15001 Special Conditions for Mechanical Work:

I. The Construction Documents including but not limited to the Plans, Specifications, and contracts are issued for information to be complied with by all contractor. That information is available from the Architect and is hereby incorporated in the Division 15 requirements. Paragraphs in this document may seem to be in conflict with the above documents, the Architect will resolve any conflicts.

2. The term "contractor" in this section refers to the contractor whose work is covered by each section.

3. All work shall be done in accordance with applicable local and national codes. Report any conflict between the construction documents and codes to the Architect who will issue instructions or addenda to resolve such conflict. In no case shall a contractor base its bid on work that will not acceptable to code or these documents. No consideration will be given to requests for extra compensation to bring the work into conformance to code. 4. All material for which there is a category for testing by UL shall be so tested, listed and labelled.

5. It is the intent of these documents to produce a complete and finished project. The Architect is the final authority on the completeness of the work. The contractor is solely responsible for coordinating his work with other trades necessary to provide a final and complete project. 6. The contractor shall employ only skilled, experienced, and when required, licensed workers. Materials and equipment shall be installed in accordance with the manufacturer's written instructions, in accordance with the best trade practices and in a nest and workman like manner. Work not conforming to the above in the opinion of the Architect shall be removed and replaced at the contractor's expense.

1. The plans and details are diagrammatic in nature. Coordinate the location of items with the needs of the project taking the site conditions and work of other trades into consideration. Consult with the Architect when the exact location of an item is in question.

8. Secure all necessary permits, licenses and inspections and pay all required fees. The contractor shall include the entire cost of any tests or adjustments required by the authority having jurisdiction. The contractor shall include the final inspection certificate in final documents. 9. The conditions encountered on the site are available for observation by the contractor at any reasonable time. The contractor is responsible for

informing himself to his satisfaction prior to bid time. No consideration will be given to additional compensation due to conditions of the site or construction. 10. Locations of utility connections shown on the site are approximate and are based on consultation with the utility companies. Actual utility connections may vary slightly. The contractor shall contact the utility companies involved prior to bid to confirm the actual conditions of connection. The contractor shall include in bid the actual conditions of connection and any fees required by the utility for establishment of the utility service. The contractor shall inform the owner in a timely manner of any requirements from the utility companies to obtain service.

l. After completion of the work and before final inspection, the contractor shall thoroughly clean each exposed device, piece of equipment and fixture to the satisfaction of the Architect and owner.

12. All equipment has been selected to produce the lowest possible noise level. Substituted equipment shall produce an equal or lower sound level than the specified equipment. The contractor shall adjust equipment for its quietest operation. Equipment not meeting sound specifications shall be removed and The contractor shall submit all materials to the Architect/Engineer for approval prior to installation. Failure to obtain on material shall make the contractor-

liable to remove any materials not approved and replace them at his own expense and with no allowance in the time allowed for construction. Contractor shall submit drawings on piping, air distribution and control systems. Contractor shall submit manufacturer's cut sheets on all other material. 14. The contractor shall guarantee that all work performed under this contract is free from defects in material and workmanship for one following final acceptance by the owner. The contractor shall respond to requests for service in a timely manner appropriate to the service requested. The contractor shall

immediately repair or replace any items found to be defective within the guarantee period at no cost to the owner.

15. The contractor shall maintain on the site a set of construction documents marked in red to show the actual conditions of construction. Locations of equipment and routing of systems shall be accurately recorded during the course of construction. Contractor shall forward a reproducible copy of the record drawings to the Architect at the completion of construction and shall maintain the original record drawings for use during the guarantee period. 16. In addition to the above required record drawings, the contractor shall furnish to the Architect at the completion of the work the following documents:

a. A certificate of guarantee showing the dates of beginning and ending of the guarantee.

b. Documents pertinent to the guarantees and warranties of manufacturers. c. Written installation instructions for equipment installed on the project.

d. Three sets of operating instructions for mechanical systems.

e. All other data and drawings used during construction.

f. Lists of repair parts and information necessary to obtain local service for each item of equipment installed in the work q. Valve tag charts and diagrams.

11. All materials shall be new and of domestic manufacture. All items of the same type on the project shall be of the same manufacturer. Equipment

requiring electrical connections shall be provided with the electrical characteristics of the electrical service available. 18. Products of various materials and equipment are specified in order to establish a standard of quality and a basis of design. Other similar materials may be acceptable to the Architect and Engineer as substitutions provided they meet the same standards of quality and design criteria in the opinion of the Architect and Engineer. Alternate Items shall be submitted to the Architect for approval prior to installation. The decision of the Architect regarding acceptability shall be final. The contractor shall bear all costs, including that of other trades and the design team, associated with accommodations for substitutions. The contractor shall furnish access doors and panels as required to allow access to all adjustable items and open site drains.

Excavation and backfill shall be in accordance with Division 2.

15002 Plumbing Scope

i. The scope of this work includes furnishing all labor, materials, and services necessary to provide a complete and operating plumbing system as described in the construction documents.

15003 Piping Systems 1. Provide a complete system of hot and cold water distribution from water supply source to plumbing fixtures and other items shown or specified which require water supply.

2. Provide backflow prevention as required.

3. Provide control and automatic valves as required by construction documents.

4. Provide sealed air chambers to eliminate water hammer 5. Proper slope piping as shown or required by code.

6. Provide connections for fixtures as shown on drawings, minimum connection size shall be 1/2" except that flush valve fixtures shall be 1" and hose bibs

7. Provide a complete system of gravity drainage including proper venting from plumbing fixtures and other items shown or specified which require sanitary drain to and including the point of connection with the sanitary utility.

8. Provide traps for all untrapped fixtures. Traps shall be as close as practical to the fixture and in accordance with code. 9. Water piping underground outside the building may be Schedule 40 PVC.

Water piping within the building lines shall be Type K copper tubing with wrought copper fittings. No joints allowed below the slab.

Soil, waste and vent pipe and fittings may be Type DVW PVC with matching fittings. Use proper dielectric fittings and insulation to prevent dissimilar metals from coming into contact.

All copper pipe shall be supported every five feet. All PVC pipe shall be supported every four feet. All pipe shall be supported within two feet of an

Cleanouts shall be provided as shown on drawings, at each change in direction for horizontal runs and at 50 foot maximum intervals for straight runs. No piping shall be installed exposed unless specifically approved by the Architect. All exposed piping shall be chrome plated copper with chrome plated

16. Each valve shall be tagged with an identifying number. A chart identifying each valve by number, size and function shall be provided with the owner's

17. The entire water distribution shall be flushed and disinfected in a manner approved by the authority having jurisdiction and the Engineer. Following disinfection and testing, the contractor shall deliver to the Architect a certificate from the authority stating that the water is safe for drinking. 15004 Gas Distribution System

1. Provide a complete system of gas distribution from gas supply source to all gas appliances and other items shown or specified which require gas supply. Work shall include, but not be limited to, gas service, connection to all appliances, pressure regulators, control devices, piping and fittings. I. All gas piping shall be standard weight, Schedule 40 black steel pipe conforming to ASTM A-120. Fittings above grade shall be standard weight black malleable iron. Underground pipe shall be wrapped or coated to prevent corrosion.

2. Unions shall be Grinnell 463. 3. Provide cut-off valves or cocks at tank and each appliance. Cock shall be Crane *324.

4. Provide swing joints where lines leave grade and enter building.

5. Provide pressure regulators where required. 6. Test completed system for twenty four hours at thirty psi., Locate leaks with ether or peppermint. Provide certification of test to Architect.

1. Provide all plumbing fixtures as indicated on drawings. Refer to Architectural Drawings and coordinate whit other trades for exact locations. Provide all necessary fixtures and connections to meet code.

2. Each fixture and piece of equipment shall have a trap. Provide traps with cleanouts. 3. Provide fixtures that comply with ADA and the state water conservation laws.

4. Provide chrome plated brass stop and supply pipe with each fixture.

15007 Drains and Hydrants I. Provide drains and hydrants of the size noted on drawings.

2. Provide drains and hydrants by Josam, JR Smith, Wade or Zurn. 3. Provide trap primer at floor drains as required by local authority. 4. Floor drains shall be JR Smith 2010-NB.

5. Wall hydrants shall be JR Smith 5509.

15009 Valves and Valve Boxes

1. Provide valves and valve boxes where shown on drawings and as required. 2. Valves shall be installed as follows whether shown on plans or not: all branch lines, inlet and outlet of each fixture or piece of equipment, on each bypass

and at low point in piping system. 3. Valves shall be Crane Nibco, Jenkins, Victaulic, Walworth or approved equal.

4. Provide twelve sets of washers for each type valve in a wall mounted compartmentalized box located in the maintenance area. Consult with Architect for

5. Valve boxes shall be the plastic type install flush with finished grade. Valve boxes shall not be installed in traffic areas.

15014 Insulation, Plumbing 1. Provide insulation on domestic water lines as described in this specification.

2. Insulation shall be Armstrong, CertainTeed, Knauf, Manville, Owens-Corning, or approved equal. 3. All insulation shall have composite fire and smoke ratings as tested under ASTM E-84, NFPA 225 and UL 723, not exceeding flame spread 25, smoke

developed 50. This requirement includes all accessories such as jacket, adhesives, mastics, cements, and cloth for fittings. 4. Hot water supply and recirculation lines shall have 3/4" insulation. Cold water lines in outside walls shall have 1/2" insulation. 15021 Heating, Ventilating and Air Conditioning

1. The scope of this work includes, but is not limited to, providing a complete system of Heating, ventilating and Air Conditioning as shown in the construction documents and as necessary to provide complete and operating systems. 2. The design conditions are as follows: Indoor conditions, Summer: 750F± 62.50F wetbulb, Winter: 700F± Outdoor conditions: Summer: 1050F± 780F wetbulb,

Winter:230F. 16025 Split System Air Conditioning Units I. Furnish heating furnace as shown. Furnace shall be electric heat pump with emergency strip as shown. Cooling/heating coil shall be built into unit.

Safety interlocks shall be included as a complete package unit. 2. Condensing unit shall consist of hermetic refrigerant compressor, condenser coil, condenser fan with motor, drive and all associated controls. Assembly shall include all recommended accessories such as valves and strainer/dryer. Instal condensing unit on concrete pad as shown. 3. Refrigerant piping shall be type L copper dehydrated tubing sized in accordance with the condensing unit manufacturer's written recommendations.

Fittings shall be forged copper sweat fittings. All joints shall be made with Sil-fos or approved brazing alloy. 4. All controls except room thermostat shall be unit mounted and factory tested.

5. All power, starting, safety and operating shall be included and wired under this contract.

6. Route condensate into nearby hub drain in an approved manner.

9. Provide one Inch Armaflex insulation on refrigerant lines.

7. Provide platform type air pienum and louvers as required. 8. Provide one inch filters of the size and type required. Furnish six extra filters for each unit to the owner at the completion of the project. If the units are operated during the construction period, install new filters just prior to delivery of the finished project to the owner.

Division 16 Electrical Specifications

15001 Special Conditions for Electrical Work: 1. The Construction Documents including but not limited to the Plans, Specifications, and contracts are issued for information to be complied with by all contractors. That information is available from the Architect and is hereby incorporated in the Division 16 requirements. Paragraphs in this document may seem to be in conflict with the above documents, the Architect will resolve any conflicts.

2. The term "contractor" in this section refers to the contractor whose work is covered by each section.

3. All work shall be done in accordance with applicable local and national codes. Report any conflict between the construction documents and codes to the Architect who will issue instructions or addenda to resolve such conflict. In no case shall a contractor base its bid on work that will not acceptable to code or these documents. No consideration will be given to requests for extra compensation to bring the work into conformance to code. 4. All material for which there is a category for testing by UL shall be so tested, listed and labelled.
5. It is the intent of these documents to produce a complete and finished project. The Architect is the final authority on the completeness of the work.

The contractor is solely responsible for coordinating his work with other trades necessary to provide a final and complete project. 6. The contractor shall employ only skilled, experienced, and when required, licensed workers. Materials and equipment shall be installed in accordance with the manufacturer's written instructions, in accordance with the best trade practices and in a nest and workman like manner. Work not conforming to the above in the opinion of the Architect shall be removed and replaced at the contractor's expense.

7. The plans and details are diagrammatic in nature. Coordinate the location of items with the needs of the project taking the site conditions and work of other trades into consideration. Consult with the Architect when the exact location of an Item is in question. 8. Secure all necessary permits, licenses and inspections and pay all required fees. The contractor shall include the entire cost of any tests or

adjustments required by the authority having jurisdiction. The contractor shall include the final inspection certificate in final documents. 9. The conditions encountered on the site are available for observation by the contractor at any reasonable time. The contractor is responsible for informing himself to his satisfaction prior to bid time. No consideration will be given to additional compensation due to conditions of the site or construction. 10. Locations of utility connections shown on the site are approximate and are based on consultation with the utility companies. Actual utility connections may vary slightly. The contractor shall contact the utility companies involved prior to bid to confirm the actual conditions of connection. The contractor shall include in bid the actual conditions of connection and any fees required by the utility for establishment of the utility service. The contractor shall inform the

owner in a timely manner of any requirements from the utility companies to obtain service. Il. After completion of the work and before final inspection, the contractor shall thoroughly clean each exposed device, piece of equipment and fixture to the satisfaction of the Architect and owner.

12. All equipment has been selected to produce the lowest possible noise level. Substituted equipment shall produce an equal or lower sound level than the specified equipment. The contractor shall adjust equipment for its quietest operation. Equipment not meeting sound specifications shall be removed and replaced at no cost to the owner.

13. The contractor shall submit all materials to the Architect/Engineer for approval prior to installation. Failure to obtain on material shall make the contractor liable to remove any materials not approved and replace them at his own expense and with no allowance in the time allowed for construction. Contractor shall submit drawings on electrical rooms and switchgear. Contractor shall submit manufacturer's cut sheets on all other material. 14. The contractor shall guarantee that all work performed under this contract is free from defects in material and workmanship for one following final acceptance by the owner. The contractor shall respond to requests for service in a timely manner appropriate to the service requested. The contractor shall immediately repair or replace any Items found to be defective within the guarantee period at no cost to the owner. 15. The contractor shall maintain on the site a set of construction documents marked in red to show the actual conditions of construction. Locations of

equipment and routing of systems shall be accurately recorded during the course of construction. Contractor shall forward a reproducible copy of the record drawings to the Architect at the completion of construction and shall maintain the original record drawings for use during the guarantee period. 16. In addition to the above required record drawings, the contractor shall furnish to the Architect at the completion of the work the following documents: a. A certificate of guarantee showing the dates of beginning and ending of the guarantee.

b. Documents pertinent to the guarantees and warranties of manufacturers.

c. Written installation instructions for equipment installed on the project. d. Three sets of operating instructions for electrical systems.

e. All other data and drawings used during construction.

f. Lists of repair parts and information necessary to obtain local service for each item of equipment installed in the work 11. All materials shall be new and of domestic manufacture. All items of the same type on the project shall be of the same manufacturer. Equipment

requiring electrical connections shall be provided with the electrical characteristics of the electrical service available. 18. Products of various materials and equipment are specified in order to establish a standard of quality and a basis of design. Other similar materials may be acceptable to the Architect and Engineer as substitutions provided they meet the same standards of quality and design criteria in the opinion of the Architect and Engineer. Alternate Items shall be submitted to the Architect for approval prior to installation. The decision of the Architect regarding acceptability shall be final. The contractor shall bear all costs, including that of other trades and the design team, associated with accommodations for substitutions.

19. The contractor shall furnish access doors and panels as required to allow access to all adjustable items and concealed junction boxes. Excavation and backfill shall be in accordance with Division 2. 16200 Raceway Systems

1. Wiring method shall be as required by local code. Type NM Cable, Type AC Cable, Type MC Cable, Electrical Non-metallic Tubing, and Electrical Metallic Tubing are all acceptable wiring methods for wiring indoors and above grade provided they are acceptable to the authority having jurisdiction. 2. EMT fittings may be die cast set screw.

3. Conduit below grade shall be Schedule 40 PVC with matching fittings. Elbows shall be galvanized rigid steel. 4. Exposed conduit outdoors or in damp locations shall be galvanized rigid steel or intermediate metal conduit with malleable condulets and fittings.

5. Flexible metal conduit shall be used for the connection of rotating or vibrating equipment or equipment that must be moved to be adjusted or maintained. Such equipment located outdoors or in damp locations shall be connected with liquid tight flexible metal conduit using listed fittings. 6. Minimum cover for outdoor conduits shall be 24 inches. Note: Utility conduits may have a greater depth requirement. 16300 Building Wire and Cable

I. All wire and cable shall be copper of at least 38% conductivity. 2. All insulation shall be type THHN except type THW may be used for sizes larger than 6 AWG.

3. No wire smaller than 12 AllG may be used except that control circuit may be 14. 4. A strict method of color coding shall be maintained. Unless the authority having jurisdiction has a different standard, the following shall be maintained.

A Phase: Blackt B Phase: Redt C Phase: Bluet Neutral: Uhitet Ground: Greent Switch leg: Brown: Travellers: Brown 5. Wire connectors for 6 and smaller may be spring steel connectors. Split bolt connectors with rubber and vinyl tape shall be used for sizes larger than 6. Power distribution blocks may be used for any size conductor for which it is listed. 6. UL listed wire pulling lubricant shall be used on all raceway installations.

16400 Wiring Devices 1. Wiring devices shall be ivory in color with matching smooth ivory plastic plates. Devices shown in one location shall be under a single plate. No split 2. Provide devices as shown on documents. Consult with Architect and other trades for exact location of outlets. Where outlets serve a specific piece of

equipment and where possible, conceal outlet behind that equipment. 3. Where outlets serve a piece of equipment furnished by others, consult with the trade furnishing the equipment and furnish the correct outlet for the specific equipment. Furnish cords for dryers and ranges.

4. Where outlets are shown outdoors, furnish GFI outlets with weatherproof covers in cast boxes. 16500 Panelboards and Safety Switches

I. Panelboards and Safety Switches shall all be by the same manufacturer. 2. Panelboards and Safety Switches shall be manufactured by Challenger, Cutler-Hammer, General Electric, Seimens, or Square D. 3. Panelboards and Safety Switches shall be NEMA I indoors and NEMA 3R outdoors and in damp locations.

4. Safety Switches may be General Duty. 5. Provide a disconnecting means for each piece of equipment that uses electrical energy unless such means is furnished with the equipment. 6. As a standard of quality, Panelboards shall be Square D type NQOD with type QO circuit breakers. 1. The interrupting rating of circuit breakers shall be greater than the available fault current. Verify the available fault current with the serving electrical

I. Provide lighting fixtures as shown on the documents. If a type designation is left off the drawing, furnish a fixture of the same type as similar

2. Fixtures are listed by manufacturer and catalog number to establish type and quality. Equal fixtures will be considered. The opinion of equality shall rest with the Architect and shall be final 3. Fasten each lighting fixture to an outlet box or the structure. Include all necessary hardware and supporting devices to accomplish this.

4. Provide lamps as shown for each lighting fixture. Metal halide lamps shall be coated. 5. All lighting fixtures shall be clean and fully operational at the time of final acceptance. 16700 Equipment Connections

I. Provide electrical connections for all equipment on the project whether furnished by this contractor or others. 2. Carefully research the documents and consult with others to determine the requirements for connections.

3. This includes, but is not limited to: Computer equipment, telephone equipment, residential appliances, laundry equipment, plumbing equipment, HVAC

(DIVISION IS CONT.)

15032 Air Distribution System 1. All ductwork shall be standard galvanized steel fabricated in accordance with the latest SMACNA Standards.

2. Elbows and transitions shall be fitted with turning vanes. 3. Round or flat oval duct may be substituted where rectangular duct is shown provided it will fit in the space allocated. Criteria of sizing shall be equal static

4. All ductwork shall be insulated with vapor barrier, 1-1/2" fiberglass insulation and outer Jacket.

5. Volume dampers shall be placed on all taps and as shown on plans.

6. Insulated flexible duct may be used for the last six to the air device. T. Air devices shall be as specified on drawings. Refer to Architectural plans for locations. Aliqu air devices with walls or other building features,

8. Provide wall mounted room thermostats in locations shown on drawings. Thermostat shall include thermometer, on-auto fan switch, heat-off-cool switch, and emergency heat switch. Emergency heat switch shall deactivate the condensing unit in the on position.

15037 Testing and Balancing 1. On completion of the installation, the entire system shall be tested and adjusted for proper operation.

2. Each air piece of air moving equipment shall be tested and adjusted to deliver the air volume required. 3. The system shall be balanced to deliver the specified air quantities at each location shown.

4. Supply air temperatures (both wet bulb and dry bulb) shall be measured and recorded.

5. Each control device shall be tested and proven to be within the manufacturer's published specifications. 6. A complete test and balance report shall be submitted for the owner's records.

15033 Fire Sprinkler System

A. The work includes, but is not limited to, connection of the fire protection water service to the utility mains, cost of all fees, permits and installation, complete system of distribution for fire sprinklers. This shall include all pipe and materials such as fire department connections, sprinklers alarm valves and other specified and required materials and equipment to furnish complete operating and approved fire protection systems. 12 Codes and Standards

A. In addition to those standards referred to in the "Special Conditions of Mechanical Work," the fire protection systems shall be installed to meet the requirements of the local Building Department, and Fire Prevention and Engineering Bureau of Texas.

B. The fire protection systems shall be installed in accordance with all applicable portions of the NFPA standards and particular attention is called to the following bulletins: Bulletin No. 29A - "Gate and Check Valves, "Bulletin No. 13 - "Sprinkler Systems," and Bulletin No. 23 - "Fire Department Connections."

A. The Installation of this fire protection system shall be made by a Contractor licensed to Install fire protection systems within this City, County, State. The Contractor shall upon request of the Owner, Architect, Engineer or his representative, present proof of his authority to do business within the City, County, State as a licensed Fire Protection Contractor, approved to Install systems in accordance with the requirements of the national

Bureau of Fire Underwriters and such other governing authorities as exists. 1.4 Shop Drawings and Approvals A The contractor shall prepare complete working shop drawings of the entire fire protection system and submit them to the approving authorities hereinbefore mentioned for their written approval after which he shall submit them to the Architect for checking and distribution,

15 Approved Manufacturers A All material, equipment, and accessories used in the fire protection system shall be listed as approved in the "Fire Protection Equipment List" as published by Underwriters' Laboratory, Inc. Certain equipment and material has been listed by manufacturer's name and figure

in the "Fire Protection Equipment List" and shall bear the proper label as identified therein. B. Approved manufacturers for fire department connections and similar fire protection equipment shall be: W.D. Allen, Elkhart Fyr-Fyter, Potter-Roemer, SECO and Standard. C. Approved manufacturers for sprinkler heads, water motor gongs, alarm valves, and related equipment shall be: Reliable, Viking, Star and Central. D. Approved manufacturers for other valves and appurtenances shall be: Crane, Stockham and Jenkins,

number in these specifications. These listings are to set the standard of design and appearance and similar equipment used in these systems shall be listed

1.6 Water Service A. This Contractor shall arrange for water service as required. The water service shall included water main connection, valves, and miscellaneous accessories as required.

This contractor shall pay all fees and permits involved and required for the Installation fo the water service. B. Water service shall be run in the building, using Class 150 AWWA centrifugally cast, cast iron pipe, joined installed in accordance with the regulatory authorities and assembled in accordance with the manufacturer's published instructions.

A Furnish all fire department connections, alarms, valves, water motor gongs, valves, ball drips, sprinkler heads, escutcheons, etc., required for a complete system. B. Sprinkler heads in unfinished areas shall be up-right or pendant type as called for on the drawings in a rough brass finish.

C. The sprinkler heads in finished areas sahil be brass plated flush type. D. Sprinkler heads installed below 1'-0" shall be furnished with wire cage type head guards

THE FOLLOWING REQUIREMENTS ARE COPIED FROM TAS & ADA

E. Piping materials, etc., shall be as required by the governing authorities. Part 3 Execution

A. The entire installation shall be installed to meet all codes, etc., and the approval of the Architect. B. Installation shall include all required heads in occupied areas as well as city required heads in wood truss attic spaces. C. At Contractor's option, with approval of local authorities, attic system can be either dry charged or antifreeze protected.

ADA REQUIREMENTS FOR HEARING AND VISUAL IMPAIRED (RMS 112, 114, 121, 215, 224, 314, 315)

POOL, EXERCISE, MTG. ROOM HOSPITALITY, LAUNDRY, LOBBY CONF. ROOM, OFFICES AND PUBLIC RESTROOMS WITH HORN AND STROBE LIGHT NOT OVER 50' APART IN CORRIDORS. (ALL PUBLIC AREA TO MEET TAS 4 ADA REQUIREMENTS)

4.21 Controls and Operating Mechanisms

1. Controls and operating mechanisms required to be accessible by 4.1 shall comply with 421.

2. For mounting heights suitable in schools and other facilities used primarily for children see section 2.11. 4.27.2 Clear Floor Space. Clear floor space complying with 4.2.4 that allows a forward or a parallel approach by a person using a wheelchair shall be provided

at controls, dispensers, receptacles, and other operable equipment. Controls and operating mechanisms located in alcoves deeper than 24" require additional maneuvering area. 427.3 Height. The highest operable part of controls, dispensers, receptacles, and other operable equipment shall be placed within at least one of the

reach ranges specified in 425 and 426. Electrical and communications system receptacles on walls shall be mounted no less than 15 in (380 mm) above the floor. EXCEPTION: These requirements do not apply where the use of special equipment dictates otherwise or where electrical communications systems receptacles are not normally intended for use by building occupants.

421.4 Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf (222 N). 428 Alarms

428. General. Alarm systems required to be accessible by 4.1 shall comply with 4.8. At a minimum, visual signal appliances shall be provided in buildings and facilities in each of the following areas: restrooms and any other general usage areas (e.e.g., meeting rooms), hallways, lobbies, and any other area for common use.

4282 Audible Alarms. If provided, audible emergency alarms shall produce a sound that exceeds the prevailing equipment sound level in the room or space by at least 15 dbA or exceeds any maximum sound level with a duration of 60 seconds, whichever is louder. Sound levels for alarm signals shall not exceed 120dbA 4283 Visual Alarms. Visual alarm signal appliances shall be integrated into the building or facility alarm system. If single station audible alarms are provided then single station visual alarm signals shall be provided. Visual alarm signals shall have the following minimum photometric and location features:

1. The lamp shall be a xenon strobe type or equivalent.

2. The color shall be clear or nominal white (i.e. unfiltered or clear filtered white light).

3. The maximum pulse duration shall be two-tenths of one second (0.2 sec) with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent of maximum signal.

4. The intensity shall be a minimum of 15 candela.

5. The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.

6. The appliance shall be placed 80 in (2030 mm) above the highest floor level within the space or 6 in (152 mm) below the ceiling, whichever is lower.

rooms and spaces exceeding 100 ft (30 m) across, without obstructions 6 ft (2 m) above the finish floor, such as auditoriums, devices may be placed around the perimeter, spaced a maximum 100 ft (30 m) apart, in lieu of suspending appliances from the ceiling. 8. No place in common corridors or hallways in which visual alarm signalling appliances are required shall be no more than 50 ft (15 m) from the signal. 428.4 Auxillary Alarms. Units and sleeping accommodations shall have a visual alarm connected to the building emergency alarm system or shall have a standard 110-volt

electrical receptacle into which such an alarm can be connected and a means by which a signal from the building emergency alarm system can trigger such an auxillary

alarm. When visual alarms are in place the signal shall be visible in all areas of the unit or room. Instructions for use of the auxillary alarm or receptacle shall be provide.

1. In general, no place in any room or space required to have a visual signal appliance shall be more than 50 ft (15 m) from the signal (in the horizontal plane). In large

9.3 Visual Alarms, Notification Devices and Telephones. 9.3.1 General. In sleeping rooms required to comply with this section, auxiliary visual alarms shall be provided and shall comply with 428.4. Visual notification devices shall also be provided in units, sleeping rooms and suites to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to auxiliary visual alarm signal appliances. Permanently installed telephones shall have volume controls complying with 43152 an accessible electrical outlet within 4 ft (1220 mm) of a telephone connection shall be provided to facilitate the use of a text telephone.

OB



JOB: 811 DRAWN: FEC DATE: 8/12/98 **REVISIONS:**

