top floor. Provide a duplex outlet within 5 feet of governor for traction elevators. (Note - All electrical receptacles shall be GFCI type). Refer to 1.26.B
4. Provide conduit with pull wire between nearest telephone closet and junction box in elevator machine room for elevator telephone. Refer to 1.21.

1.8 Selection of Type of Equipment

- A. For rise up to 45 feet - Select hydraulic type elevator machine. Specify a dry pumping unit. That is, the pump, motor and valves should not be located in the hydraulic reservoir. (Note: Piston stabilizers not allowed)
- B. For rise above 45 feet - Select electric traction machines.
- C. Elevator speed
 1. Electric Traction Elevators
 - Minimum: 200 ft/min.,
 - Maximum: 350 ft/min.
 2. Hydraulic Freight
 - Minimum: 25 ft/min.
 - Maximum: 100 ft/min.
 3. Hydraulic Passenger
 - Minimum: 100 ft/min.
 - Maximum: 125 ft/min.
- D. Elevator Control/Controller - For both hydraulic and electric traction elevators: Specify non-proprietary microprocessor controls. In addition, electric traction elevators must have SCR

drive. Specify remote diagnostics. State in specifications that controllers requiring proprietary diagnostic tools are not allowed.

The SCR Drive shall limit the total harmonic distortion (THD) reflected back into the power system to the following values at any motor speed from 50 to 100 percent.

- SCR Drive input voltage waveform: less than 3% THD
- SCR Drive input current waveform: less than 100% THD

After startup of the system, the University will measure reflected THD. The Elevator Contractor shall provide at no additional cost any additional devices required to meet the above THD limits.

E. Additional for Traction Elevators Only: Include with controller package a circuit designed to detect the failure of the brake to lift. Detection of this failure shall be by means of a mechanical switch and shall take the elevator out of service at the next stop and remain out of service until the condition is corrected.

1.9 Hydraulic Elevator Cylinder Unit

The cylinder shall be fabricated from steel pipe and provided with a removable cylinder head and packing gland at the top. The cylinder head shall have a bronze, babbitt or phenolic-lined bearing and an integral drip ring. Packing shall be of the self-adjusting type.

The exterior of the cylinder shall be treated with a corrosion resistant compound and double-lap wrapped with a commercial grade wrapping, such as Scotchwrap or Tapecoat, before installation.

Provide an outer cylinder casing using at least schedule 30 steel pipe. Provide a PVC liner between outer casing and cylinder unit, sealed at the bottom. Use only clean, dry sand to fill void between outer casing and the liner and between the liner and the cylinder unit.

1.10 Landing System

The landing system shall provide high speed stepping signals, one-floor-run stepping signals, leveling, and door zone signals. Each output signal shall be electrically isolated and shall be capable of reliably operating at 120 VAC.

The leveling and stopping accuracy of the system shall be within 1/4 inch of the floor level and shall correct for over travel or under travel to within the same accuracy, regardless of load variations or direction of travel.

NOTE: MECHANICAL TYPE OR MECHANICALLY DRIVEN SELECTORS/LANDING SYSTEMS ARE NOT ACCEPTABLE.

1.11 Hoistway Door Unlocking, Top-of-Car Inspection, and Pit Emergency Stop Devices

Furnish and install hoistway door unlocking and top-of-car inspection devices in accordance with requirements of the latest Edition (currently accepted by State of Michigan) of the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators (ANSI/17.1), and as permitted by the Local Code.

The following equipment shall be furnished:

1. Hoistway door unlocking devices shall be installed at all landings with removable plugs and as required by local codes.

The hoistway door unlocking device shall unlock and permit the opening of the hoistway door from the access floors irrespective of the position of the car. The design of the device shall be such as to prevent unlocking the door with common tools. The means for unlocking the door shall be available and used only by inspectors, maintenance men, and repair men.

2. A car top inspection station shall be located between the car crosshead and hoistway door, complete with an Emergency Stop Switch, an inspection switch, and Up, Down & Safety Operating Buttons. In addition, if elevator is equipped with fireman's service, car top station must include an audible and visible indication in the event fireman's service is activated.

To operate the top-of-car operating device, the inspection switch shall be turned from "Car" to "Top" which shall transfer operation to the top-of-car device. Movement of the car shall be controlled by continuous pressure of the appropriate direction button and a safety button.

Operation from the top of the car shall not be permissible unless all electric door contacts are closed.

3. Provide a light w/guard with On-Off switch at inspection station and GFCI duplex electrical receptacle.
4. An Emergency Stop Switch in the pit. Provide a switch which meets Elevator Code and can be padlocked out.
5. Provide hoistway access features operable from top and bottom landings.

1.12 Landing Door Hangers

Each hoistway door section shall be suspended by two sheave-type hangers running on a drawn steel track. Each hanger shall consist of a polyurethane tread on a metal hub equipped with precision ball bearings mounted onto a steel bracket. The hanger sheaves shall be not less than 3-1/4 inches in diameter. The drawn steel track shall be so shaped as to permit free movement of sheaves without regard to vertical adjustment of the sheave brackets. An up-thrust roller shall be provided beneath the track and each sheave wheel, capable of withstanding a vertical thrust equal to the carrying capacity of the upper sheave. The up-thrust roller (equipped with ball bearings) shall

be adjustable for fine vertical adjustment and the face of the roller shall be so shaped as to conform to the bottom face of the hanger track.

Entrances which have multiple door sections shall be provided with a suitable coordinating mechanism to transmit motion from one door panel to the other.

1.13 Door Panels

- A. Door panels must be minimum of 18" wide.
- B. Use single or two speed door operation only, side slide or center opening. For freight elevators use power operated, bi-parting, center opening, vertically operating freight loading type doors..
- C. Each door panel shall be provided with minimum of two door guides.

1.14 Door Operation

A. Passenger and Service Elevators:

The car and hoistway doors shall be operated quietly and smoothly by an electric operator which shall open and close the car door and respective hoistway door simultaneously. The doors shall open automatically when the car is leveling at the respective floor and, when operating without an attendant, shall close after a predetermined time has elapsed. Momentary pressure on the "Open Door" button in the car shall cause the doors to remain open or, if closing, to reopen and reset the time interval.

The opening speed of doors shall be approximately 2 ft. per second, but the closing speed shall be reduced to approximately 1-1/4 feet per second.

Provide door pre-opening feature with switch to disable this function.

B. Door Protection:

Do not specify incandescent type light beams or mechanical safe edges. Specify infrared type beams only.

C. Freight Elevators:

Provide power-operated, vertical, bi-parting door operation.

1.15 Guide Rails

Minimum Rail Size - 15 pounds/ft. upgrade rails based on application.

1.16 Roller Guides for Car

A. Passenger and Service Elevators:

Each roller guide shall consist of minimum of three wheels (minimum roller diameter - 6") tired with a durable resilient material; each rotating on ball bearings having sealed-in lubrication; all assembled on a substantial metal base and so mounted as to provide continuous contact of all wheels with the corresponding rail surface under all conditions of loading and operations. The wheels shall run on three finished rail surfaces. The roller guides shall be properly secured at top and bottom on each side of car frame. Provide roller guides at top and bottom of car.

The roller guides shall run on dry guide rails.

B. Freight Elevators:

Use either roller guides or slide guides.

1.17 Signal Fixtures

A. Operating Devices in Car/Car Operating Panel

The operating devices in the car shall consist of a vandal resistant stainless steel flush mounted control panel. The control panel shall contain a series of push buttons with illuminated (LED type) call registration devices, numbered to correspond to the various landings serviced; In Car Keyed Stop Switch, Alarm Button (connected to a bell located on the car), and a Door Close, Door Open button for each entrance. Alarm bell shall be operated from the battery providing emergency lighting. The control panel shall also contain separate key operated switches for inspection, independent service, car lights and car fan keyed to "Adams standard keying system" (Note - Inspection key switch shall activate inspection circuit and disable automatic door operation). Auxiliary panel, if required, shall contain all floor buttons; alarm, door open and door close buttons for each entrance. Whenever key switches are required; the key switch cylinders shall be Best Co. 7-pin tumblers keyed to U of M lock system. Contractor shall contact U of M key Office through Owner's representative.

B. A gong shall be provided at the handicap floor entrance to comply with barrier-free code requirements.

C. All buttons shall conform to the University of Michigan Barrier Free Elevator Guidelines attached herewith.

D. Car Telephone:

Provide hands-free vandal resistant type emergency phone integral with car operating panel in car and two shielded conductors via trail cable to the machine room. Terminate phone connections in machine room in a junction box conveniently located for phone company installation.

E. Hall Push Button

Vandal resistant illuminating LED type hall push buttons shall be installed at each floor to permit waiting passengers to call the elevator to the floor.

Fixtures shall have up and down buttons at intermediate floors and single buttons at top and bottom floors.

Buttons shall be made of vandal resistant stainless steel with integral up or down arrows and shall illuminate to indicate a call has been registered. Button shall remain illuminated until the call has been answered.

F. Hall and Car Position Indicators

Shall be LED (Light Emitting Diode) digital type and good for a minimum of 5-years. Provide position indicators in car and at all landings.

1.18 Elevator Car Enclosure

A. Lighting

Indirect fluorescent or cove lighting (Do not use incandescent lamps). Provide standard length light fixtures and install fixtures equally on both sides of elevator cab to balance the light that is emitted.

B. Flooring

Finished floor (for passenger elevators) shall be heavy duty "sheet type vinyl" securely cemented in place or "commercial grade carpeting" or heavy duty tile.

Finished floor (for freight elevators) shall be made of 1/4" thick (minimum) checkered aluminum plate.

C. Emergency Lighting

The elevator car shall be provided with emergency lighting with a battery powered unit in compliance with code requirements. This should be integral with the car operating panel.

D. Pads and Pad Hooks (Passenger & Service Elevators only).

Provide pad hooks on walls near top 12" o.c. Provide protection pads for all walls.

E. Class of Loading for Elevator

Provide class C-3 loading for all types of elevators. (For modernizations - Discuss any exceptions with University Project Coordinator)

F. Car Telephone

See 1.17D.

G. Electrical Receptacle In Car

Provide GFCI type duplex electrical receptacle in car. Locate receptacle approximately 2" above finished floor below car station. Provide matching face plate on receptacle.

H. Ceiling Height In Elevator Car - Minimum 8'-0".

I. Elevator Enclosure

Provide a steel elevator cab enclosure. Attach all finish wall panels to the steel shell. Construct canopy from formed and reinforced 16 gauge steel. Provide an emergency exit panel in canopy.

1.19 Hoistway Entrances

A. The entrances shall consist of flush hollow metal door panels, bolted unit type frames, sills, hanger covers, fascia plates or toe guards, headers, struts, sight guards and hardware. Rubber astregals shall be provided for center opening doors.

B. Sills: Sills shall be of extruded aluminum or stainless steel construction with a non-slip wearing surface. They shall be supported on steel brackets and securely fastened to the floor. Grooves for the door guides shall have minimum clearance for the guides. For harsh environments (e.g. Parking Decks) - use corrosion resistant sills. Sills shall be designed for class C-3 loading.

C. Hanger covers: Hanger covers shall be fabricated of No. 14 gauge steel extending the full width of the hanger pocket.

D. Fascia: Fascia plates shall be constructed of No. 14 gauge steel, adequately reinforced to ensure a flat surface, spanning the width of the opening plus 6 inches, and fastened to the header and the sill above.

1.20 Accessories

1.21 Submittals

A. Shop Drawings: Submit eight (8) copies of Shop Drawings as required showing the general and detailed arrangement of all elevator equipment. Show ceiling, lighting, and signal fixtures (Including layout and conduit routing for smoke detectors).

B. Final Submittals:

Provide four complete sets (bound and properly arranged) of the parts lists and operators manuals prior to receiving final payment. Following is a brief summary of items:

1. Legible schematic wiring diagrams including all changes made during installation.

2. Description of operation of elevator system installed.
3. Hoisting machine: Including Motor, Brake, Geared Machine and associated devices such as Tach Motors or Monitors.
4. Deflector Sheaves, Governor and Governor Tail Sheaves, Safeties, Buffers.
5. Counterweight Assembly, Guide Rollers on Counterweight and Car, Cable Shackles.
6. Controller and Selector: Including parts information on Relays, Printed Circuit Boards, Reverse Phase Relays, Switches, Lamps, Electrical Cables, Monitors, Modems, Diagnostic Hardware, Diagnostic Software, Overload Protection Devices.
7. Door Assemblies: Including Hangers, Rollers, Door Motor, Door Operator, Door Clutch Assembly, Door Closers, Door Drive Arms, Related Hardware, Sheaves, Door Guides, Interlocks, Safety Door Edge.
8. Signal Equipment: Including Car Station, Hall Stations, Position Indicators, Direction Indicators, Fire Service Panel, Smoke Detectors, Keyswitches, Push-button Assemblies.
9. SCR Drive Units, Transformers, Chokes.
10. Car Top Inspection Station, Limit Switches, Solid State Leveling Control Units, Leveling Switches, Alarm Bell.
11. For Hydraulic Units - Pumps, Valves, Motors, and Cylinders.

1.22 Operating Instructions

(Ask for an Add Alternate to identify cost of this work, in Section-3 of bid documents)

On site technical training shall be held for the purpose of familiarizing University of Michigan Elevator Support Mechanics with operations and troubleshooting procedures. The session shall accommodate up to ten personnel in each session and consist of forty hours of Training (This to include two 2-day sessions and the fifth day reserved for any additional diagnostic training). Training on equipment controller shall be provided by trained factory service engineers of controller manufacturers through the elevator installers. Submit details of training with bid.

1.23 Acceptance Demonstration and Performance Test:

- A. Demonstrate to Owner, or Owner's designated representative, the operation of the elevator system. Demonstration shall include:
 1. Installation compliance with specifications.
 2. Contract speed, capacity, and floor-to-floor performance compliance with specifications.

3. Stopping accuracy and car ride compliance with specifications.
4. Operation of signal fixtures, operation of supervisory or dispatching system and fireman's service operation.
5. Promptly remove all work rejected by the Engineer for failure to meet specifications and replace to comply with requirements, at no additional cost to the Owner. All expenses of repairing work of other Trades damaged by this replacement shall be borne by Contractor.

Rejected work which is not made good within a reasonable time, determined by the Engineer, may be corrected by the Owner at Contractor's expense.

6. Upon completion of installation and before final acceptance, conduct a running speed test with full design load to verify compliance with performance requirements including items 2 and 3.
7. Operating Instructions: Provide instructions to the Owner's personnel, including safety procedures, proper operation of the equipment, and routine maintenance procedures

1.24 Performance Guarantee

The elevator subcontractor shall assume full responsibility to furnish and provide a complete and functional elevator and to obtain and furnish the University final State Elevator Inspection approval. All costs necessary to correct code deficiencies cited by the State Elevator Inspector will be paid by the elevator subcontractor as part of this Contract at no additional cost to the Owner.

1.25 Keys

A. Car Operating Keys

Use manufacturer's standard keys only. Do not use high security keys (e.g. MEDECO Keys, Barrel Keys, Magnetic Keys) that cannot be duplicated locally and by U. of M.'s key office.

1.26 Elevator Hoistway and Pit

Provide the following:

- A. Pit ladder.
- B. Pit light and GFCI duplex receptacle 3 feet above finished floor. Refer to 1.7.C.3.
- C. Provide a 16" dia. x 30" deep sump in elevator pit with steel cover plate. Evaluate need for a sump pump and provide sump pump and related electrical if needed.
- D. Paint pit floor and walls (up to the sill) with two coats of light gray, gloss, oil based paint.

E. Paint all exposed metal in hoistway (except guide-rails) with two coats of rust inhibitive paint.

1.27 Elevator Machine Rooms

Provide the following:

A. Ventilation and Cooling

Provide adequate ventilation. Evaluate the need for mechanical cooling in elevator machine rooms whenever microprocessor based controllers are specified. Ambient temperature 50° F - 95° F.

B. Painting (Floor and Walls)

Paint elevator machine room floor with two coats of light gray gloss oil based paint.

Paint elevator machine room walls and ceiling with two coats of white paint

C. Painting (Elevator Equipment)

All exposed surfaces of machines and motors, governors, etc., shall be repainted after field installation and before acceptance by Owner with rust resisting gloss enamel paint (of color selected by Owner).

D. Lighting

Provide 30 foot candles of florescent lighting in elevator machine rooms. Lighting shall be positioned so it does not create shadows while service personnel are working on major equipment.

E. Fire Extinguisher

Appropriate classification 15 pounds fire extinguisher. Mount in elevator machine room near main entrance.

F. Door

Appropriately labeled self closing, self locking door.

G. Door Hardware

Keyed to U. of M. Best "XV" Key System. Contractor to contact U. of M.'s key office for cylinders. All costs to be included in contract.

1.28 Sensing Devices: (For Firefighter's Services)

14000

Smoke detectors shall be photoelectric type, 120 vac, Gentex Corp. Model 8100. Submit drawings showing locations of smoke heads and exposed conduit for owner's approval prior to installation.

APPENDIX A:

**ELEVATOR GUIDELINES TO ENSURE ACCESSIBILITY BY PEOPLE WITH
DISABILITIES**

Elevators shall meet the guidelines of the Americans with Disabilities Act using the Uniform Federal Accessibility Standards (UFAS) relevant to elevators (Section 4.10 Elevators) as the technical requirements.

Elevators shall meet the requirements of the State of Michigan Department of Labor Building Code relevant to barrier free design and elevators. Section 512.10.

APPENDIX B:**ACCEPTABLE PRODUCTS**

- A. FIXTURES (Car Operating Panel, Hall Push Button): Adams Vandal Resistant Survivor Plus Series manufactured by Adams Elevator Equipment Company.
- B. MICRO-PROCESSOR BASED CONTROLLER
 For Traction Type Elevators: Motion Control Engineering Model with SCR Drive and remote diagnostics or O. Thompson with SCR drive and remote diagnostics. (Specify Appropriate Model No.)
 For Hydraulic Elevators: Motion Control Engineering Model HMC 1000 or O. Thompson with electronic soft start features to limit inrush current and remote diagnostics. (Specify Appropriate Model No.)
- C. DOOR OPERATOR & EQUIPMENT: GAL Manufacturing Corp. MOH Operator, car and hall door tracks, car and door hangers with roller assemblies. All interlocks, pickup rollers and operating linkage manufactured by GAL.
- D. HOIST MACHINE: Manufacturer's standard that complies with all duty requirements of this Section and manufactured by Hollister Whitney or Titan.
- E. SCR DRIVES: GE-300E or SWEO with all applicable options.
- F. DOOR PROTECTIVE DEVICE: ICU/47 PLUS from Adams Elevator Equipment Company or Innovation Smart Edge Model No. 2002 with Additional Dual Eye Ray Unit.
- G. TELEPHONE: Adams - Ident-i-call Model A-931P3T-01 integral to car operating panel.
- H. ROLLER GUIDES: ElSCO for car and on counterweights suitable for application.
- I. CAR TOP INSPECTION STATION: Adams Model A-912CG with guard.
- J. FLOOR ANNOUNCEMENT SYSTEM: Adams Part No. A-102A "Adams Voice", including 23 standard floor and direction messages; or voice package furnished integral with controllers noted in Item "B" above.
- K. CAB MANUFACTURERS:
- G & R Elevator Mfg.
 - Haunstein Burmeister
 - Tyler
 - Brice Southern
- L. DOOR GUIDES: Nylube

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