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State Register

STATE OF MINNESOTA

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MCAR AMENDMENTS AND ADDITIONS

List of amendments and additions to rules contained in the Minnesota Code of Agency Rules (MCAR) as published in the State Register, Volume 2:

EXECUTIVE ORDERS

Executive Order No. 156

Creating a Committee for the Governor's Pre-White House Conference on Libraries

I, Rudy Perpich, Governor of the State of Minnesota, by virtue of the authority vested in me by the Constitution and applicable statutes, do hereby issue this Executive Order:

WHEREAS, the State of Minnesota has various library systems that make important contributions to the total educational system; and

WHEREAS, the President of the United States is providing federal assistance to the states in order to establish a White House Conference on Libraries, said purpose to gather information and ideas to strengthen and improve library services; and

WHEREAS, the State of Minnesota can make an important contribution and gain great benefit from participating in such a cooperative venture;

NOW, THEREFORE, I ORDER:

1. Creation of a Governor's Pre-White House Conference on Libraries.

a. Said committee to consist of 20 members representative of broad spectrum of Minnesota citizens, with emphasis on people with known interest in library and related educational programs.

b. Terms to be effective for two years from September 22, 1977.

2. The Committee to meet as often as necessary to accomplish work and goals to be established by the committee, in conformance with the federal recommendations to the committee.

3. Staff assistance to be provided by the Office of Public Libraries and Inter-Library cooperation of the Department of Education.

This Order shall be effective 15 days after publication in the State Register, and shall continue in effect until October 1, 1979, or until the work of the committee is completed, whichever is sooner.

IN TESTIMONY WHEREOF, I hereunto set my hand on this 6th day of October, 1977.

Department of Administration Building Code Division

Performance Standards for Solar Energy Systems and Sub-systems Applied to Energy Needs of Buildings

These rules are printed here in their adopted form without indication of changes from their proposed form. Readers are directed to consult 1 S.R. 1478 for the proposed form of the rules.

Table of Contents

Rules as Adopted

SBC 6101 Purpose.

A. These Rules are authorized by Minn. Stat. §§ 116H.127 and 16.85 (1976) and established through the rulemaking procedures set forth at Minn. Stat. § 15.0411, et seq.

B. These Rules shall apply to solar energy systems which are used to satisfy space heating and/or space cooling and/or domestic or service hot water demands of buildings, and shall be used for all solar energy systems and subsystems as those terms are defined at SBC 6105 herein. These Rules are to be used in conjunction with existing Building Codes and Standards and do not replace existing Building Codes.

C. The purpose of these Rules is twofold: first, to establish standards for the evaluation of the performance, durability, reliability and maintainability of solar energy systems and subsystems; and second, to require disclosure by the seller to each potential buyer of the extent to which the seller's solar energy system or subsystem meets or exceeds the Standards set forth at SBC 6106 and 6107 herein.

D. The Standards set forth herein are in reasonable conformance with Interim Performance Criteria for Commercial Solar Heating/Cooling Systems and Facilities (NASA), Interim Performance Criteria for Solar Heating and Combined Heating/Cooling Systems and Dwellings (NBS), and Intermediate Minimum Property Standards for Solar Heating and Domestic Hot Water Systems (HUD).

E. The Standards set forth herein are intended to serve as a model for evaluating solar energy system or subsystem performance. These Rules require that the seller determine and disclose the extent to which its system or subsystem meets or exceeds these Standards. These Rules do not require the seller to comply with the Standards.

SBC 6102 Enforcement.

A. The building official in each municipality shall enforce the Rules set forth in SBC 6103 herein. The building official shall not issue any permits required for installation of the electrical, mechanical or structural aspects of the solar energy system or subsystem until the seller has furnished the building official a copy of the completed Disclosure Statement Form required by these Rules. However, the building official shall not be required to determine the accuracy of the seller's disclosures or to otherwise determine the extent to which the seller's solar energy system or subsystem meets or exceeds the Standards set forth in SBC 6106 and 6107 herein.

B. Any person who violates the provisions of these Rules or knowingly submits false information in the required Disclosure Statement Form shall be guilty of a misdemeanor and may be subject to a civil penalty of not more than $10,000 for each violation. See Minn. Stat. § 116H.15 (1976).

SBC 6103 Rules.

A. Every seller of a solar energy system or subsystem shall inform every bonafide prospective buyer of the extent to which the seller's system or subsystem meets or

exceeds the Standards set forth at SBC 6106 and 6107 herein.

B. The information required by SBC 6103.A above shall be provided on the Disclosure Statement Form set forth at SBC 6104.A and 6104.B herein.

C. A copy of the operation and maintenance manual described at SBC 6106.6 herein shall be available for review by a bonafide prospective buyer, and shall be provided to each buyer upon sale of the solar energy system or subsystem.

D. The seller of a solar energy system or subsystem shall complete the Disclosure Statement Form, including SBC 6104.C; and shall submit copies to the buyer at the time of sale and to the municipal building official prior to installation.

E. Where the solar energy system or subsystem includes flat plate collectors, or any other collectors whose thermal performance is capable of being rated in accordance with ASHRAE Standard 93-77 "Methods of Testing to Determine the Thermal Performance of Solar Collectors", such collectors shall be tested in accordance with the methods set forth at ASHRAE Standard 93-77. No other tests are required by these Rules; however, the seller shall fully disclose on the Disclosure Statement Form the bases for its determinations as required on the Disclosure Statement Form, and where the determinations are not substantiated by testing, the seller shall so indicate.

SBC 6104 Disclosure statement.

A. Compliance. The purpose of this Statement is to disclose to the buyer the extent to which this system meets the standards for solar systems set forth in the State Building Code.

1. This system/subsystem/component meets or exceeds the standards set forth at SBC 6106 and 6107 except as noted in 3 below.

2. The seller's determination that these standards have or have not been met are based on the following tests, computations, and documentation, which are available for review by the buyer:

SBC SECTION	TESTS, COMPUTATIONS, AND DOCUMENTATION

3. This system (subsystem/component) does not meet or exceed the standards set forth at SBC 6106 and 6107 in the following respects:

4. The seller may explain below any reasons for the system (subsystem or component) not meeting the standards set forth at SBC 6106 and 6107 and may indicate the extent to which the system does meet the standard.

B. Design life. The manufacturer of solar energy systems shall outline herein the design life of systems and subsystems under anticipated design conditions. This is not a warranty or a guarantee of this life.

1. Design life of solar energy system, with normal maintenance as described by manufacturer _____

2. Design life of subsystems and components, with normal maintenance as described by manufacturer

Collector subsystem _____

Transport subsystem _____

Storage subsystem _____

Control subsystem _____

C. Solar energy system performance.

Sizing. Sizing of the previously identified solar energy system is outlined below. All load calculations are performed in accordance with Appendix A and/or B.

Calculated facility heating consumption _____

Calculated service hot water consumption _____

Calculated facility cooling consumption _____

Other calculated facility energy consumption as may be offset by solar energy system. _____

TOTAL CALCULATED FACILITY CONSUMPTION _____

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

Solar contribution. Solar contribution, as calculated in accordance with Appendix B, shall be provided as follows: (Calculations which have been substantiated by field testing of solar system/subsystems and components are an acceptable submission in lieu of Appendix B Calculation Procedures.)

Calculated solar contribution to space heating consumption _____%

Calculated solar contribution to service hot water consumption _____%

Calculated solar contribution to facility cooling consumption _____%

Calculated solar contribution to other consumption _____%

CALCULATED SOLAR CONTRIBUTION TO TOTAL CONSUMPTION_____%

SBC 6105 Definitions.

Abbreviations. DHW Domestic Hot Water
H Heating
HC Heating/Cooling
UV Ultra violet

Absorptance. The ratio of the amount of radiation absorbed by a surface to the amount of radiation incident upon it.

Absorptivity. The capacity of a material to absorb radiant energy.

Active solar system (flat plate or concentrating collector based). A system characterized by the use of powered mechanical equipment to move the heat transfer fluid (liquid or gas) through a collector and from a collector to load or storage.

Auxiliary energy subsystem. Equipment utilizing conventional energy sources both to supplement the output provided by the solar energy system and to provide full energy backup during periods when the solar H or DHW systems are inoperable.

Cathodic protection. Corrosion protection against electrolytic reactions.

Chemical compatibility. The ability of materials and components in contact with each other to resist mutual chemical degradation, such as the chemical degradation caused by electrolytic action or plasticizer migration.

Collector efficiency (instantaneous). The ratio of the amount of energy removed by the transfer fluid per unit of aperture (entrance window area) over a 15 minute period to the total incident solar radiation onto the same collector area for the same 15 minute period (as defined by NBSIR 74-635).

Collector subsystem. The assembly for absorbing solar radiation, converting it into thermal energy, and transferring the thermal energy to a heat transfer fluid.

Combined system (combined collectors and storage devices). A combined component system characterized by a system with integral construction and operation of the components such that the solar radiation collection and storage phenomena cannot be measured separately in terms of flow rate and temperature changes.

Control subsystem. An assembly of devices and its electrical, pneumatic or hydraulic auxiliaries used to regulate the processes of collecting, transporting, storing and utilizing energy.

Design life. The period of time during which a solar energy system or component is expected to perform without major maintenance or replacement.

Dielectric fitting. An insulating or nonconducting fitting used to isolate electrochemically dissimilar materials.

Emittance. The ratio of the radiant energy emitted by a body to the radiant energy emitted by a black body at the same temperature.

Facility. Means a building or structure including appliances, heating or cooling equipment, industrial or manufacturing processes to be served by the solar energy system.

Flow condition. The condition existing in the solar energy system when the heat transfer fluid is flowing through the collector under normal operating conditions.

Fluid requiring special handling. Fluid which is a "highly toxic substance" or a "toxic substance" as defined by paragraphs 191.1(e) and (f) of the Federal Hazardous Substances Labeling Act, Regulations, Part 191, Chapter I, Title 21(A); or fluid having a degree of flammability such that it is a "flammable substance" or an "extremely flammable substance" as defined by application of the Tagliabue Open-Cup Flash Point Test (stated in the Hazardous Substances Act, Public Law 86-613, July 12, 1960).

Heat generated cooling. The use of thermal energy to operate an absorption refrigerating unit.

Heating degree days. The number of degrees that the daily mean temperature is below 18.3°C. (65°F.).

Maximum "flow" temperature. The maximum temperature obtained in a component when the heat transfer fluid is flowing through the system.

Maximum "no-flow" temperature. The maximum temperature obtained in a component when the heat transfer fluid is not flowing through the system.

Maximum service temperature. The maximum temperature to which a component will be exposed in actual service, either with or without the flow of heat transfer fluid.

Operating energy. The conventional energy required to operate the H, HC and HW systems, excluding any auxiliary energy which supplements the solar energy collected by the systems (e.g., the electrical energy required to operate the energy transport and control subsystems).

Outgassing. The emission of gases by component materials usually during exposure to elevated temperature or reduced pressure.

Passive solar system (integral collector, storage and building). A passive system characterized by collector and storage components which are an integral part of the building. Auxiliary energy may be used for control purposes but heating is achieved by natural heat transfer phenomena. Roof ponds, modified walls, roof sections with skylights, or similar applications where solar energy is used to supply a measurable fraction of the building heating requirements are examples of passive systems.

Solar energy system. An assembly of subsystems and components which is designed to convert solar energy into thermal energy.

Transmittance. The ratio of the radiant flux transmitted through and emerging from a body to the total flux incident on it.

SBC 6106 Standards for evaluation of solar energy systems.

A. Scope. This section contains design criteria for evaluation of performance and quality of solar systems.

B. Solar system performance. The solar system shall be capable of collecting and converting solar energy into thermal energy. The thermal energy shall be used to meet the total energy needs for space heating, cooling and water heating alone or in combination with storage and auxiliary energy, as required. The solar system shall supply more energy to the demand of the facility for which it is installed than is required for the solar systems.

1. Solar energy system sizing. The solar system combination shall be based upon monthly average heat loads determined by a degree-day method using average monthly design temperature and conditions as the maximum analytical time interval. Building heat loss shall be determined by historical energy use data or calculation. Calculation of building heat loss for use in sizing solar energy systems shall be performed for the full heating and/or cooling season using the method described in Appendix B.

2. Solar energy system contribution. The average yearly contribution of solar energy to the operation of the solar systems shall be specified in the Disclosure Statement and shall result in a reduction in the annual consumption of conventional energy. The solar energy contribution shall be determined as a percentage of the average annual space conditioning and water heating energy requirements less solar system operating energy demand. Analytical simulations or correlations based upon simulations combining the building heating and cooling loads, solar system performance and climatic conditions shall be utilized to predict the average monthly and annual energy contribution to be provided by solar energy, auxiliary energy and electrical operating energy as illustrated in Appendix B. (Calculations which have been substantiated by field testing of solar system/subsystems and components are an acceptable submission in lieu of Appendix B Calculation Procedures.)

C. Durability and reliability.

1. Structural. The structural design of the solar system including connections and supporting structural elements shall be based on loads anticipated during the design life of the systems.

a. Service loads. The following additional loads shall be used in the structural design of conventional and non-conventional elements and connections of H, HC and DHW systems:

(1) Constraint loads caused by the environment, normal functioning of the system and time-

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dependent changes within the materials of the system shall be taken as the most severe likely to be encountered during the design life.

(2) Ice loads (I) shall be taken as those produced by the accumulation of ice on surfaces exposed to the natural environment. The thickness of ice shall be taken as a radial thickness of ½ inch.

(3) Hail loads. System components and supporting structural elements that will be exposed to the natural environment in service shall be designed to resist, without excessive damage or major impairment of the functioning of the system, the perpendicular impact of falling hail having a particle diameter of ¾ inch. "Excessive damage or major impairment" shall not include punching or local cracking of nonstructural elements such as glass cover plates of collector panels under hail impact, but shall include damage which creates a major curtailment in the functioning of the system, premature failure or hazards created by excessive shattering of glazed elements.

2. Mechanical stresses. Mechanical stresses that arise within the system shall not cause damage or malfunction of the system or its components.

a. Vibration stress levels. Vibrations in collectors, piping, ducts, instrumentation lines, and control devices shall be controlled to reduce stress levels below those that could cause fatigue and subsequent component damage.

b. Components involving moving parts. Components that involve moving parts shall be capable of performing their intended function without excessive wear or deterioration for their design lives with normal maintenance.

c. Wear and fatigue. Check valves, pressure regulators, pumps, electrical switches, and similar components shall be capable of operating under in-use conditions for their design lifespans without exhibiting wear or fatigue to a degree that would affect the performance as declared in Disclosure Statement form.

d. Flexible joints. All systems employing heat transfer fluids shall be designed to accommodate flexing of subsystems and components.

3. Temperature and pressure resistance. Components shall be capable of performing their functions for their design lives when exposed to the temperatures and pressures that may develop in the system under foth flow and no-flow conditions.

a. Thermal cycling stresses. The solar energy system shall be capable of withstanding the stresses induced by thermal cycling for their respective design lives.

b. Thermal changes. The solar energy system shall be designed to allow for the thermal contraction and expansion that may occur over the service temperature range.

c. Thermal degradation. Solar energy systems shall not thermally degrade to the extent that their function will be reduced to a degree that will affect the performance as declared in Appendix A.

d. Relief valves and vents. As required for protection of a particular system design, combination temperature and pressure relief valves, vacuum relief valves, separate pressure relief valves, pressure reducing valves, and/or atmospheric vents shall be provided.

4. Materials compatibility. All materials which are joined to or in contact with other materials shall have sufficient chemical compatibility with those materials to prevent deterioration that may impair their functions to a degree that would affect the performance as declared in Disclosure Statement form. Allowances shall be made for differences in the expansion of jointed materials.

a. Corrosion of dissimilar materials. Non-isolated dissimilar materials with or without corrosion resistant finishes, where used either in contact with a transfer fluid, or without such contact, shall not be corroded to the extent that their function is or may be impaired under in-use conditions during their intended design lives. Dissimilar materials joined to form the transport system shall be electrically isolated from each other unless documentation is provided to demonstrate that the joints are sufficiently compatible to prevent corrosive wear and deterioration to the extent that their function would be impaired to a degree that would affect the performance as declared in Disclosure Statement form.

b. Corrosion by leachable substances. Chemical substances that can be leached by moisture from any of the materials within the system shall not cause corrosive deterioration of any other components that may impair the ability of these components to perform their intended function as declared in Disclosure Statement form.

c. Effects of decomposition products. Chemical decomposition products that are expelled from components under in-use conditions shall not cause the degradation of other components within the system to the extent that it would impair their ability to perform their

intended functions to a degree that would affect the performance as declared in Disclosure Statement.

5. Erosion/Corrosion. The solar system and components shall not be adversely affected by erosive wear (such as by the flow of a liquid transfer medium) to an extent that will impair their functions during their intended design lives.

6. Heat or humidity transfer effects. Heat or humidity transfer from the collector, thermal storage, piping or other components of the solar system or subsystem shall not interfere with the efficient operation of the solar system or cause loss of control of temperature, humidity or other controlled conditions.

7. Effects of external environment. The solar systems for heating (H) and combined heating and cooling (HC) and the hot water (HW) system/subsystem and their components shall not be affected by external environmental factors to an extent that will impair their performance as declared in Disclosure Statement form.

a. Solar degradation. Components or materials that are exposed to sunlight shall not undergo changes in their properties during their design lives that would impair the function of the system to a degree that would affect the performance as declared in Disclosure Statement form. When components or materials are exposed to UV radiation in combination with an intermittent water spray at their maximum "no-flow" temperature, there shall be no excessive deterioration such as cracking, crazing, embrittlement, etching, loss of adhesion, changes in permeability, loss in flexural strength or any other changes that may affect the performance of the components in the system.

b. Soil corrosion. Materials that are intended to be buried in soils shall not be degraded under in-use conditions to an extent that may impair their functions during their intended design lives.

c. Airborne pollutants. Materials exposed under in-use conditions to airborne pollutants such as ozone, salt spray, sulfur dioxide, oxides of nitrogen and/or hydrogen chloride shall not be affected by those pollutants to an extent that may impair their functions during their intended design lives.

d. Growth of fungi. Components and materials used in the solar systems shall not promote the growth of fungi, mold or mildew.

D. Maintainability.

1. Accessibility for maintenance and servicing. The solar system shall be designed, constructed, and installed to provide adequate access for general maintenance and convenient servicing.

2. Service personnel. The solar systems shall be capable of being serviced by a trained service technician using a maintenance manual.

3. Replacement parts. Parts, components, and equipment required for service, repair or replacement shall be commercially available or available from the system or subsystem manufacturer or supplier.

4. Draining and filling of liquids. To facilitate system or subsystem maintenance and repair, subsystems employing liquids shall be capable of being filled and drained.

5. Flushing of liquid subsystems. Suitable connections shall be provided for the flushing (cleaning) of liquid energy systems and subsystems.

6. Installation, operation and maintenance manual. A manual shall be provided to the purchaser for the operation and maintenance of the solar energy system/subsystem. An installation manual shall be provided to the trained service technician for installation and repair of the solar energy system/subsystem.

a. Installation instructions. The manual shall include physical, functional and procedural instructions describing how the components of the solar energy system are to be installed. These instructions shall include descriptions of both interconnections among the system components and their connections with the facility and site.

b. Maintenance and operation instructions. The manual shall completely describe the H, HC and DHW systems, their breakdown into subsystems, their relationship to external systems and elements, their performance characteristics, and their required parts and procedures for meeting specified capabilities. The manual shall list all parts of the system, by subsystem, describing as necessary for clear understanding of operation, maintenance, repair and replacement such characteristics as shapes, dimensions, materials, weights, functions and performance characteristics. The manual shall include a tabulation of those specific performance re-

quirements which are dependent upon specific maintenance procedures. The maintenance procedures, including ordinary, preventive and minor repairs, shall be cross-referenced for all subsystems and organized into a maintenance cycle. The manual shall fully describe operation procedures for all parts of the system including those required for implementation of specified planned changes in mode of operation. The manual shall include instructions for the inspection, treatment, and disposal of transfer fluids used in the system.

c. Maintenance plan. The maintenance manual shall include a comprehensive plan for maintaining the specified performance of the solar system for its design life. The plan shall include all the necessary ordinary maintenance, preventive maintenance and minor repair work and projections for equipment replacement.

d. Manual adjustment. If manual control adjustments are required during normal operation of the system/subsystem, the operating instructions shall enumerate the time period over which these adjustments must be made and the environmental conditions requiring such adjustments.

SBC 6107 Standards for evaluation of solar subsystems.

A. Scope. This section contains design criteria for evaluation of performance and quality of solar subsystems. Solar subsystems shall include but not be limited to the following:

1. Collector subsystems.

2. Energy transport subsystems.

3. Storage subsystems.

4. Control subsystems.

B. Collector subsystems.

1. Transmission losses due to outgassing. Outgassing of volatiles that will reduce collector performance below specified design values shall not occur when the collector is exposed to the temperature and pressure that will occur in actual service.

2. Condensation. Condensation formed on the underside of the cover plate(s) shall not reduce its transmittance during its design life to a degree that would affect the performance as declared in Disclosure Statement form.

3. Dirt retention. The cover plate(s) under normal weather conditions shall not, with normal maintenance, collect or retain dirt to an extent that would reduce its ability to transmit sunlight to a degree that would affect the performance as declared in the Disclosure Statement Form.

4. Damage by hail. Refer to SBC 6106 C.1.a.(3).

C. Transport and storage subsystems.

1. Entrapped air. When liquid heat transfer fluids are used, the system shall provide suitable means for air removal.

2. Protection against blockage of fluid flow. The entire heat transport system shall be protected to prevent contamination by foreign substances that may impair the flow and quality of the heat transfer fluid to a degree that would affect the performance as declared in Disclosure Statement form. Duct and fan systems shall be protected against accumulations of deposits of dust, dirt or fungi that reduce flow and efficiency.

3. Automatic pressure and temperature relief valves for flammable or combustible fluids. The fluid transfer systems shall include a pressure relief valve. The valve and its discharge system shall not permit fluid discharge into occupied space. A holding tank shall be included in the system for collection of discharge expected from the relief valve. The pressure relief valve shall be designed based on maximum temperature criteria for abnormal operating conditions. (ΔP must be limited to comply with temperature criteria.) It shall prevent further increase in temperature and provide discharge in the same manner as the pressure relief valve. Maximum fluid temperature at which temperature relief valve shall operate:

a. 37.8°C. (100°F.) below firepoint of fluid.

4. Detection of highly toxic and flammable fluids. If heat transfer fluids that are highly toxic and/or flammable are used, means shall be provided for the detection of leaks and the warning of occupants when leaks occur.

5. System drainage. System designs incorporating automatic drainage of heat transfer fluid or storage to prevent freezing of the fluid in solar collectors shall not be constructed of materials which corrode in the presence of air or shall be suitably protected against such corrosion. Liquid systems, system components, piping or storage tanks shall be designed for complete isolation and drainage for maintenance purposes.

6. Heat transfer fluids. The heat transfer fluid shall not cause deleterious effects to those parts of the solar energy system with which it comes into contact. Except when such changes are allowed by the design of the system, the heat transfer fluid shall not freeze, give rise to

excessive precipitation, otherwise lose its homogeneity, boil, change pH or undergo large changes in viscosity when exposed to its intended service temperature and pressure range.

7. Contamination. Thermal transfer system and storage materials, including any interior protective coatings and the heat storage medium used, shall not contaminate potable water nor ventilation air.

D. Control subsystems. The control subsystem shall provide for the safe and efficient operation of the solar systems/subsystems.

1. The solar energy system controls shall prevent major damage to system components in the event of power failure or other system malfunction.

2. Identification and location of controls. Main shutoff valves and switches shall be conspicuously marked and placed in readily accessible locations.

3. Bypass. The control subsystem shall include such provision for manual bypass, adjustment, or override of automatic controls as is required to facilitate installation, startup, shutdown and maintenance.

Appendix A

Reference Standards and Test Methodology

The following standards have been excerpted from the documents referenced below. Use of these standards and tests is mandatory for evaluation of systems, subsystems, and components.

ASTM — American Society for Testing and Materials, 1916 Race St., Philadelphia, Penn. 19103

HUD — NBSIR 76-1059 Intermediate Minimum Property Standards for Solar Heating and Domestic Hot Water Systems April, 1976, 415 7th Street S.W., Washington, D.C. 20410

NASA — 98M 10001 Interim Performance Criteria for Commercial Solar Heating and Combined Heating/Cooling Systems and Facilities February 28, 1975 National Aeronautics & Space Admin., Solar Heating & Cooling Office, Marshall Space Flt. Cntr., Huntsville, Alabama 35812

NBS — Interim Performance Criteria for Solar Heating and Combined Heating/Cooling Systems and Dwellings January 1, 1975, U.S. Dept of Commerce, Washington, D.C. 20234

ASHRAE — 93-77 "Methods of Testing to Determine the Thermal Performance of Solar Collectors", ASHRAE Circulation Sales Dept., 345 E. 47th Street, New York, NY 10017

SOLAR SYSTEM — Durability/Reliability

A. Materials Compatibility

1. Effects of decomposition products — NASA Chapter 5, Section 15

2. Material compatibility test — NASA Chapter 5, Section 13

3. Absorptive coatings, compatibility with heat transfer medium — ASTM D-1308-57, 1973

4. Transport subsystem, materials used for transporting fluids — HUD Appendix Table B-2

Materials/transfer fluid compatibility — ASTM D 2570-73

NBS Appendix Section 12

5. Gaskets and sealants

Chemical and physical compatibility — ASTM F82-67, 1973

Deterioration of gaskets and sealants — NASA Chapter 5, Section 10

B. Effects of the external environment

1. Growth of fungi, mold or mildew

Section 10, UL 181-74

Method 508 MIL-STD-810

2. Solar degradation — NASA Chapter 5, Sections 01, 02, 03

3. Soil corrosion — NASA Chapter 5, Section 04

4. Airborne pollutants — NASA Chapter 5, Section 5

5. Collector subsystem

Cover plate, UV stability — ASTM E-424-71

Absorber plate, UV stability — ASTM D822-60, 1973 (modification of above) HUD 515 2.4.3

Moisture stability — ASTM D2247-68, 1973

6. Organic coupling hoses

UV stability — ASTM D750-68, 1974
Compatibility with heat transfer fluid — ASTM F82-67, 1973

Ozone degradation — ASTM D1149-64, 1907

C. Temperature and pressure resistance

1. Thermal cycling stresses — NBS Appendix, Section 08

2. Thermal degradation test — NASA Chapter 5, Appendix, Section 06

3. Leakage — NBS Appendix, Section 09

4. Absorptive coatings, thermal stability

ASTM D660-44, 1970; D661-44, 1975; D714-56, 1974; D772-47, 1975

5. Gaskets and sealing pressurized systems test — ASTM D1081-60, 1974

COLLECTOR SUBSYSTEMS

A. Collector performance. Collector thermal performance test — NBSIR 74-635

B. Durability and reliability of collector subsystems. Outgassing, transmission losses due to — NASA Chapter 5, Section 11

C. Durability/reliability of transport subsystems. Deterioration of heat transfer fluids — NBS Appendix, Section 07.

Appendix B

Calculation Procedures — Solar Systems

NOMENCLATURE

A_c	Collector aperture area (ft^2) (M^2)
$(\dot{m}c_p)$	Min fluid capacitance [Btu/(h°F)] (Watts/°C)
c_p	Fluid capacitance [Btu/(1b°F)] (Joules/Kg − °C)
D_1, D_2	Dimensionless parameters
Δt_d	Temperature difference for building design temperature conditions (°F)
Δt	Total number of hours in a particular month (h)
ϵ_c	Effectiveness of the collector-storage heat exchanger
ϵ_L	Effectiveness of the load heat exchanger
θ	Collector tilt (°)
E	Solar energy supplied for a particular month (Btu/month) (Joule/month)
E_{total}	Solar energy supplied for an entire year (Btu/year) (Joules(year)
f	Monthly fraction of total heating load supplied by solar energy
F_{annual}	Yearly fraction of the total heating load supplied by solar energy
F_R	Collector heat removal factor
F_R'	Combined form of the collector heat exchanger effectiveness and the collector heat removal factor (F_R)
γ	Solar collector azimuth angle (for due south = 180°)
$\bar{I}_H$	Monthly average of the daily radiation incident on a horizontal surface [Btu/(day·ft^2)] (Joule/Day − M^2)
$\bar{I}_T$	Monthly average of the daily radiation incident on a tilted surface [Btu/(day·ft^2)] (Joule/Day — M^2)
$\bar{K}_t$	Ratio of the monthly averages of the daily radiation on a horizontal surface to the extraterrestrial radiation on a horizontal surface
K_1	Correction factor to correct f for various storage capacities other than 15 Btu/(°F·ft^2) (306,620 Joule/°C − M^2)

K_2	Correction factor to correct for $_L(\dot{m}c_p)$min/UA other than 2
L	Total heating and hot water load for a particular month (Btu/month) (Joules/month)
L_{Total}	Total heating and hot water load for an entire year (Btu/year) (Joules/year)
m	Mass of domestic hot water used for a particular month (lb)(kg)
$\dot{m}$	Flow rate of the working fluid either air or liquid (lb/hr) (kg/hr)
M	Mass of thermal storage (lb) (kg)
N	Number of days in a particular month
Φ	Latitude
Q_s	Space heating load for a particular month (Btu/month) (Joules/month)
Q_w	Domestic hot water heating load for a particular month (Btu/month)
q_d	Building design rate of sensible heat loss (Btu/h) (Watts)
$\bar{R}$	Ratio of the monthly average daily radiation on a tilted surface to that on a horizontal surface
S	Monthly incident solar radiation on a tilted surface Btu/(month·ft^2)
t_a	Average ambient air temperature for the particular month (Joules/month·M^2)
t_s	Temperature of domestic hot water supply (°F) (°C)
t_m	Temperature of water main supply (°F) (°C)
t_{ref}	Reference temperature, 212°F (100°C)
Δ time	Total number of hours in each month
$\bar{\gamma\alpha}$	Average transmissivity-absorptivity product for design purposes
$(\gamma\alpha)_n$	Transmissivity-absorptivity product at normal incidence
U_L	Collector heat loss factor Btu/(h·F·ft^2) (Watt/°C – M^2)
UA	Building heat loss factor Btu/(h·F) (Watt/°C)
f_n	Monthly fraction of heating load supplied by solar energy
f_c	Monthly fraction of cooling load supplied by solar energy
f_o	Monthly fraction of other load supplied by solar energy
P.F.	Proportionality factor used to refine heat load calculations based on the 65° degree-day method.

Appendix B Calculation Procedures[1] — Solar Systems

A. Performance measurements for a solar system shall be made using the following outline:

1. Calculate the monthly energy load (heating, cooling).

2. Calculate the monthly incident solar radiation on the collector array.

3. Determine the component parameters, i.e. subsystem efficiencies, capacities, required operating energies, etc.

4. Calculate the monthly fraction of load supplied by solar system.

References Cited

1. Klein, S. A., Beckman, W. A., AND J. A. Duffiie, "Design Procedure for Solar Heating Systems," presented at the 1975 International Solar Energy Congress, UCLA, Los Angeles, California, July, 1975.

2. B. Y. H. Liu, R. C. Jordan, "Availability of Solar Energy for Flat-Plate Solar Heat Collectors," *Low Temperature Engineering Application of Solar Energy*, ASHRAE, New York, 1967.

1. Klein, S. A., Beckman, W. A., and J. A. Duffiie, "Design Procedure for Solar Heating Systems," presented at the 1975 International Solar Energy Congress, UCLA, Los Angeles, California, July, 1975.

5. With the monthly loads and monthly fractions supplied by solar, calculate the annual fraction of load supplied by solar energy less solar system operating energy.

B. Specifically, performance measurements for different solar systems shall be made as follows:

1. Combined collector and storage devices. The system thermal performance is determined by the short term (1 to 3 days) collection and storage of thermal energy obtained from solar radiation and the amount of useful energy delivered to the load from storage for part and full load conditions. Experimental performance data, in terms of heat collected and stored or delivered to load, shall be provided for the design conditions including solar power density, heat transfer fluid temperature, ambient temperature, wind, solar radiation incident angle, and flow rates. The daily and average test period electrical operating requirements shall be reported with system performance.

2. Passive (integral) solar systems. The thermal performance of an integral solar system shall be obtained from a detailed simulation analysis of the climate, building thermal properties and occupancy thermal influence.

3. Active solar systems. Where applicable, collector based solar systems shall use the calculation procedures outlined in paragraph C. below. When different procedures are used due to an incompatibility between the system (or subsystem) under study and the outlined procedures, the elected calculation procedure shall be representative of realistic demand, solar radiation, component capacities, efficiencies, required operating energies, etc.

C. Determining monthly load. The monthly load is comprised of heating, cooling, and other service loads that might be offset by the solar system.

1. Total heating load. The total heating load is determined on a monthly basis for both space and hot water heating. The space and hot water heating loads are calculated separately and for combined systems, the monthly individual loads are added to get a monthly total load.

a. Hot water load. Determine the required volume of domestic hot water (gal) required on a monthly basis. Then, knowing the volume, calculate the mass (m) using a value of 8.33 lb/gal (119.8 kg/M^3). Determine the water main temperature (t_m) or assume t_m = 55°F. (12.8°C). Calculate the monthly domestic hot water heating load using the following equation:

$$Q_w = \left[\frac{\text{(lb or kg)}}{\text{DHW consumed}}{\text{Month}}\right] \left[\text{Specific Heat of Water } \left(\frac{\text{Joule}}{\text{kg-°C}}\right)\right]$$

$$\left[\text{Temp. Supply} - \text{Temp. Water Main}\right]$$

For situations where the domestic hot water requirements cannot be reasonably estimated, a load of 1.6×10^6 Btu/month may be assumed for a typical residence. This is equivalent to approximately 90 gallons of hot water use per day.

b. Space heating load. The space heating load for each month shall be calculated using the degree-day method. A P.F. value of 0.75 shall be used unless practical experience in the locality dictates the use of a different value.

(1) To calculate space heating load. Building heat loss shall be calculated according to methods described in the ASHRAE Handbook of Fundamentals or other recognized means. The loss calculations shall include:

Heat loss by transmission:

$Q_{st} = U\ A\ (t_i - t_o)$

Heat loss by infiltration — use (a) or (b):

(a) Air change method

(b) Crack method

In either case, $Q_{si} = .018\ V(t_i - t_o)$

(2) Obtain the monthly total degree days from the ASHRAE Systems Handbook for the particular location for each month.

(3) Add infiltration and transmission losses to obtain design total instantaneous loss. $Q_s = Q_{st} + Q_{si}$

(4) Obtain BTU's per degree day for month.

$$\frac{\text{P.F.} \times Q_s \times 24}{t_i - t_o} = \text{Btu/DD}$$

Q_s = Heat flow rate, BTU/Hr.

U = Heat transfer coefficient, BTU/(hr) (ft^2) (F°)

A = Area of transfer surface, ft^2

t_i = Design indoor temperature, °F

t_o = Design outdoor temperature

P.F. = Proportionality factor

V = Volume of air (c.f. per hour)

D.D. = Degree day

2. Calculation of cooling and other loads. Calculations of cooling loads and/or other loads that might be offset by the solar system shall be according to the ASHRAE Handbook of Fundamentals or other recognized means.

3. Table A is included for tabulating loads.

D. Determining the monthly incident solar radiation. Table B is included for tabulating the incident solar radiation calculation.

1. Monthly average of the daily radiation incident on a horizontal surface, I_H. For locations near St. Cloud, I_H shall be taken from Table 4A. For other locations, alternate means of determining I_H, such as interpolation from radiation maps, may be used.

2. Ratio of the monthly averages of the daily radiation on a horizontal surface to the extraterrestrial radiation, (K_t). For locations near St. Cloud, K_t shall be taken from Table 4A. For other locations, alternate means may be used.[1,2]

3. Ratio of the monthly average daily radiation on a tilted surface to that on a horizontal surface for collectors facing due south (R). Using Table 4B and knowing collector tilt (Θ), latitude (ϕ), and $\bar{K}_t$, determine $\bar{R}$ for each month. K_t may be interpolated.

4. Monthly average daily radiation on a tilted surface, ($\bar{L}_T$). Knowing $\bar{I}_H$ and $\bar{R}$ for each month, calculate $\bar{I}_T$ on a monthly basis using the equation: $\bar{I}_T = (\bar{I}_H)(\bar{R})$

5. Total monthly radiation on a tilted surface, (S). $\bar{I}_T$, the monthly average daily radiation on a tilted surface, must be multiplied by the total days in each month, (N) to obtain total insolation for each month. $S = (\bar{I}_T)(N)$

6. Shading. Shading should not be neglected in calculating the incident solar radiation on a particular collector array. The amount of shading is strongly dependent on the collector site and orientation; thus, each case must be analyzed separately.

1. Donald G. Baker and John C. Klink, *Solar Radiation Reception, Probabilities and Areal Distribution in the North-Central Region*, Agricultural Experiment Station, University of Minnesota, Technical Bulletin 300 (1975).

2. Donald G. Baker, *Climate of Minnesota Part VI Solar Radiation at St. Paul*, Agricultural Experiment Station, University of Minnesota, Technical Bulletin 280 (1971).

TABLE 4-A

		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
St. Cloud, Minn.	$\bar{I}_H$	632.8	976.7	1383	1598.1	1859.4	2003.3	2087.8	1828.4	1369.4	890.4	545.4	483.1
Lat. 45°35'N	$\bar{K}_t$	0.595	0.629	0.614	0.534	0.530	0.553	0.573	0.570	0.539	0.490	0.435	0.504
El. 1034 ft.	$\bar{t}_a$	13.6	16.9	29.8	46.2	58.8	68.5	74.4	71.9	62.5	50.2	32.1	18.3

Values from "A Rational Procedure for Predicting a Long Term Average Performance of Flat Plate Collectors." *Solar Energy*, 17, No. 2, 1963. B.Y.H. Liu, R.C. Jordan.

E. Predicting system performance. This procedure does not apply to passive systems or to active systems that do not generally conform to the configuration of Figure 5A or 5B as appropriate. The procedure cannot be used for systems in latitudes farther north than sixty degrees. The procedure is intended to evaluate long-term performance of most solar heating systems using a simple desk calculator or slide rule. Since in most instances flat plate collectors are utilized for heating buildings, the collector component parameters are only valid for modeling flat plate collectors. Concentrating collectors or evacuated tubular collectors cannot be incorporated into the solar heating system evaluation as it is presently written in this Appendix. The system evaluation procedure as outlined in this Appendix can only accurately predict system performance for systems using south facing collector arrays. Cases of different collector orientations must be analyzed using a different procedure.

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

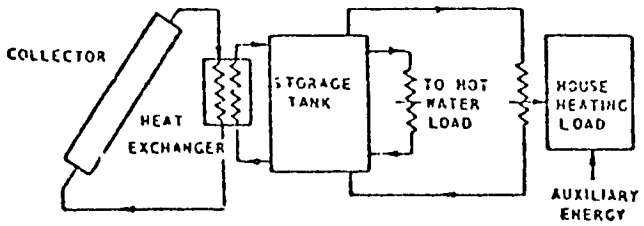

Figure 5-A Liquid System

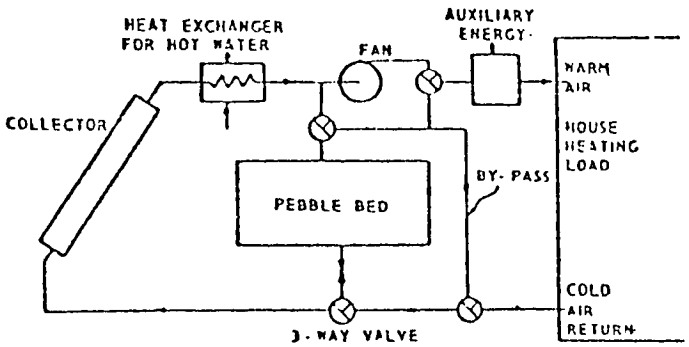

Figure 5-B Air System

TABLE 4B

$\bar{R}$ for $\bar{K}_T$ = .40

LATITUDE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
					(Latitude − Tilt) = 15.0							
40	1.44	1.35	1.17	1.06	.99	.97	.98	1.03	1.12	1.27	1.39	1.51
45	1.68	1.40	1.24	1.09	1.00	.97	.98	1.05	1.17	1.39	1.58	1.85
50	1.90	1.58	1.32	1.12	1.01	.97	.99	1.06	1.23	1.46	1.92	2.11
					(Latitude − Tilt) = .0							
40	1.61	1.45	1.19	1.03	.93	.89	.91	.98	1.12	1.34	1.53	1.70
45	1.88	1.49	1.26	1.05	.93	.89	.91	.99	1.16	1.47	1.75	2.12
50	2.13	1.69	1.35	1.08	.94	.88	.90	1.01	1.22	1.54	2.14	2.40
					(Latitude − Tilt) = −15.0							
40	1.68	1.48	1.15	.95	.83	.78	.80	.89	1.06	1.34	1.58	1.80
45	1.98	1.51	1.22	.96	.83	.77	.80	.90	1.10	1.47	1.82	2.27
50	2.24	1.72	1.30	.99	.83	.76	.79	.91	1.16	1.53	2.24	2.56
					Vertical							
40	1.51	1.25	.86	.61	.48	.44	.46	.55	.75	1.08	1.39	1.65
45	1.84	1.30	.96	.67	.53	.48	.50	.60	.83	1.25	1.66	2.17
50	2.13	1.54	1.08	.74	.58	.52	.54	.66	.93	1.34	2.12	2.47

TABLE 4B

$\bar{R}$ for $\bar{K}_T$ = .50

LATITUDE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
					(Latitude − Tilt) = 15.0							
40	1.52	1.40	1.20	1.08	1.00	.97	.98	1.04	1.14	1.32	1.46	1.60
45	1.80	1.47	1.28	1.11	1.08	.97	.98	1.06	1.20	1.45	1.69	1.99
50	2.06	1.68	1.38	1.14	1.02	.97	.99	1.08	1.27	1.54	2.08	2.30
					(Latitude − Tilt) = .0							
40	1.72	1.53	1.24	1.04	.93	.88	.90	.99	1.15	1.41	1.63	1.83
45	2.05	1.59	1.32	1.07	.93	.88	.90	1.01	1.20	1.56	1.89	2.31
50	2.34	1.83	1.42	1.10	.94	.88	.91	1.03	1.28	1.64	2.35	2.65
					(Latitude − Tilt) = −15.0							
40	1.82	1.58	1.20	.96	.82	.77	.79	.90	1.10	1.42	1.71	1.96
45	2.18	1.62	1.28	.98	.83	.76	.79	.91	1.15	1.57	1.99	2.50
50	2.48	1.87	1.38	1.01	.83	.76	.79	.93	1.21	1.65	2.48	2.84
					Vertical							
40	1.66	1.35	.90	.61	.46	.41	.43	.54	.77	1.16	1.51	1.83
45	2.05	1.42	1.01	.68	.52	.45	.48	.60	.86	1.35	1.83	2.42
50	2.37	1.70	1.16	.76	.57	.50	.53	.67	.97	1.46	2.37	2.77

TABLE 4B
$\bar{R}$ for $\bar{K}_T$ = .60

LATITUDE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
					(Latitude − Tilt) = 15.0							
40	1.60	1.46	1.23	1.09	1.00	.96	.98	1.05	1.17	1.37	1.53	1.68
45	1.92	1.54	1.32	1.12	1.01	.97	.99	1.07	1.23	1.52	1.79	2.13
50	2.22	1.79	1.44	1.17	1.03	.97	.99	1.10	1.32	1.63	2.24	2.49
					(Latitude − Tilt) = 0							
40	1.84	1.61	1.28	1.06	.93	.88	.90	1.00	1.18	1.47	1.73	1.96
45	2.21	1.69	1.37	1.09	.94	.88	.90	1.02	1.25	1.65	2.03	2.50
50	2.54	1.96	1.50	1.13	.95	.88	.91	1.05	1.33	1.75	2.55	2.90
					(Latitude − Tilt) = −15.0							
40	1.96	1.68	1.25	.98	.82	.76	.78	.90	1.13	1.50	1.83	2.12
45	2.37	1.73	1.34	1.01	.83	.75	.78	.92	1.19	1.68	2.16	2.73
50	2.71	2.07	1.46	1.04	.83	.75	.79	.94	1.27	1.77	2.72	3.13
					Vertical							
40	1.81	1.45	.94	.61	.44	.38	.40	.53	.79	1.23	1.64	2.00
45	2.26	1.53	1.07	.69	.50	.43	.46	.60	.90	1.45	2.01	2.66
50	2.62	1.85	1.23	.78	.56		.52	.67	1.02	1.58	2.61	3.07

TABLE 4B
$\bar{R}$ for $\bar{K}_T$ = .70

LATITUDE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
					(Latitude − Tilt) = 15.0							
40	1.66	1.50	1.26	1.10	1.00	.96	.98	1.05	1.19	1.40	1.58	1.75
45	2.01	1.60	1.36	1.14	1.02	.97	.99	1.08	1.26	1.57	1.87	2.23
50	2.34	1.87	1.49	1.19	1.03	.97	1.00	1.11	1.35	1.69	2.36	2.63
					(Latitude − Tilt) = .0							
40	1.92	1.68	1.31	1.07	.93	.57	.89	1.00	1.21	1.52	1.80	2.06
45	2.34	1.76	1.42	1.11	.94	.67	.90	1.03	1.28	1.71	2.14	2.65
50	2.70	2.07	1.55	1.16	.95	.68	.91	1.06	1.37	1.83	2.71	3.09
					(Latitude − Tilt) = −15.0							
40	2.07	1.75	1.29	.99	.81	.75	.78	.91	1.16	1.56	1.92	2.25
45	2.52	1.82	1.39	1.02	.83	.75	.78	.93	1.23	1.75	2.28	2.90
50	2.89	2.14	1.53	1.07	.84	.75	.79	.96	1.32	1.87	2.90	3.35
					Vertical							
40	1.92	1.52	.97	.61	.42	.36	.39	.52	.81	1.29	1.74	2.13
45	2.42	1.61	1.11	.70	.49	.41	.45	.59	.93	1.53	2.14	2.85
50	2.81	1.96	1.29	.79	.55	.47	.51	.68	1.06	1.47	2.80	3.30

Component parameters. The component parameters characterize the various components that make up the system. In cases of design where several different solar heating systems may be considered for the same location and collector tilt, incident radiation on a tilted surface ($\bar{I}_T$) need only be calculated once. In such a case, only the values of the component parameters need to be adjusted for the different systems.

Solar collector. Using collector thermal performance efficiency curves provided by the manufacturer (as determined by test in accordance with NBSIR 74-635) range of operational temperature, insolation, tilt angles and flow rates determine the collector parameters $F_R U_L$ and $F_R(\tau\alpha)$. The thermal efficiency collector curve must be plotted such that the y-axis is the thermal efficiency (η) and the x axis, the temperature difference between the collector fluid inlet and the ambient air divided by the incident solar radiation ($t_i - t_a/I_T$). The thermal efficiency is the ratio of useful output thermal energy to the incident solar energy on the collector aperture area. To determine $F_R U_L$ calculate the slope of a linear curve

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fit for the efficiency curve. The y-axis intercept is equal to $F_R(\tau\alpha)$.

Collector-Storage Heat Exchanger. To simplify the number of input parameters, the collector-storage heat exchanger effectiveness ϵ_c, and the collector heat removal factor, F_R, can be combined in a single parameter F_R'. Determine F_R'/F_R by the following equation, or the graphical representation in Figure 5-D.

$$\frac{F_R'}{F_R} = \frac{1}{1 + \left[\frac{F_R U_L A_C}{(\dot{m}\, c_p)_c}\right]\left[\frac{(m\, c_p)_c}{\epsilon_c\, (\dot{m}\, c_p)_{min}} - 1\right]}$$

where A_c = aperture area of the collector array

$(\dot{m}\, c_p)_{min}$ = minimum fluid capacitance rate of the working fluids across the collector-storage heat exchanger.

$(m\, c_p)_c$ = fluid capacitance rate of the collector working fluid.

ϵ_c = effectiveness of the collector heat exchanger

$$= \frac{\text{actual heat transfer}}{\text{maximum possible heat transfer}}$$

The water-to-water collector storage heat exchanger effectiveness (ϵ_c) is easily calculated from methods given in the ASHRAE Handbook of Fundamentals or from data supplied by the manufacturer.

Note: In systems that do not use a collector to storage heat exchanger, the ratio of F_R' to F_R is equal to 1.

$$\frac{F_R'}{F_R} = 1$$

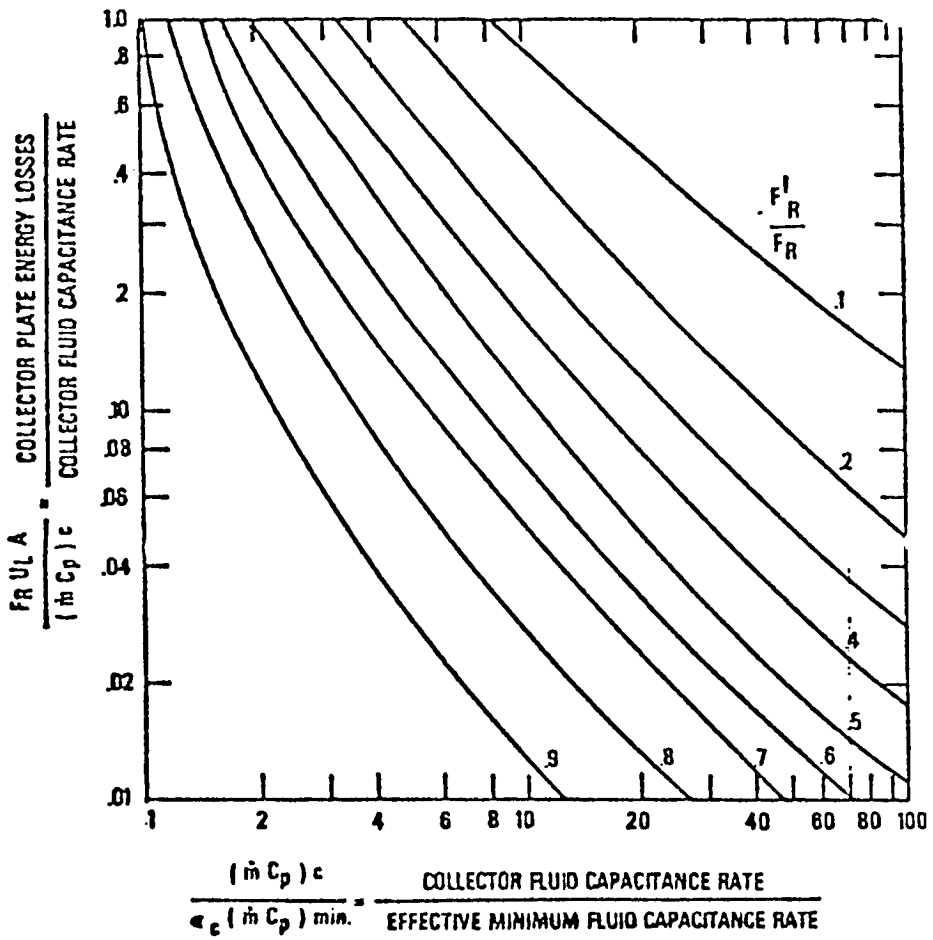

FIGURE 5-D. F_R'/F_R as a function of $F_R U_L A/(\dot{m}\, C_p)_c$ and $(\dot{m}\, C_p)_c/\epsilon_L\, (\dot{m}\, E_p)_{min}$

Storage. In general for solar heating systems utilizing water or air as heat transfer fluids an average storage capacity of 15 Btu/°F per square foot of collector has been determined as near economic optimum. For storage capacities other than 15 a correction factor will be introduced later to correct the value of the predicted system thermal performance.

Load Heat Exchanger. Determine from the manufacturer's specifications the load heat exchanger effectiveness (ϵ_L) and calculate minimum fluid capacitance $(\dot{m}c_p)_{min}$ rate across the exchanger. Where ϵ_L is not provided, values can be determined using procedures in the ASHRAE Handbook of Fundamentals.

Note: Since a load heat exchanger is not usually incorporated into a system using air collectors and air as the transport medium, the load heat exchanger effectiveness may be assumed equal to 1.

Dimensionless Parameters (D_1, D_2). The dimensionless parameters D_1 and D_2 characterize the entire solar heating system thermal effectiveness. Calculate the two dimensionless parameters for each month using the factors defined previously on a monthly basis according to the following equations:

$$D_1 = \frac{\text{energy absorbed by collector plate}}{\text{total heating load}}$$

$$= [A_c] \quad [F_R(\alpha)_n] \left[\frac{(\tau\alpha)}{(\tau\alpha)_n}\right] \left[\frac{F_R'}{F_R}\right] \frac{S}{L}$$

$$D_2 = \frac{\text{ref. collector plate energy losses}}{\text{total heating load}}$$

$$= [A_c] \quad [F_R U_L] \quad \left[\frac{F_R'}{F_R}\right] \quad [t_{ref} - \bar{t}_a] \quad \frac{\Delta \text{ time}}{L}$$

t_{ref} = 212°F (arbitrarily chosen reference temperature)

$\bar{t}_a$ = average ambient air temperature for the particular month.

Δ time = total number of hours in each month

$\left[\frac{\tau\alpha}{(\tau\alpha)_n}\right]$ = 0.90 to account for the change in the value of the effective transmission-absorption product with incident angle throughout a day.

Monthly Fraction of Total Heating Load Supplied by Solar Energy (f_n). The fraction of the heating load supplied by solar energy (f_n) can be determined from Figure as a function of the dimensionless parameters, D_1 and D_2. Locate the two dimensionless parameters on Figures 5-D and 5-E and determine the fraction of total heating load supplied by solar energy (f_n) on a monthly basis.

Annual fraction of the total heating load supplied by solar energy (F_{annual}). It was mentioned earlier that the procedure was intended to only provide an estimate of system performance for a particular month but a relatively good estimate for long-term performance (yearly basis). In order to calculate f on a yearly basis, the following calculations must be performed. Table C has been included for tabulating and calculating f on a yearly basis.

A. The actual solar energy supplied for each month must be calculated as follows:

$E_{Jan} = f_{Jan} L_{Jan}$
$E_{Feb} = f_{Feb} L_{Feb}$
$E_{Dec} = f_{Dec} L_{Dec}$

Total the solar energy supplied for the entire year by summing the contributions from each month.

$$E_{Total} = E_{Jan} + E_{Feb} \ldots E_{Dec}$$

B. Calculate the amount of operating energy required by the solar system, using standard engineering methods.

C. Calculate the total heating load for the entire year (L_{Total})

D. Knowing the total annual solar energy supplied by the heating system (E_{total}) and the total annual heating load (L_{Total}), determine F_{annual} for the entire year from the following equation:

$$F_{annual} = \frac{E_{total} - \text{operating energy}}{L_{total}}$$

E. Correction factors for F_{annual}

1. To correct for various storage capacities other than 15 Btu/(°F · ft²), use Figure 5-F to obtain the correction factor (K_1).

2. For cases where ϵ_L $(\dot{m}c_p)$ min/UA is other than 2, use Figure 5-G to obtain the correction factor (K_2).

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

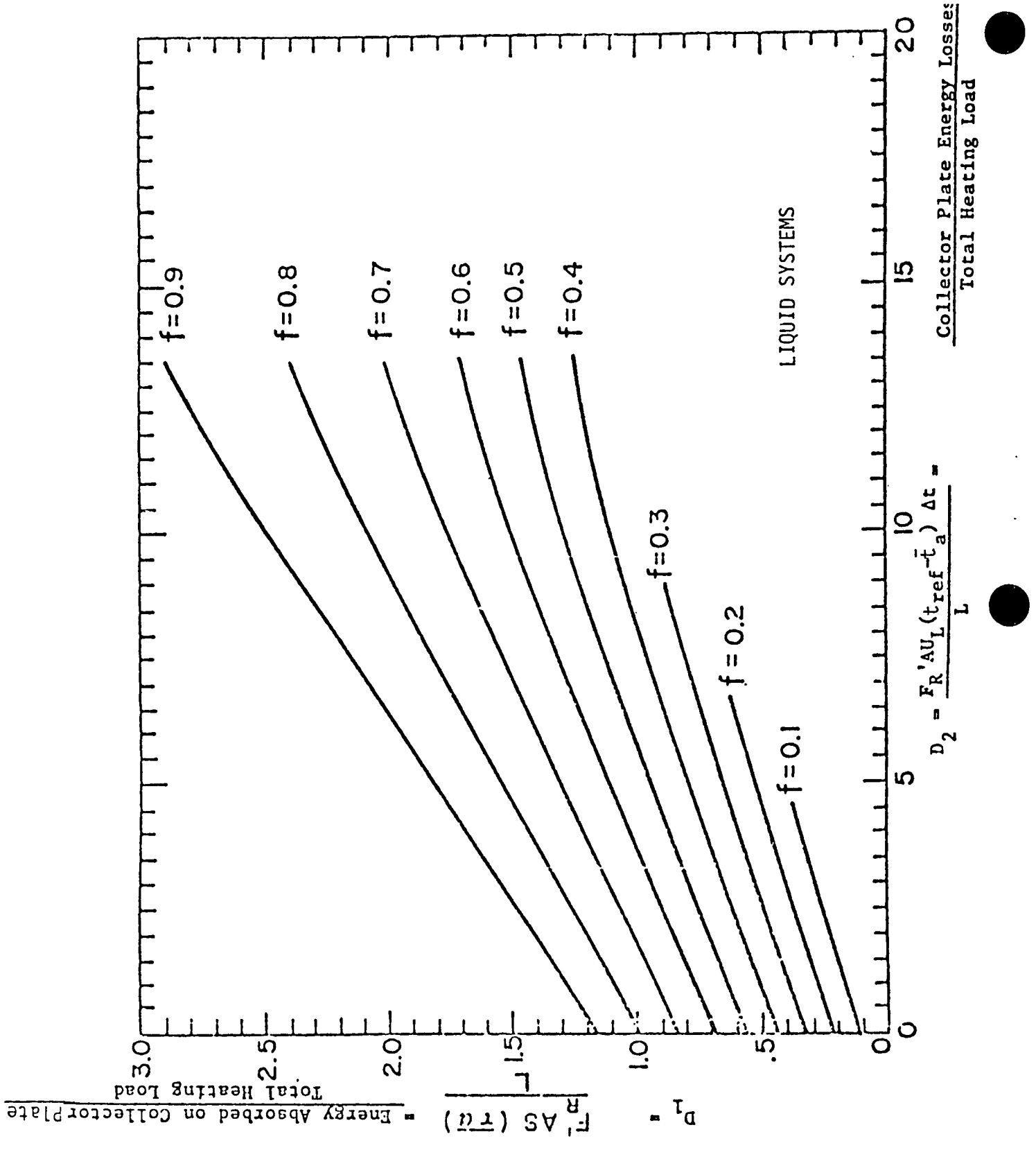

FIGURE 5-D (Liquid systems) Relationship between solar fraction and dimensionless parameters D_1 and D_2.

$$\frac{D_1 = F_R' \, AS \, (\bar{\gamma}\bar{u})}{L} = \frac{\text{Energy Absorbed on Collector Plate}}{\text{Total Heating Load}}$$

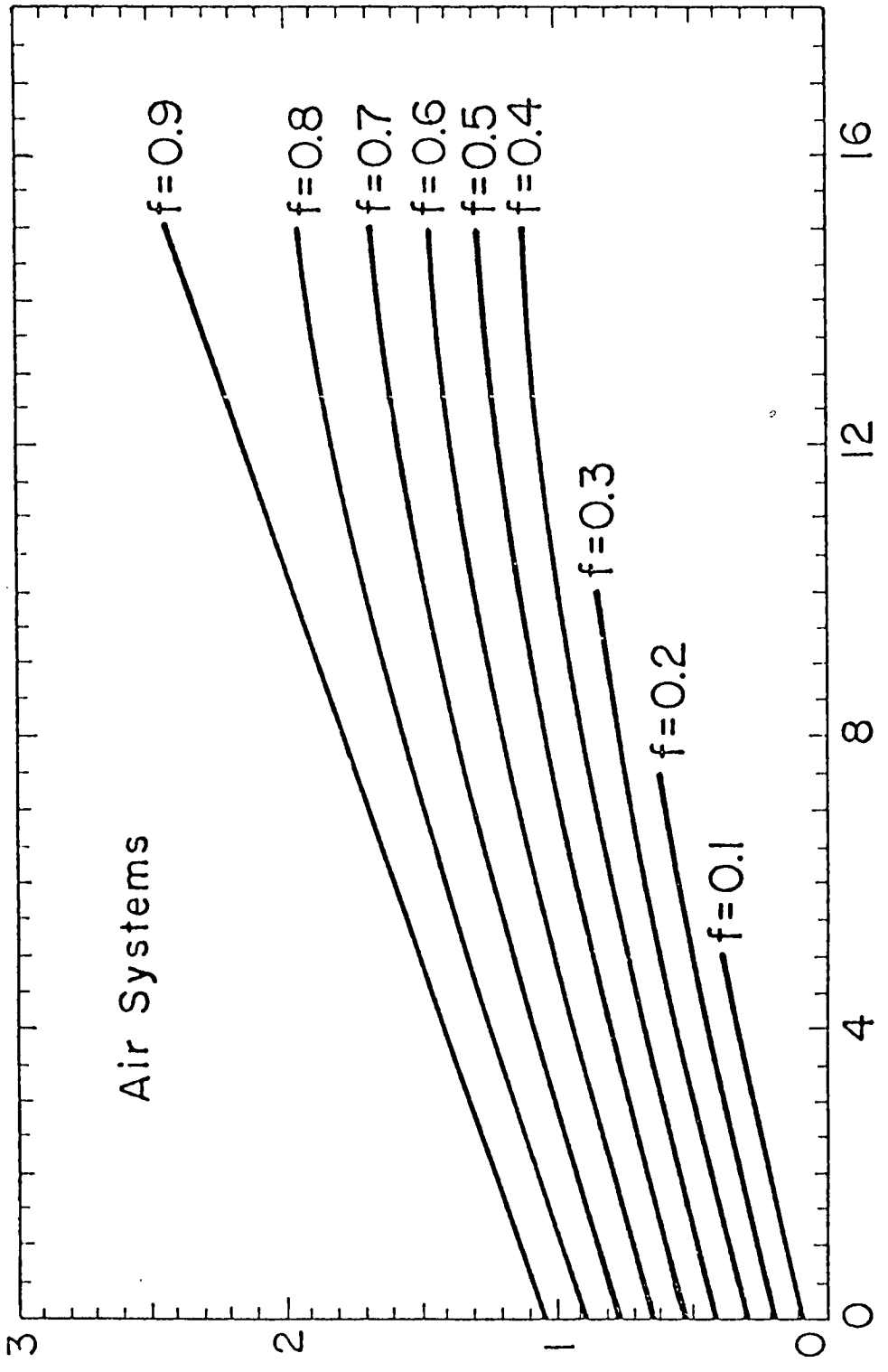

FIGURE 5-E (Air Systems) Relationship between solar fraction and dimensionless parameters D_1 and D_2.

3. Utilizing the correction factors K_1 and K_2, the corrected and final value of F_{annual} may be calculated as follows:

$$F'_{annual} = (K_1)\,(K_2)F_{annual}$$

F. Calculation of fraction of cooling and other loads supplied by solar energy (f_c), (f_o). Calculation of cooling and other solar contribution shall be determined in a manner similar to the process described for calculation of heating contribution.

1. Calculate cooling and/or other loads.

2. Apply the following parameters in the same manner as in Sections D and E.

a. Monthly incident solar radiation

b. Component parameters

3. Calculate the monthly fraction of load (less operating energy) supplied by solar system.

4. Calculate the annual fraction of load supplied by solar energy. Calculations shall be performed with the same degree of accuracy and with the same completeness, as those for determining solar heating contribution. Tables similar to A, B and C may be used for data presentation.

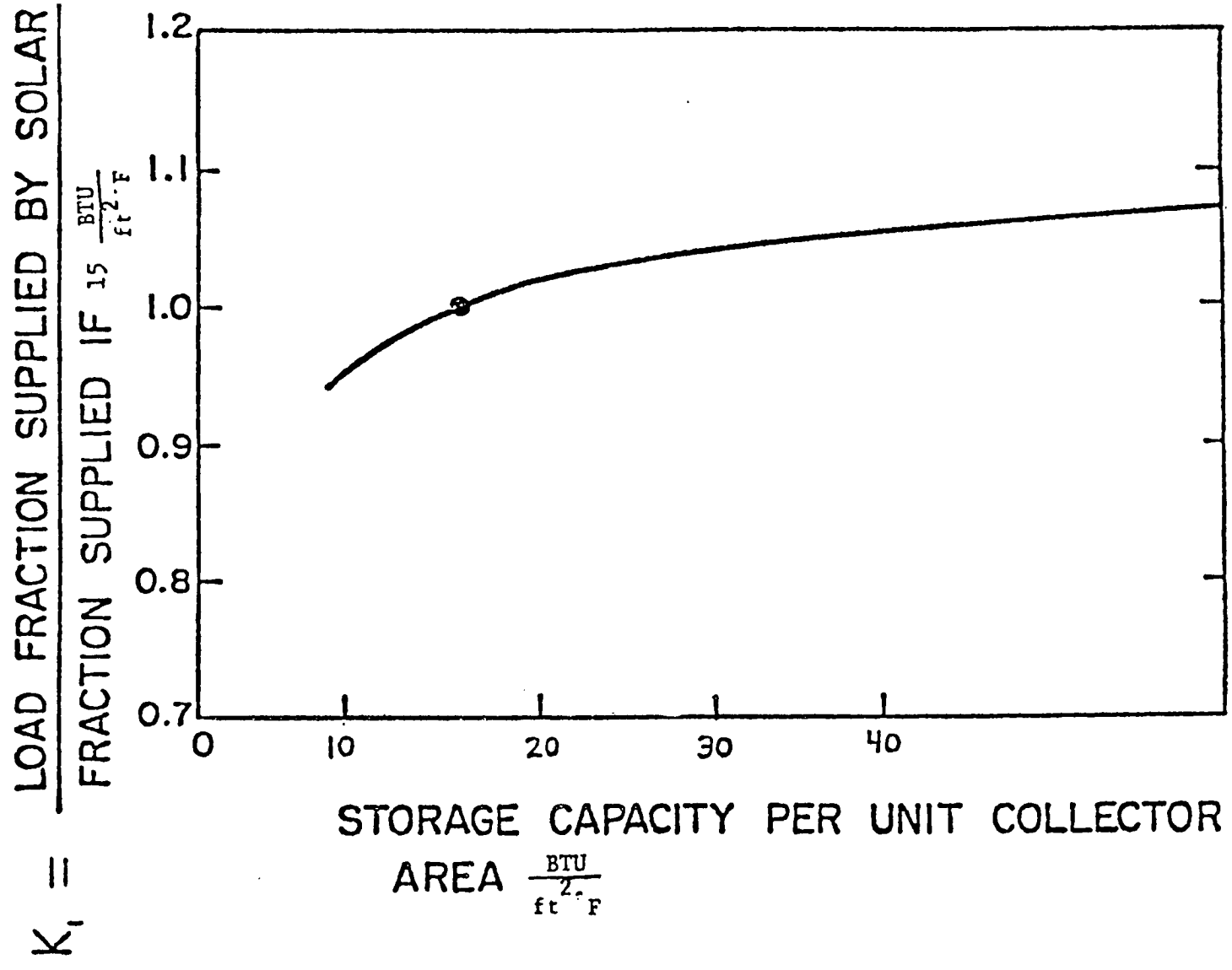

FIGURE 5-F Correction Factor (K_1) for Storage Capacities Other Than 15 BTU/ft² °F

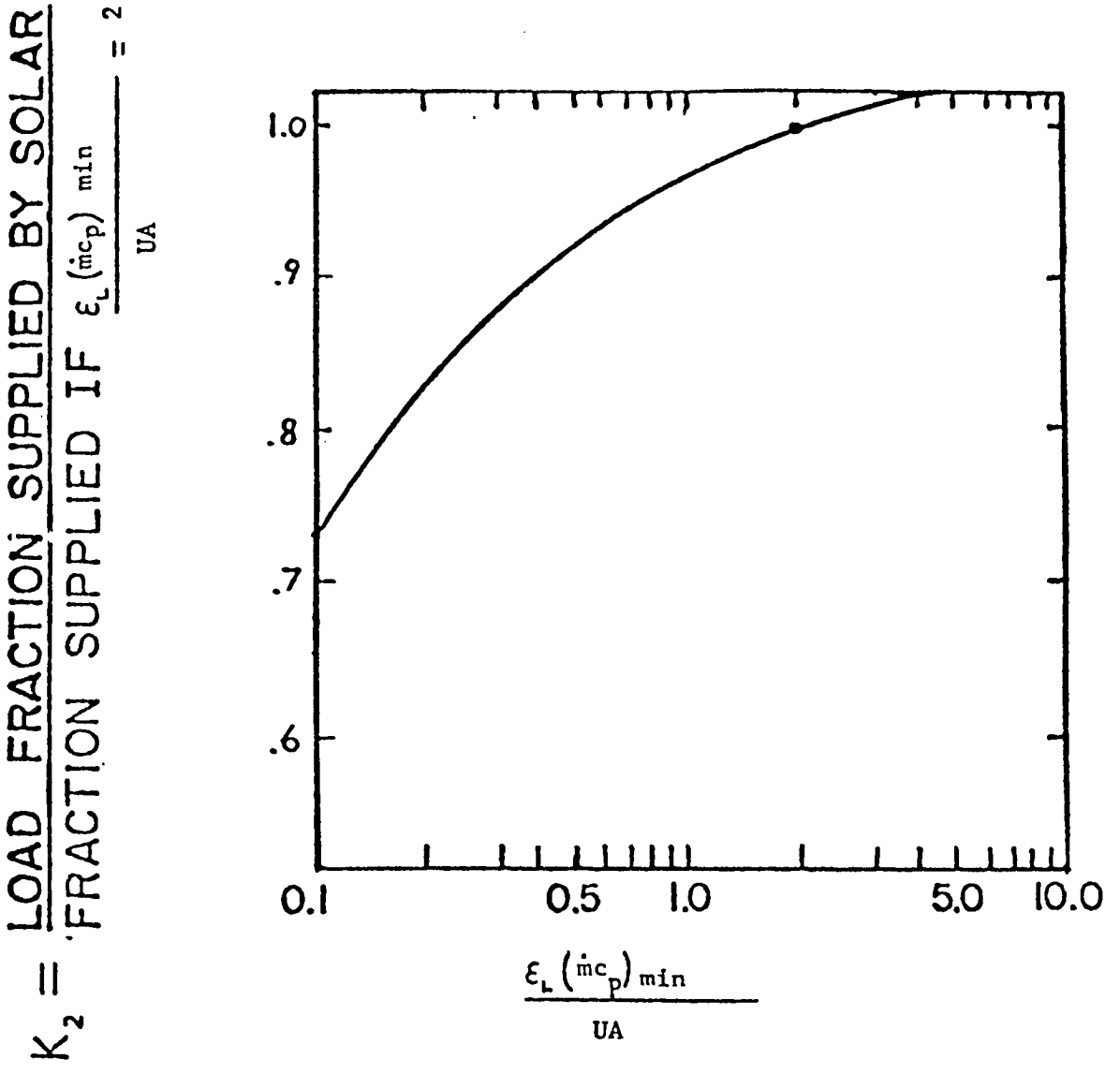

FIGURE 5-G Correction factor (K_2) for various values of $\epsilon_L(\dot{m}c_p)_{min}/UA$

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

TABLE A

DOMESTIC HOT WATER

SPACE HEATING LOAD

	DEGREE DAYS	BTU / MONTH Qs
Jan.		
Feb.		
Mar.		
April		
May		
June		
July		
Aug.		
Sept.		
Oct.		
Nov.		
Dec.		

q_d = _____ BTU/h

ΔT_d = _____ (°F)

UA = _____ BTU/h F

HEATING LOAD

DHW / MONTH m* Cal/lbm	BTU / MONTH Qw

* 1 gal=8.3 lbm

t_s = _____ °F

t_m = _____ °F

TOTAL HEATING LOAD

BTU / MONTH L=Qs + Qw	$\bar{t}_a$ (°F) Ambient Air Temperature

TAB B

Incident Solar Radiation

	$\frac{BTU}{Day\,ft^2}$ $\overline{I_H}$		$\overline{K_t}$	$\overline{R}$	$\frac{BTU}{Day\,ft^2}$ $\overline{I_T} = \overline{I_H}\overline{R}$	$\frac{BTU}{Month\,ft^2}$ S
Jan						
Feb						
Mar						
April						
May						
June						
July						
Aug.						
Sept.						
Oct.						
Nov.						
Dec.						

Component Parameters

latitude = ____

tilt = ____

I. Collectors

$F_R U_L =$ $\quad m =$

$F_R(\tau\alpha)_n =$ $\quad c_p =$

$A_c =$

II. Collector-Storage Heat Exchanger

$F_R'/F_R =$ $\quad \frac{(F_R U_L)A_c}{(\mathring{m}\, c_p)_c} =$

$\varepsilon_c =$ $\quad \frac{(\mathring{m}\, c_p)_c}{\varepsilon_c (\mathring{m} c_p)_{min}} =$

III. Storage

$M =$ $\quad c_p M/A_c =$

IV. Load Heat Exchanger

$\varepsilon_L =$ $\quad \frac{\varepsilon_L (\mathring{m} c_p)_{min}}{UA} =$

$(\mathring{m}\, c_p)_{min} =$

TABLE C

DIMENSIONLESS PARAMETERS

	BTU / MONTH L	BTU / MONTH ft² S	HRS / MONTH Δt	°F t_a	D1	D2
Jan.			744			
Feb.			696			
Mar.			744			
April			720			
May			744			
June			720			
July			744			
Aug.			744			
Sept.			720			
Oct.			744			
Nov.			720			
Dec.			744			

FRACTION OF THE TOTAL HEATING LOAD SUPPLIED BY SOLAR ENERGY

f	BTU / MONTH E

E total = _____

L total = _____

F annual = $\frac{\text{E total}}{\text{L annual}}$

= _____

K_1 = _____

K_2 = _____

F'annual = (K_1) (K_2) F annual

= _____

Department of Health

Operation of Health Facilities Grievance Mechanisms

The rules published at State Register Vol. 1, No. 22, p. 889, December 7, 1976 (1 S.R. 889), are adopted and are identical in every respect to their proposed form, with the following amendments:

Chapter Twenty-nine: Operation of health facilities grievance mechanisms.

7 MCAR § 1.521 Applicability. These rules apply to hospitals and outpatient surgery centers.

§ 1.522 Definitions. Definitions for these rules are as follows:

A. "grievance mechanism" means grievance and/or complaint procedures.

B. "hospital" means any entity licensed as such pursuant to Minn. Stat. §§ 144.50 to 144.56.

C. "outpatient surgery center" means a free standing facility organized for the specific purpose of providing elective outpatient surgery for preexamined prediagnosed low risk patients. Services provided at an outpatient surgery center shall be limited to surgical procedures which utilize local or general anesthesia and which do not require overnight inpatient care. "Outpatient surgery center" does not mean emergency medical services, or physician or dentist offices.

D. "patient" means an individual in or admitted to a hospital or outpatient surgery center for the purpose of prevention of disease, medical diagnosis or medical treatment. The term "patient" includes inpatient, outpatient and emergency room patient.

E. "representative" means a person designated by the patient as a responsible party, a parent of a minor, a guardian, or one who is in loco parentis to a patient unable to act for himself.

§ 1.523 Minimum standard. Every hospital and every outpatient surgery center shall establish, operate and maintain a grievance mechanism designed to process and resolve patient grievances in accordance with these rules.

§ 1.524 Procedural Requirements.

A. Designated Person. Every hospital and every outpatient surgery center, shall]], through their respective governing authorities,]] designate an individual, by name or by title, to be accountable for the operation of a grievance mechanism.

B. Complaints, generally.

1. Any patient, or his representative, may initiate any oral or written complaint related to those subjects specified in 7 MCAR § 1.525.

2. Such complaints may be made to [[the]] a person designated by the facility under 7 MCAR § 1.524 A., or to any other person authorized to receive complaints by the facility. A person authorized to receive complaints shall be physically within the facility and able to receive complaints during ordinary business [[and visiting]] hours. Persons authorized to receive complaints, other than [[the]] a person designated under 7 MCAR § 1.524 A., shall, in all complaint cases, report any response or resolution, or refer the complaint, to [[the]] a person designated under 7 MCAR § 1.524 A.

C. Time [[limits]] for response. [[When such complaints are made while the patient is in the facility, written response to them, or written notice of the resolution of the complaint, shall be provided to the complainant within the following time periods:

1. 24 hours for complaints relating to the following provisions of MHD 525: A.; B.; C.; G.; I.; K.; L.; M.; N.; O.; Q.; and T.

2. 72 hours for complaints relating to the following provisions of MHD 525: D.; E.; F.; H.; J.; R.; S.; and U.

3. 30 days for complaints relating to the following provisions of MHD 525: P.; and V.]]

Response to a complaint, or notice of the resolution of a complaint, shall be provided to the complainant as soon as possible. Such responses, or notices of resolution, shall be in writing, if requested by the complainant.

D. Notice of time limit. The authorized individual to whom [[the]] any oral complaint is made shall, [[within 4 hours]] upon receipt of the complaint, inform the complainant of [[the applicable time limit, in his best judgment, for response or resolution under MHD 524 C.1., 2., or 3.]] his best estimate of when the facility could respond to the complaint.

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[[E. Exception. If the condition of the patient in question presents an emergency situation preventing timely response to, or the resolution of, a complaint, the time limits specified in MHD 524 C.1. and 2. shall extend an additional 48 hours. In all such cases, a dated annotation of the existence of such an emergency situation shall be placed in the record required to be kept under MHD 524 G. and signed by the person asserting them in behalf of the facility.

F. Denials. The grounds on which denial of the action requested by the complainant can be based include the following:

1. the action sought by the claimant is medically and/or therapeutically contraindicated;

2. the action sought by the claimant would be violative of any of the rights, as prescribed in Minn. Stat. § 144.651, of other facility patients; or,

3. the action sought by the claimant would violate a written policy, approved by the facility's governing authority.

A dated annotation of any of the above grounds shall be placed in the patient's record and signed by the person asserting them.]]

[[G.]] E. [[Patient c]] Complaint records. The following complaint records shall be maintained according to patient by the facility [[for periods of time determined in a written policy approved by the facility's governing authority:]] for at least one year:

1. an annotation of the date, time and substance of each complaint made by, or in behalf of, any patient;

2. a reference to any previous complaints made by, or in behalf of, the same patient during his current stay in the facility; and

3. an annotation of the date, time and substance of any response to, denial of, or resolution of, the complaint.

The arrangement of such records shall be such that identification of particular patients and complainants is possible.

[[H.]] F. Patient notice.

1. Notice of mechanism. Written notice of the existence and availability of the grievance mechanism shall be posted conspicuously in all facilities, along with the notice required under Minn. Stat. § 144.652, and furnished, [[along with the notice required under Minn. Stat. § 144.652, to the patient or his representative upon admittance to the facility.]] unless an emergency prevents such furnishing, to the patient or his representative if and when the former is actually admitted to the facility. If an individual patient notice is required to be furnished to the patient or his representative under Minn. Stat. § 144.652, written notice under these rules shall be furnished at the same time.

2. Content of the notice. Such written notice shall include the following:

a. a statement that complaints or grievances related to rights expressed in the Patients' Bill of Rights (Minn. Stat. § 144.651), or to any other rights, may be able to be resolved within the facility;

b. a statement that the facility maintains a grievance mechanism for this purpose; [[and,]]

c. a statement specifying an individual or type of individual to whom such complaints or grievances can be directed[[.]] ; and,

d. a statement that any complainant has the right to request and to receive a written response to any complaint.

§ 1.525 Patient complaints. Complaints relating to at least the following shall be subject to being processed through a grievance mechanism;

A. lack of considerate or respectful care;

B. failure to provide complete, current and understandable information concerning diagnosis, treatment or prognosis;

C. failure to provide the name and specialty, if any, of the physician responsible for coordination of care;

D. failure to afford consideration [[or]] of privacy;

E. failure to afford consideration of individual social, religious and psychological well-being;

F. failure to preserve the confidentiality of the medical care program;

G. failure to provide, upon request, information bearing on the individual case with respect to any relationship of the facility to other health services facilities, medical groups and other similar entities;

H. failure to afford continuity of care;

I. failure to provide requested information, prior to

or at the time of admission and during the period spent in the facility, relating to charges for care;

J. failure to afford the opportunity to participate in the planning of medical treatment;

K. failure to inform of, or to offer an opportunity to refuse to participate in, experimental research;

L. retaliatory, arbitrary, or otherwise medically unjustifiable discharge;

M. interference with or retaliation for the free exercise of any legally prescribed rights;

N. mental and/or physical abuse;

O. medically unjustifiable physical and/or chemical restraints;

P. failure to comply with lawful requests to release or to withhold medical records;

Q. requiring the performance of services not included for therapeutic purposes in the plan of care;

R. restriction of the right to associate and communicate privately with others;

S. interference with the sending and receipt of personal mail;

T. restriction of the rights to meet with representatives and to participate in commercial, religious and community activities;

U. restriction of the right to retain and use personal clothing and possessions, to the extent that space permits; and,

V. failure to respond to questions concerning billing practices, the amount of a specific bill, and the like.

§ 1.526 Reports. Every hospital and every outpatient surgery center, shall, on or before each February first, submit to the [[state board]] Commissioner of health a report on the experience of their respective grievance mechanisms during the immediately preceding calendar year. Such reports shall include at least the following information:

A. the name and location of the reporting institution;

B. the reporting period in question;

C. the name of the individual(s) responsible for the operation of the grievance mechanism;

D. the total number of complaints [[received by]] filed with the facility pursuant to 7 MCAR § 1.524 B.1.;

E. the total number of complaints, according to classification under 7 MCAR § 1.525;

F. the total number of any other complaints;

G. the number of patients by whom or for whom more than one complaint was made and the total number of such complaints; and,

H. the total number of complaints resolved to the patient's apparent satisfaction.

§ 1.527 Schedule of fines.

A. Patient notification and complaint mishandling.

1. Grounds; fine amounts. The following violations of these rules shall constitute grounds for the automatic assessment of a per violation $50 fine:

a. failure to give[[n]] individual patient notice, as required under 7 MCAR § 1.524 H.; and,

b. failure to respond to a patient complaint [[within the applicable time limits]] as soon as possible, as required under 7 MCAR § 1.524 C.

Multiple violations with respect to the current stay of a particular patient shall result in fines which in no case exceed $200. Such fines are payable within 30 days of the automatic assessment, unless there is a facility request for a hearing. Such a request shall stay the collection of the assessed fines, pending the outcome of the hearing.

B. Inadequate or improperly functioning mechanism.

1. Grounds. The following violations of these rules shall constitute grounds for the issuance of a correction order:

a. failure to have a grievance mechanism, as required under 7 MACR § 1.523;

b. failure to designate [[a person]] an indivi-

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dual, by name or title, to be responsible for the operation of a grievance mechanism, as required under 7 MCAR § 1.524 A.;

c. failure to have an individual within the facility and able to receive complaints during ordinary business [[and visiting]] hours, as required under 7 MCAR § 1.524 B.2.;

d. failure to maintain patient complaint records, as required by 7 MCAR § 1.524 [[G.]] E.;

e. failure to post notice, as required by 7 MCAR § 1.524 [[H.]] F.;

f. failure to submit an annual report, as required by 7 MCAR § 1.526; and,

g. failure to fulfill the criteria for content of the annual report, as required by 7 MCAR § 1.526 A.

2. Time periods for correction. In no case may the allowable period for correction of any of the violations in 7 MCAR § 1.527 B.1. exceed 60 days. In no case may the allowable period for correction of violations in 7 MCAR § 1.527 B.1.d., f., or g. be less than 20 days.

3. Fine amounts. The amounts which shall be assessed in the event that the facility does not comply with correction orders within the allocated period of time are as follows:

a. violations as described in 7 MCAR § 1.527 B.1.a. — up to $200 per violation;

b. violations as described in 7 MCAR § 1.527 B.1.b. — up to $100 per violation;

c. violations as described in 7 MCAR § 1.527 B.1.c. — up to $150 per violation;

d. violations as described in 7 MCAR § 1.527 B.1.d. — up to $50 per violation;

e. violations as described in 7 MCAR § 1.527 B.1.e. — up to $100 per violation;

f. violations as described in 7 MCAR § 1.527 B.1.f. — up to $200 per violation; and,

g. violations as described in 7 MCAR § 1.527 B.1.g. — up to $100 per violation.

Such fines are payable within 30 days of the assessment, unless there is a facility request for a hearing within that period. Such a request shall stay the collection of the assessed fines, pending the outcome of the hearing.

§ 1.528-535 Reserved for future use.

7 MCAR § 1.370 Governing body; consumer members; enrollee participation; complaint system.

Sections A. through E. remain unchanged.

F. Records of complaints. Every health maintenance organization shall maintain a record of each complaint filed with it during the prior three years. The record shall, where applicable, include:

1. The complaint or a copy thereof and the date of its filing.

2. A brief written summary of the outcome of all informal discussions, consultations or conferences held relative to each complaint and the date or dates on which each such informal discussion, consultation or conference occurred. Such summary shall include an acknowledgment by those participating in the form of their signatures.

3. The date or dates of any hearing and a copy of the hearing findings given the enrollee complainant.

4. The dates of commencement and conclusion of another processing conducted in accordance with 7 MCAR § 1.370 E.; and a copy of the concise written record of all findings and recommendations arising therefrom, which record shall include an acknowledgment by those participating in the form of their signature.

5. The date of submission of any complaint to arbitration; a copy of the arbitrator's decision; and the date of the decision.

6. A brief written summary, including the filing date, of each complaint which becomes a subject of litigation; a brief written summary, with dates, of the findings or outcome of any prior processing held relative to the complaint; and a brief written statement describing the outcome of the complaint or claim as determined in litigation.

G. Complaint reports. Every health maintenance organization shall[[, on or before each February first,]] submit to the [[state board]] Commissioner of [[h]] Health, along with its annual report, a report on the experience of its respective complaint system during the immediately preceding calendar year. Such reports shall include at least the following information:

1. the name and location of the reporting health maintenance organization;

2. the reporting period in question;

3. the name of the individual(s) responsible for the operation of the complaint system;

4. the total number of written complaints received by the health maintenance organization;

5. [[a copy of the written summaries of informal discussions, consultations and conferences required to be kept for each complaint under (f) (2) of this rule;]]

the total number of written complaints received, classified as to whether they were principally medical care, psychosocial, or coverage-related in nature, or classified according to a classification most suited to the characteristics of the particular health maintenance organization, unless unduly burdensome;

6. the number of enrollees by whom or for whom more than one written complaint was made and the total number of such complaints; and,

7. the total number of written complaints resolved to the enrollee's apparent satisfaction.

Pollution Control Agency

Label Requirements and Issuance of Exemptions for Use of Polychlorinated Biphenyls (PCB's)

The rules published at State Register Vol. 1, No. 42, p. 1545, April 25, 1977 (1 S.R. 1545), are adopted and are identical in every respect to their proposed form, with the following amendments:

WPC 38 Requirements for labeling of products containing PCB and for issuing certificates of exemption for the use, possession, sale, purchase or manufacture of PCB or products containing PCB.

C. Certificate of Exemption.

C.1. Application.

C.1.a. Existing facilities, equipment and product. Any person who presently uses, possesses, sells, purchases or manufactures PCB or a product containing PCB shall submit a complete application for a certificate of exemption for such PCB or products containing PCB within 90 days after the effective date of this regulation.

C. 1. b. New facilities, equipment and products. Any person who intends to use, possess, sell, purchase or manufacture PCB or a product containing PCB shall submit a complete application for a certificate of exemption for such PCB or products containing PCB at least 180 days prior to the proposed date of use, possession, sale, purchase or manufacture of PCB or a product containing PCB.

C.1.d. Contents of Application.

(1) The application for certificate of exemption shall include:

(a) The name and address of the applicant.

(b) The amount of PCB involved in the use, possession, sale, purchase, or manufacture or contained in a product containing PCB. In instances where the amount of PCB involved is not ascertainable by applicant, applicant shall supply the name and mailing address of the manufacturer of such product and serial and model number, if any, of the product involved. In all such cases wherein the amount of PCB involved cannot be reasonably ascertained by an applicant, the applicant shall make an estimate of the amount of PCB involved.

C.3. Public notice of certificate of exemption application.

C.3.b. Availability of Public Notice.

(1) The Director shall mail a copy of the public notice to the applicant. The Director shall mail a copy of the public notice to any [[and to]] interested persons upon written request.

C.3.c. Public notice comment period.

(1) Any interested person, including the Applicant, may, within [[30 days]] the time allowed for public comment following the issuance of the public notice, submit written comments on the certificate of exemption application to the agency. The time for public comment shall be 30 days unless otherwise extended by the Director. The time for public comment may be extended by the Director if he determines that such extension is necessary to facilitate public comment.

C.3.d. Public notice contents.

(5) A statement that any interested person may submit written comments to the agency during the public comment period. [[for 30 days]] after the issuance of the public notice.

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(6) The date the [[30 day]] public comment period terminates.

C.4. Public hearing on certificate of exemption application.

C.4.a. The applicant or any interested person may, within the [[30 day]] public comment period, file a petition with the Director for public hearing on a certificate of exemption application. A petition for public hearing shall include:

(1) The basis for the hearing request.

(2) The specific portion of the draft certificate of exemption, if one has been prepared pursuant to section C.2 of this regulation, that necessitates a public hearing.

(3) The interest in or relationship of the petitioner to the applicant.

[[The Agency shall, in its discretion, grant or deny the hearing request.]]

C.8. Subsequent uses. If the Agency issues a certificate of exemption for the use of PCB or a product or class of products containing PCB, the certificate of exemption shall be valid for all subsequent uses of such PCB or [[the]] product or class of products containing PCB if the subsequent uses are consistent with the terms and conditions of the original certificate of exemption.

C.9. Modification, suspension, and revocation of certificate of exemption.

C.9.c. Opportunity for public hearing. Any exempt person may request, in accordance with Minn. Reg. MPCA 9(b), the Agency to hold a public hearing on the proposed modification, suspension or revocation. [[The Agency shall, in its discretion, grant or deny the hearing request.]] The Agency, upon its own motion, may order that a public hearing be held. In issuing its order of modification, suspension or revocation of a certificate of exemption, the Agency shall state the reasons for such action.

E. Exemptions.

1. The following uses of PCB or products containing PCB are exempted by the Agency:

c. Any electrical ballast, capacitator or transformer which contains less than one kilogram of PCB.

Department of Public Service
Public Service Commission
Automatic Adjustment of Charges for Public Utility Service for Gas and Electric Regulation

Chapter Eleven: PSC 390-395. Readers should note that the following are totally new rules.

PSC 390 Definitions. For the purpose of rules 390-395, the following definitions shall apply:

A. "Annual Sales Volume" is the sum of the Mcf or Ccf of gas delivered during the most recent 12 months of the 14 month period preceding a change in the city gate rate or end of the heating season for which actual data is available.

B. "Annual Demand Sales Volume" is the annual sales volume adjusted by an average percentage change in sales computed over the preceding 3 year period, normalized for weather. Annual Demand sales volume shall include interruptible sales to the extent that demand cost is incurred to service interruptible customers.

C. "Base Cost" is the cost of fuel consumed in the manufacture of gas or generation of electricity and purchased gas or purchased power in the base period expressed as a cost per kilowatt hour sold or cost per Mcf or Ccf sold.

D. "Base Period" is the 12 month period during which the automatic adjustment of charges is set at zero.

E. "City Gate Rate" is the demand or commodity rate charged a distribution gas utility by its supplier. It refers to the cost of gas at the point at which the distribution utility takes title to the gas.

F. "Cost of Energy Purchased" is the cost of purchased power and net interchange defined by the Minnesota Uniform System of Accounts — Class A and B electric utilities, Account 555 and purchased under federally regulated wholesale rates for energy delivered through interstate facilities. All electric public utilities shall use this definition regardless of class.

G. "Cost of Fuel Consumed in the Generation of Electricity" is the cost of fossil and nuclear fuel.

H. "Cost of Fossil Fuel" is the current period withdrawals from Class A and B utilities. All electric public utilities shall use this definition regardless of class.

I. "Cost of Nuclear Fuel" is the current period charges and credits to Account 518, of the Minnesota Uniform Sys-

tem of Accounts — Class A and B electric utilities excluding any expenses for the cost of fossil fuel. All electric public utilities shall use this definition regardless of class.

J. "Cost of Fuel Consumed in the Manufacture of Gas" is the withdrawals, during the heating season, from Account 151 as defined by the Minnesota Uniform System of Accounts — Class A and B gas utilities. All gas public utilities shall use this definition regardless of class.

K. "Cost of Purchased Gas" is the cost of gas as defined by the Minnesota Uniform System of Accounts — Class A and B gas utilities, Account 804, 808 and 809 and purchased under federally regulated wholesale rates for energy delivered through interstate facilities. All gas public utilities shall use this definition regardless of class.

L. "Current Period" is the most recent two month moving average used in computing an automatic adjustment of charges. Upon approval of the Commission, a self billing utility may use a longer period, not to exceed 12 months, provided that the provision contains a settlement procedure. All electric utilities shall use this definition.

M. "Heating Season" is the period from October 1 to April 30.

N. "Kilowatt-Hour Sales" is the kilowatt-hour delivered during the current or base period less interchange sales. This is the divisor used to obtain current period cost and base period cost per Kwh in PSC 392 B.

O. "Prime Interest Rate" means the average of the daily prime lending rates offered to preferred customers at the largest bank in the Ninth Federal Reserve District during the period. The largest bank is that bank with the greatest total outstanding deposits as of the end of the calendar year preceding the notice of change in rates.

P. "Public Utilities" is as defined by Section 2, Subdivision 4 of the Minnesota Public Utilities Act.

PSC 391 Applicability and types of automatic adjustment of charges.

A. The Commission shall permit the filing of rate schedules containing provisions for the automatic adjustment of charges provided such provisions conform to PSC 392-395.

B. PSC 390-395 shall be applicable to all classes of public utilities.

C. Provisions for automatic adjustment of charges shall encompass:

1. Changes in cost resulting from changes in the federally regulated wholesale rate for energy purchased and changes in the cost of fuel consumed in the generation of electricity. This provision is entitled electric energy adjustment.

2. Changes in cost resulting from changes in the federally regulated wholesale rate for purchased gas and changes in the cost of fuel consumed in the manufacture of gas. This provision is entitled purchased gas adjustment.

PSC 392 Electric energy adjustment. The computations of the automatic adjustment to charges shall conform to the procedures set forth below:

A. The amount of the billing period adjustment to charges shall be determined by extending Kwh of sales in the billing period by an adjustment per Kwh. The adjustment per Kwh or the amount of adjustment shall be stated on the customer's bill to comply with PSC 313.

B. The adjustment per Kwh shall be the sum of the current period cost of energy purchased and cost of fuel consumed per Kwh less the base cost per Kwh.

C. The adjustment to charges shall be made in the next complete billing period succeeding the determination of the adjustment per Kwh provided the adjustment has been filed as defined by PSC 394(b). The adjustment factor shall be calculated monthly. Except, upon Commission approval, a self billing utility may calculate the adjustment less frequently but at least annually and must provide for a settlement procedure. The adjustment must be applied each month. The adjustment amount shall be rounded such that the projected recovery is within 2% of the change in total cost.

PSC 393 Purchase gas adjustment provision. The computation of the automatic adjustment to charges shall conform to the procedures set forth below:

A. The amount of the billing period adjustment to charges shall be determined by extending Mcf or Ccf sales in the billing period by an adjustment per Mcf or Ccf. The adjustment per Mcf or Ccf or the amount of the adjustment shall be stated on the customer's bill to comply with PSC 313.

B. The adjustment per Mcf or Ccf is the sum of the commodity adjustment, demand adjustment and manufactured gas adjustment as computed below:

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1. The commodity adjustment is the difference between the commodity cost which results from a change in the city gate rate and the commodity base cost. To properly reflect adjustment per Mcf or Ccf billed, the divisor for a particular class of customer must include total sales volume delivered to that class of customer. The adjustment shall be applied to billings after the effective date of the commodity rate change provided the adjustment has been filed as defined by PSC 394 B.

2. The demand adjustment is the difference between the annual demand cost which results from a change in the city gate rate and the demand base cost. In the event the demand city gate rate does not change the demand adjustment shall be recalculated for each 12 month period from the date of the last change. The adjustment shall be computed on the basis of annual demand sales volume and applied to billings after the effective date of the demand rate change provided the adjustment has been filed as defined by PSC 394 B.

3. The manufactured gas adjustment is the difference between the cost of propane and other fuel consumed in the manufacture of gas during the heating season and the manufactured gas base cost. The manufactured gas adjustment shall be computed annually for the heating season ending April 30 of each year on the basis of firm annual sales volume adjusted to the extent manufactured gas is used to serve interruptible customers. The cost of manufactured gas shall be applied to interruptible customers. The adjustment shall be applied to billings during the next 12 months period commencing on June 1 of each year provided the adjustment has been filed as defined by PSC 394 B.

C. Refunds and interest thereon received from the suppliers of purchased gas which are attributable to the cost of gas previously sold shall be refunded by credits to bills or check within a period not to exceed 12 months. The utility shall add interest to the unrefunded balance at the prime interest rate.

PSC 394 Filing requirements and approvals electric energy and purchase gas adjustments.

A. All public utilities shall file annually on October 31 of each year, the procurement policies for selecting sources of fuel and energy purchased and dispatching policies, if applicable, and a summary of actions taken to minimize cost.

B. Whenever a public utility changes its automatic adjustment of charges, the utility shall prior to the effective date, file the following:

1. A summary of the computation of the adjustment.

2. An explanation of significant changes between the base cost and current cost. Changes for electric utilities shall be quantified as to price, mix, thermal efficiency and distribution loss. Changes for gas utilities shall be quantified as to price and mix changes.

3. A computation of standard cost for the current reporting period, if available. The standard cost for this computation may be either the planned or budgeted cost of fuel or simulation of the cost of fuel under normal operating and purchasing limits for the adjustment period or current period.

C. Automatic adjustment of charges shall be provisionally approved and may be placed into effect without Commission action, but subject to the conditions specified in PSC 394 D. and E.

D. Errors made in adjustment must be refunded by check or credits to bills to the consumer in an amount not to exceed the amount of the error plus interest computed at the prime rate upon the order of the Commission provided that:

1. Such order is served within 90 days after the receipt of the filing defined in rule PSC 394 B. or at the end of the next major rate proceeding, which ever is later.

2. The amount of the error is greater than 5% of the corrected adjustment charge.

E. The Commission may upon complaint or upon its own motion, after appropriate investigation, notice and hearing, issue an order to fix at current levels, discontinue or modify an automatic adjustment provision for an individual utility.

PSC 395 Implementation.

A. Existing automatic adjustment provisions in effect on the effective date of these Rules which will not result in adjustment amounts materially greater than those determined by PSC 390 to 395 shall continue in effect until the Commission upon its own motion or upon complaint, after appropriate notice and hearing, shall order otherwise.

B. Adjustments made pursuant to automatic adjustment provisions in effect on the effective date of these Rules which may result in adjustment amounts materially greater than those determined by PSC 390 to 395 shall be frozen by the utility at the level of any such automatic adjustments shall, on the effective date of PSC 390 to 395, be submitted to the Department of Public Service within 30 days.

C. When a utility proposes new or revised electric energy or purchased gas adjustment provisions, the proposal shall be deemed a change in rates and reviewed according to Commission Rules and practices relating to utility rate changes.

D. If existing automatic adjustments of charges are continued under the provision of PSC 395 A. then the filing requirements of PSC 394 B. shall apply.

PROPOSED RULES

Department of Administration
Building Code Division
Amendments to the State Building Code
Notice of Hearing

NOTICE IS HEREBY GIVEN that a public hearing in the above-entitled matter will be held in Room 83, State Office Building, Aurora and Fuller Streets, St. Paul, Minnesota on November 28, 1977 commencing at 10:00 a.m. and continuing until all persons have had an opportunity to be heard.

All interested or affected persons will have an opportunity to participate. Statements may be made orally and written materials may be submitted at the hearing. In addition, written materials may be submitted by mail by Peter Erickson, State Hearing Examiners Office, Room 300, 1745 University Avenue, St. Paul, Minnesota 55104, 612/296-8118, either before the hearing or within 5 days or up to 20 days after the close of the hearing upon order of the hearing examiner.

The proposed rules, if adopted, will bring about changes that will place nationally recognized standards and refined changes in line with the state of the art in the use of materials and methods of construction within the State of Minnesota. Copies of the proposed rules are now available and one free copy may be obtained by writing to the Building Code Division, 408 Metro Square Building, 7th and Robert Streets, St. Paul, Minnesota 55101. Additional copies will be available at the door on the date of the hearing. The agency's authority to promulgate the proposed rules is contained in Minn. Stat. 16.86 (1974). A "statement of need" explaining why the agency feels the proposed rules are necessary and a "statement of evidence" outlining the testimony they will be introducing will be filed with the Hearing Examiners Office at least 25 days prior to the hearing and will be available there for public inspection.

Please be advised that pursuant to Minn. Stat. 10A.01, subd. 11 (1974) any individual engaged for pay or other consideration for the purpose of representing persons or associations attempting to influence administrative action, such as the promulgation of these rules, must register with the State Ethics Commission as a lobbyist within five days of the commencement of such activity by the individual.

Richard L. Brubacher
Commissioner of Administration

The Composition and Use of the State Building Code

The State Building Code, to be known as the "Code", includes several documents or codes pertaining to buildings. They are as follows:

1. State Building Code regulations known and identified by the prefix "SBC".

2. SBC adopting by reference the following codes:

(a) [1973] **1976** Edition of the Uniform Building Code, identified as "UBC";

(b) 1975 National Electrical Code, identified as "NEC";

(c) 1971 American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, identified as ANSI A17.1-1971 and Supplements ANSI A17.1a-1972, ANSI A17.1b-1973, **ANSI A17.1e-1974, ANSI A17.1d-1975, ANSI A17.1e-1975, ANSI A17.1f-1975 and ANSI A17.1g-1976.**

(d) [1973] **1976** Minnesota Plumbing Code, identified as MHD 120 through MHD 135;

(e) "Flood Proofing Regulations", Office of the Chief Engineers, U.S. Army

3. SBC Minnesota Heating, Ventilating, Air Conditioning and Refrigeration Code, identified as SBC [7601] **7101** through **8505.**

4. "Design and Evaluation Criteria for Energy Conservation in New Buildings, Additions and Remodeled Elements of Buildings and **Standards for Certain existing Public Buildings,"** identified as 2 MCAR Section 1.16001 through 2 MCAR Section 1.16006. **(SBC 6007 through SBC 6013 reserved for future use.)**

5. State of Minnesota Mobile Home **Installation Standards 1977.**

6. Certain appendices which contain the listing of various National Standards referred to in the body of the code; technical requirements for fallout shelters; and various chapters of those codes adopted by reference which chapters may be adopted by municipalities and administered and enforced by such municipalities. The Code is to be used in its entirety by the municipalities in administering and enforcing the

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Code as well as by designers and builders in their designs and construction of structures. It is necessary to use the entire Code to ensure uniformity in compliance with the Code as well as uniformity in its administration and enforcement.

The above referenced SBC and MHD Codes are available from the Department of Administration Documents Section, 140 Centennial Office Building, St. Paul, Minnesota 55155.

Other codes are available from the publishers of the codes.

(a) Uniform Building Code:
International Conference of Building Officials
5360 South Workman Mill Road
Whittier, California 90601

(b) National Electrical Code:
National Fire Protection Association
470 Atlantic Avenue
Boston, Massachusetts 02110

(c) American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks:
American Society of Mechanical Engineers
United Engineering Center
345 East 47th Street
New York, New York 10017

(d) **ASHRAE Standard 90-75**
American Society of Heating, Refrigeration, and Air-Conditioning Engineers Inc.
New York, New York 10017

Each provision of SBC 101 through SBC 111 and 201, 202, 203 and 204 is deleted in its entirety, and the following is adopted in lieu thereof:

Table of Contents

Rules as Adopted.

SBC 101 Title. Rules and regulations. The rules and regulations contained in this Code and rules and standards adopted by reference therein shall be collectively known as the Minnesota State Building Code, and may be cited as such and will be referred to herein as "this code".

SBC 102 Purpose and application. The purpose of this Code is to provide uniform standards to safeguard life or limb, health, property and public welfare by regulating and controlling design, construction, quality of materials, use and occupancy of all buildings and structures.

The State Building Code shall apply state-wide and supersede the building code of any municipality. The State Building Code shall not apply to agricultural buildings except with respect to state inspections required or rulemaking authorized.

SBC 103 Definitions. Wherever the term "Administrative Authority" appears in this Code the words "Building Official" shall be substituted therefor.

Wherever the terms "Mayor" or "City Council" appear in this Code the words "Governing Body" shall be substituted therefor.

"City" means a home rule charter or statutory city.

"Municipality" means any city, county, or town.

"Code" means the State Building Code or any amendments thereof.

SBC 104 Scope. The provisions of this Code shall apply to the construction, alteration, moving, demolition, repair and use of any building or structure within the city, except work located primarily in a public way, public utility towers and poles, mechanical equipment not specifically regulated in this Code, and hydraulic flood control structures.

Additions, alterations, repairs and changes of use or occupancy in all buildings and structures shall comply with the provisions for new buildings and structures except as otherwise provided in UBC Sections 104, 306 and 502 of this Code. Where, in any specific case, different sections of this Code specify different materials, methods

of construction or other requirements, the most restrictive shall govern.

Wherever in this Code reference is made to the Appendix, the provisions in the Appendix shall not apply unless specifically adopted.

The provisions of this Code relating to fallout shelters shall apply only to state-owned buildings.

SBC 105 Fallout shelters. Whenever it has been determined by the Department of Public Safety, Division of Civil Defense and the State Architectural Engineer that fall-out protection is needed for a particular location the "Technical Requirements for Fall-Out Shelters" as contained in Appendix "B" shall be complied with.

SBC 106 State-owned buildings. State owned buildings shall mean all buildings and structures financed in whole or in part by state funds and which are under the exclusive jurisdiction and custodial control of one or more state department or agencies.

SBC 107 State plan checking fees. Plan checking of buildings or structures conducted by the Division shall have a fee based on valuation in accordance with Table No. 111-A. "Valuation" means the total cost of construction exclusive of site work not related to the construction.

There shall be no additional fee charge for consultation with designers, or for re-checking provided no substantial change in the design has been made. When, in the opinion of the Division, a substantial change has been made in the design, the re-checking fee shall be based on a rate of $15.00 per hour or fraction thereof. No fee shall be charged for state-owned buildings.

TABLE NO. 111-A

VALUATION	PLAN CHECK FEE
$ 3,000.00 or less	No Charge
3,001,00 to 5,000,00	$ 21.00
5,001.00 to 10,000.00	34.00
10,001.00 to 15,000.00	47.00
15,001.00 to 20,000.00	60.00
20,001.00 to 25,000.00	72.00
25,001.00 to 30,000.00	83.00
30,001.00 to 35,000.00	93.00
35,001.00 to 40,000.00	102.00
40,001.00 to 45,000.00	112.00
45,001.00 to 50,000.00	122.00
50,001.00 to 55,000.00	129.00
55,001.00 to 60,000.00	135.00
60,001.00 to 65,000.00	142.00
65,001.00 to 70,000.00	148.00
70,001.00 to 75,000.00	155.00
75,001.00 to 80,000.00	161.00
80,001.00 to 85,000.00	168.00
85,001.00 to 90,000.00	174.00
90,001.00 to 95,000.00	181.00
95,001.00 to 100,000.00	187.00
100,001.00 to 500,000.00	187.00 for the first $100,000.00 plus $1.00 for each additional $1,000.00 or fraction thereof.
500,001.00 and up	577.00 for the first $500,000.00 plus $.65 for each additional $1,000.00 or fraction thereof.

SBC 108 Disclaimer clause. The inclusion of specific requirements relative to the manner of installation of any plant or equipment in any one or more parts of said Code shall not limit this procedure to any particular type of installer nor provide a basis upon which determination of the right to perform such procedures shall be made. The authority for such determination will be found in the various licensing ordinances for each type of installer who performs the work.

SBC 109 Appendices.

A. The following appendices, annexes and supplemental material listed in the code shall be mandatory to enforce by any municipality.

1. SBC Appendix A Variation in Snow Loads

2. 1976 UBC Appendix, Chapters 23, 35

3. Minnesota Plumbing Code Appendix B

B. The following appendices, annexes and supplemental material listed in the Code shall not be mandatory but may be adopted without change at the discretion of any municipality.

1. SBC Appendix B. Abbreviations and addresses of Technical Organizations

2. 1976 UBC Appendix, Chapters 13, 15, 32, 38, 41, 48, 49, 51, 57 and 70.

3. Minnesota Plumbing Code Appendices A, C, D, E and F

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4. Flood Proofing Regulations, Sections 201.2 through 208.2

SBC 110 Adoption of "Flood Proofing Regulations."

Sections 100 through 1406 of the 1972 Edition of "Flood Proofing Regulations" as promulgated by the Office of the Chief Engineers, U.S. Army, Washington, D.C. is incorporated by reference and hereby made a part of the State Building Code subject to the following amendments:

(Sections 201.2 through 208.2 are placed in the appendix of this Code.)

Section 200.2 is amended to read as follows:

Official Flood Plain Zoning Map: The Official Flood Plain Zoning Map showing the extent and boundaries of the Primary and Secondary Flood Hazard Areas is hereby declared and established as part of these Regulations. Hereinafter reference to the term Primary Flood Hazard Areas in these regulations shall be synonymous with the term "flood plain areas" as used in the Minnesota Regulations NR 85-93.

Section 200.3 is amended to read as follows:

Regulatory

Flood Datum: For the purpose of these regulations, the Regulatory Flood Datum, or as hereinafter referred to as the "RFD", is hereby declared and established for use as the reference datum for determining the elevation above mean sea level to which flood-proofing protection shall be provided. Hereinafter reference to the term "Regulatory Flood Datum" in these regulations shall be synonymous with the term "flood protection elevation" as used in Minnesota Regulations NR 85-93.

Section 201.1 is amended to read as follows:

Application: These regulations shall apply to the construction, alteration, and repair of any building or parts of a building or structure in the Flood Hazard Area(s) of the municipalities. Additions, alterations, repairs and changes of use occupancy shall comply with all provisions for new buildings and structures as otherwise required in the Building Code, except as specifically provided in these Regulations.

Section 201.2 is amended to read as follows:

Nonconforming Use: A structure or the use of a structure or premises which was lawful before the passage or amendment of the ordinance but which is not in conformity with the provisions of these Regulations may be continued subject to the following conditions:

1. No such use shall be expanded, changed, enlarged or altered in a way which increases its nonconformity.

2. No structural alteration, addition, or repair to any conforming structure over the life of the structure shall exceed 50 percent of its value at the time of its becoming a nonconforming use, unless the structure is permanently changed to a conforming use.

3. If such use is discontinued for 12 consecutive months, any future use of the building premises shall conform to these Regulations. The assessor shall notify the zoning administrator in writing of instances of nonconforming uses which have been discontinued for a period of 12 months.

4. If any nonconforming use or structure is destroyed by any means, including floods, to an extent of 50 percent or more of its assessed value, it shall not be reconstructed except in conformance with the provisions of these Regulations; provided, the Board of Appeals may permit reconstruction if the use or structure is located outside the floodway and is adequately and safely flood-proofed, elevated, or otherwise protected in conformance with these Regulations.

5. Uses or adjuncts thereof which are or become nuisances shall not be entitled to continue as nonconforming uses.

6. Except as provided in "The Building Code," any use which has been permitted as a special exception shall not be deemed a nonconforming use but shall be considered a conforming use.

7. Any alteration, addition, or repair to any nonconforming structure which would result in substantially increasing its flood damage or flood hazard potential shall be protected as required by these Regulations.

8. The Building Official shall maintain a list of nonconforming uses including the date of becoming nonconforming, accessed value at the time of its becoming a nonconforming use, and the nature and extent of nonconformity. This list shall be brought up-to-date annually.

9. The Building Official shall prepare a list of those nonconforming uses which have been flood-proofed or otherwise protected in conformance with these regulations. He shall present such list to the Board of Appeals which may issue a certificate to the owner stating that

such uses, as a result of these corrective measures, are in conformance with these Regulations.

Section 203.3 is amended to read as follows:

Records. Copies of such tests, reports, certifications, or the results of such tests shall be kept on file in the office of the Building Official for a period of not less than two (2) years after the approval and acceptance of the completed structure for beneficial occupancy.

Section 204.6 is amended to read as follows:

Board of Appeals: In order to determine the suitability of alternate materials and methods of construction and to provide reasonable interpretations of the provisions herein, there shall be and is hereby created a Board of Appeals of five (5) members. Each member of the Board shall be a licensed professional architect or engineer, or a builder or superintendent of building construction, with at least ten years experience, for five years of which he shall have been in responsible charge of work. At no time shall there be more than two members from the same profession. At least one of the members shall be a licensed structural or civil engineer with architectural engineering experience. The Board shall adopt reasonable rules for its investigations and shall render written decisions to the Building Official.

Section 204.7 is amended to read as follows:

Validity: It shall be unlawful for any person, firm or corporation or agency (state or local) to erect, construct, enlarge, alter, repair, move, improve, remove, convert, or demolish, any building or structure in the Flood Hazard Area(s), or cause the same to be done, contrary to or in violation of any of the provisions of these Regulations and/or "The Building Code".

Section 205.1 is amended to read as follows:

Statement of Intention to Improve: The Owner or any registered architect or licensed professional engineer authorized to represent the Owner shall, before preparing final plans for any improvement in the Flood Hazard Area(s), file with the Building Official a Statement of Intention to Improve, including a brief description of the type of improvement being considered and giving its precise location, on a form provided by the Building Official. The Building Official shall note on two copies the elevation of the RFD at the location of the proposed improvement. One copy of the Statement of Intention to Improve shall be retained by the Building Official until a permit copy for improvement on the site is approved or one year has elapsed; a second copy shall be returned to the Owner for his use in final siting and design of his improvement. Assignments of the RFD elevations at all locations shall be made from profiles and/or cross sections provided by the Army Corps of Engineers, SCS, USGS. This information shall be open to public examination at all reasonable times.

Section 205.2 is amended to read as follows:

Permits Required: No person, firm or corporation shall erect, construct, alter, repair, move, remove, convert, or demolish any building or structure or any part thereof, or make any other improvement within the structure or any part thereof, or make any other improvement within the Flood Hazard Area(s), or cause same to be done, without first obtaining a separate building flood proofing permit for any such improvement from the Building Official. Ordinary minor repairs may be made with the approval of the Building Official without a permit, provided that such repairs shall not violate any provisions of these Regulations or of "The Building Code".

Section 205.3 No. 2 is amended to read as follows:

Two (2) sets of complete plans and specifications, in addition to plans and specifications required by "The Building Code", except that plans and specifications for any and all proposed improvement in the primary Flood Hazard Area(s) shall be prepared by an engineer or architect licensed by the State to practice as such. All drawings and specifications shall bear the name of the author thereof in his true name, followed by such title as he may be lawfully authorized to use. All plans and sections shall be noted with the proposed flood-proofing class of each space below the RFD including detail drawings of walls and wall openings.

Section 205.3 is amended to read as follows:

Two (2) copies of the Owner's Contingency Plan, which shall describe in detail all procedures for temporary placement and removal or contingent protection proposed items in spaces affected by these Regulations including:

1. Plans and schedules for items to be removed and locations of places above the RFD to which they will be removed if these contents violate restrictions associated

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with the flood-proofing class of the space in which they are placed temporarily, including specific organizational responsibilities.

2. Procedures, materials and equipment for protecting items required to have protection by their flood-proofing class, but for which this protection is proposed to be provided contingently, including specific organizational responsibilities for accomplishing this protection.

Waivers of restrictions implicitly requested by submission of the Owner's Contingency Plan may be granted by the Building Official as provided by 1101.2.

Section 209.1 is amended to read as follows:

New Building and Structures: Every building or structure hereafter erected, that is located in the primary Flood Hazard Area(s) where the ground surface is two (2) feet or more below the RFD, or where flood water velocities may exceed five (5) feet per second, shall be provided with an enclosed refuge space above the RFD, of sufficient area to provide for the occupancy load with a minimum of 12 square feet per person. It shall be provided with one or more exits through the exterior walls above the RFD to an exterior platform and stairway not less than three (3) feet wide.

Section 209.3 is amended to read as follows:

Use of Space Below the Regulatory Flood Datum: No floor level or portion of the building or structure that is below the RFD regardless of structure or space classification shall be used for human occupancy, or for storage of any property, materials, or equipment that might constitute a safety hazard when contacted by flood waters.

Section 210.7 is amended to read as follows:

Placard Types: Placards shall be white rigid plastic or other non-water susceptible material eight (8) inches long and twelve (12) inches wide, and shall have printed thereon in black letters the information shown in Figure 2.

Section 300.0 is amended by adding a subsection to read as follows:

Section 300.2 Interpretation: For the purpose of these regulations, where definition of terms as set forth in this Chapter conflict in meaning with those as set forth in Minn. Regs. NR 85(c), the latter shall take precedence.

Section 301.2.9 is amended to read as follows:

Habitable Room: A space used for living, sleeping, eating or cooking, or combination thereof, but not including bathrooms, toilet compartments, closets, halls, storage rooms, laundry and utility rooms, cellars and similar spaces.

Section 301.4.1 is amended to read as follows:

Building Code: The State Building Code setting forth standards for the construction, addition and modification and repair of buildings and other structures for the purpose of protecting health, safety, and general welfare of the public.

Section 402.1 (Table 2) is amended to read as follows:

General: Table 2 indicates the various degrees of protection required to permit uses of spaces for each flood-proofing, the chart in itself shall not be construed as being exhaustive with respect to all requirements imposed by these Regulations. In disputes arising over the interpretation of this chart, the written provisions of these Regulations shall be considered as definitive.

Table 2
SPACE CLASSIFICATION CHART
FLOOF-PROOFING CLASSIFICATION OF SPACES
MINIMUM REQUIREMENTS

Flood-Proofing Classes	Water-Proofing	Structural Loads	Closure of Openings	Internal Flooding & Drainage	Flooring	Walls and Ceilings	Contents	Electrical	Mechanical
W1 Completely Dry	Type A	Class 1	Type 1	See Chapter 8	Class 1	Class 1	Class 1	See Chapter 12	See Chapter 13
W2 Essentially Dry	Type B	Class 1	Type 2		Class 2	Class 2	Calss 2		
W3 Flooded with Potable Water	Type A	Class 2	Type 3		Class 3	Class 3	Class 3		
W4 Flooded with Flood Water	Type C	Class 3	Type 4		Class 4	Class 4	Class 4		
W5 Non-Flood-Proofing	—	—	Type 5		Calss 5	Class 5	Class 5		

Section 612.2.1 is amended to read as follows:

Natural Terrain: In addition to the requirements of "The Building Code", the building shall be located not less than fifteen (15) feet back from the line of incidence of the RFD on the ground, foundation design shall take into consideration the effects of soil saturation on the performance of the foundation, the effects of flood waters on slope stability shall be investigated, normal access to the building shall be by direct connections with areas above the RFD and all utility service lines shall be designated and constructed as required to protect the building and/or its components from damage or failure during a flooding event to the RFD.

Section 612.2.2 is amended to read as follows:

Building on Fill: The building and all parts thereof may be constructed above the RFD on an earth fill. Prior to placement of any fill or embankment materials, the area upon which fill is to be placed, including a five-foot strip measured horizontally beyond and contiguous to the toe line of the fill, shall be cleared of standing trees and snags, stumps, brush, down timber, logs and other growth, and all objects including structures on and above the ground surface or partially buried. The area shall be stripped of topsoil and all other material which is considered unsuitable by the Building Official as foundation material. All combustible and noncombustible materials and debris from the clearing, grubbing and stripping operations shall be removed from the proposed fill area and disposed of at locations above the RFD and/or in the manner approved by the Building Official. Fill material shall be of a selected type, preferably granular and free-draining placed in compacted layers. Fill selection and placement shall recognize the effects of saturation from flood waters on slope stability, uniform and differential settlement, and scour potential. The minimum elevation of the top slope for the fill section shall be no more than one foot below the RFD. Minimum distance from any point of the building perimeter to the top of the fill slope shall be either fifteen (15) feet or twice the depth of fill at that point, whichever is the greater distance. This requirement does not apply to roadways, driveways, playgrounds and other related features which are not integral and functional parts of the building proper. Fill slopes for granular materials shall not be steeper than one vertical on one and one-half horizontal, unless substantiating data justifying steeper slopes are permitted to the Building Official and approved. For slopes exposed to flood velocities of less than five (5) feet per second, grass or vine cover, weeds, bushes and similar vegetation undergrowth will be considered to provide adequate scour protection shall be provided.

Section 802.1 is amended to read as follows:

Applicability: Spaces to be intentionally flooded with flood water (W4) shall be provided with the necessary equipment, devices, piping, controls, etc. necessary for automatic flooding during the flood event and drainage system(s) shall utilize approved piping materials and have sufficient capacity for raising or lowering the internal water level at a rate comparable to the anticipated rate of rise and fall of a flood that would reach the RFD. These pipe systems shall be directly connected to the external flood waters to maintain a balanced internal and external water pressure condition. Provisions shall be made for filling the lower portions of the structure first and for interconnections through or around all floors and partitions to prevent unbalanced filling of chambers or parts within the structures. All spaces below the RFD shall be provided with air vents extending to at least three (3) feet above the elevation of the RFD to prevent the trapping of air by the rising water surface. All openings to the filling and drainage systems shall be protected by screens for grills to prevent the entry or nesting of rodents or birds in the system.

Section 1301.2.1 is amended to read as follows:

Heating systems utilizing gas or oil fired furnaces shall have a float operated automatic control valve installed in the fuel supply line which shall be set to operate when flood waters reach an elevation equal to the floor level of the space where furnace equipment is installed. A manually operated gate valve that can be operated from a location above the RFD shall be provided in the fuel supply line to serve as a supplementary safety provision for fuel cutoff. The heating equipment and fuel storage tanks shall be mounted on and securely anchored to a foundation pad or pads of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. As an alternate means of protection, elevation of heating equipment and fuel storage tanks above the RFD on platforms or by suspension from overhead structural systems will be permitted. All unfired pressure vessels will be accorded similar treatment. Fuel lines shall be attached to furnaces by means of flexible or swing type couplings. All heating equipment and fuel storage tanks shall be vented to an elevation of at least three (3) feet above the RFD. Air supply for combustion shall be furnished if required for systems

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installed in W1 or W2 spaces and piping or duct work for such purposes shall be terminated at least three (3) feet above the RFD.

Section 1302.2.2 is amended to read as follows:

Where the state of dryness of a space is dependent on a sump pump system, or where the stability of a structure during a flood event depends on the relief of up-lift pressures on building components, all interior storm water drainage or seepage, appliance drainage, and underslab drain tile systems shall be directly connected to a sump (pump) and discharged at an elevation at least three (3) feet above the RFD.

Section 1302.2.3.1 is amended to read as follows:

All vents shall extend to an elevation of at least three (3) feet above the RFD.

Section 1302.3 is amended to read as follows:

Sewage Disposal/Treatment. Individual sewage disposal and/or treatment facilities will be permitted in a Flood Hazard Area but only at locations where connection with a public sewer system is not permissible or feasible. Such facilities shall conform to applicable standards, criteria, rules and regulations of the Minnesota Department of Health and Pollution Control Agency in terms of size, construction, use and maintenance and with standards and criteria of the Minnesota Department of Natural Resources regarding setbacks from the normal high water mark of a water-course in accordance with the public water classification. Installations in low swampy areas or areas where the highest known ground water table is within four feet of the bottom of the soil absorption system or which may be subject to recurrent flooding will not be permitted.

Section 1302.3.1 regarding cesspools/sewage disposals has been amended by deleting this section in its entirety.

Section 1302.3.2 regarding seepage pits has been amended by deleting this section in its entirety.

Section 1302.4.1 is amended to read as follows:

Water supply wells, tanks, filters, softeners, heaters, and all appliances located below the RFD shall be protected against contamination by covers, walls, copings, or castings. All vents shall be extended to a minimum elevation of three (3) feet above the RFD.

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SBC 111 Adoption of the Uniform Building Code by reference.

Chapters 1 through 60 and the appendix of the 1976 Edition of the Uniform Building Code, hereinafter "UBC", as promulgated by the International Conference of Building Officials, is incorporated by reference and is hereby made part of the State Building Code (SBC) except as qualified by SBC 109. Said UBC shall be subject to the following alterations and amendments:

UBC 101, 102 and 103 are deleted in their entirety.

UBC 104(j) is amended by adding an additional item number 5 as follows:

5. All approvals must be based on the applicants submission of complete architectural and engineering plans and specifications.

UBC 204 is amended by amending the last sentence as follows: The Board shall adopt reasonable rules and regulations for conducting its investigations and shall render all decisions and findings in writing to the Building Official with a duplicate to the applicant and to the State Building Inspector within fifteen (15) days of such decision.

UBC 303(a) is amended by adding an additional sentence to the first paragraph as follows: The fee schedule of Table 3-A is hereby made optional for use by the local authority and is a recommended schedule. Each municipality must adopt its own schedule of permit fees.

Section 420 of the UBC is amended to read as follows:

UBC 420 Definitions

Supervised Living Facilities

Class A supervised living facilities shall include homes providing boarding and lodging for ambulatory and mobile disabled persons who are capable of semi-independent living with minimum supervision and who are mentally and physically capable of self-preservation under emergency conditions. Physically handicapped persons shall be housed at street level.

Class B supervised living facilities shall include homes providing boarding and lodging for:

1. Mobile disabled persons who are capable of semi-independent living with minimum supervision, but who are not physically capable of self-preservation;

2. Persons with diverse dependencies who require various degrees of supervised guidance and assistance, and who are not mentally or physically capable of self-preservation under emergency conditions.

UBC Table 5-A is amended to read as follows:

UBC 501 Table 5-A

I.1 Nurseries for full time care of children under kindergarten age. Hospitals, sanitariums, nursing homes, and similar buildings (each accommodating five or more persons).

I.2 Boarding care homes, detoxification center, homes for children of kindergarten age or over, supervised living facilities Class B as defined in UBC 420 (each accommodating five or more persons).

R-1 Hotels and apartment houses. Convents, monasteries (each accommodating more than ten persons). Supervised living facilities Class A as defined in UBC 420 (accommodating five or more persons).

Section 605 of the UBC is amended to read as follows:

UBC 605 Light, Ventilation, and Sanitation. All enclosed portions of Group A, Division 1 Occupancies customarily used by human beings and all dressing rooms shall be provided with natural light by means of exterior glazed openings with an area not less than one-twentieth of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system. The mechanically operated ventilating system shall supply a minimum of five (5) cubic feet per minute of outside air with a total circulated of not less than 15 (fifteen) cubic feet per occupant in all portions of the building and such system shall be kept continuously in operation during such times as the building is occupied. If the velocity of the air at the register exceeds ten (10) feet per second, the register shall be placed more than eight (8) feet above the floor directly beneath.

Lights in all parts of the building customarily used by human beings shall be on a separate circuit from that of the stage and shall be controlled from the box office. All lights in corridors, exit courts and exit passageways shall be protected by a wire cage.

All registers or vents supplying air backstage shall be equipped with automatic closing devices with fusible links. Such closing devices shall be located where the vents or ducts pass through the proscenium walls and both inside and/or outside of the vent or duct.

There shall be provided in an approved location at least one lavatory for each two (2) water closets for each sex, and at least one (1) drinking fountain for each floor level.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 802(c) of the UBC is amended to read as follows:

UBC 802(c) Special Provisions. Rooms in Division 1 and 2 Occupancies used for day care purposes, kindergarten pupils and Division 3 Occupancies shall not be located above the first story. Storage and janitor closets shall be of one-hour fire-resistive construction. Stage and enclosed platforms shall be constructed in accordance with Chapter 39. For attic partitions and draft stops see Section 3205.

Section 805 of the UBC is amended to read as follows:

UBC 805 Light, Ventilation, and Sanitation. All portions of Group E Occupancies shall be provided with light and ventilation, either natural or artificial, as specified in UBC 605.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 809 of the UBC is amended to read as follows:

UBC 809 Approved fire alarms shall be provided for All Group E Division 1 and 2 Occupancies with an occupant load of more than 50 persons and in Group E Division 3 Occupancies with an occupant load of more than 29 persons. In every Group E Occupancy provided with an automatic fire extinguishing or detection system, the operation of such system shall automatically activate the school alarm system.

The fire alarm system shall be installed in compliance

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

with NFPA Standard 72-A-74, "Local Protective Signaling Systems."

An approved fire alarm is a fire alarm and detection system consisting of the following:

1. A complete non-coded continuously sounding until manually reset, electronically supervised type.

2. Shall have sounding stations on 100 foot to 150 foot spacing; (a) in corridors, (b) in areas of high noise levels, such as band rooms, shops, boiler rooms, (c) a weatherproof station on exterior of building facing residential areas.

3. Shall have automatic sending stations (detectors) in boiler rooms, kitchens, shops, painting areas, lounges, laundries, janitor's closets, storerooms, etc., or unsupervised and unoccupied spaces; namely, critical or hazardous areas.

4. Manual sending stations shall be provided in the natural path of escape from fire, near each exit from an area, on each floor, and shall be readily accessible, unobstructed and at visible locations.

Section 901 of the UBC is amended to read as follows:

UBC 901 Division 1. Nurseries for full time care of children under kindergarten age. Hospitals, sanitariums, nursing homes, and similar buildings (each accommodating five or more persons).

Division 2. Boarding care homes, detoxification centers, homes for children of kindergarten age or over, supervised living facilities. Class B as defined, for the mentally retarded, mentally ill, chemically dependent and the physically handicapped (each accommodating five or more persons).

Section 902(b) Special Provisions. Division 3 Occupancies shall be housed in buildings of Type I or II-F.R. construction.

Every story of a Group I, Division 1 Occupancy accommodating more than five (5) non-ambulatory persons, unless provided with a horizontal exit, shall be divided into not less than two compartments accommodating approximately the same number of non-ambulatory persons in each compartment by smokestop partition meeting the requirements of a one-hour occupancy separation so as to provide an area of refuge within the building.

Corridor openings in the smokestop partition shall be protected with doors as required in Section 3304(h). Other openings shall be limited to ducts which have fire dampers in the plane of the wall activated by detectors of products of combustion other than heat conforming to Section 4306(b)2.

Rooms occupied by inmates or patients whose personal liberties are restrained, shall have noncombustible floor surfaces.

Section 905 of the UBC is amended to read as follows:

UBC 905 All portions of Group I Occupancies shall be provided with natural light by means of exterior glazed openings with an area equal to one-tenth of the total floor area, and natural ventilation by means of exterior openings with an area not less than one-twentieth of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system as specified in Section 605 and SBC 7720.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 909 of the UBC is amended to read as follows:

UBC 909 An approved fire alarm system shall be provided for all Group I Occupancies.

Audible alarm devices shall be used in all non-patient areas. Visible alarm devices may be used in lieu of audible devices in patient occupied areas. An approved alarm system shall comply with UBC 809.

Section 1005 of the UBC is amended to read as follows:

UBC 1005 All portions of Group H Occupancies shall be provided with natural light by means of exterior glazed openings with an area equal to one-tenth of the total floor area, and natural ventilation by means of exterior openings with an area not less than one-twentieth of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system as specified in Section 605 and the applicable sections of SBC 7701 through 7736.

In all buildings or portions thereof where flammable liquids are used, exhaust ventilation shall be provided sufficient to produce four complete air changes per hour. Such exhaust ventilation shall be taken from a point at or near the floor level.

In all buildings used for the repair or handling of automobiles operating under their own power, ventilation shall be provided capable of exhausting a minimum of 3/4 cfm per square foot. Additionally, each engine

repair stall shall be equipped with an exhaust pipe extension duct, extending to the outside of the building, which, if over 10 feet in length, shall mechanically exhaust 300 cubic feet per minute. Connecting offices and waiting rooms shall be supplied with conditioned air under positive pressure.

EXCEPTION: In public repair garages and aircraft hangars not exceeding an area of 5,000 square feet, the Building Official may authorize the omission of such ventilating equipment where, in his opinion, the building is supplied with unobstructed openings to the outer air which are sufficient to provide the necessary ventilation.

Every building or portion thereof where persons are employed shall be provided with at least one water closet. Separate facilities shall be provided for each sex when the number of employees exceeds four (4) and both sexes are employed. Such toilet facilities shall be located either in such building or conveniently in a building adjacent thereto on the same property.

All water closet rooms shall be provided with an exterior window at least 3 square feet in area, fully openable; or a vertical duct not less than 100 square inches in area for the first toilet facility with an additional 50 square inches in area for the first toilet facility with an additional 50 square inches in area for each additional toilet facility; or a mechanically operated exhaust system which is connected to the light switch, capable of providing a complete change of air every 15 minutes. Such systems shall be vented to the outside air and at the point of discharge shall be at least 5 feet from any openable window.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 1105 of the UBC is amended to read as follows:

UBC 1105 All portions of Group B, Divisions 1, 2 and 3 Occupancies shall be provided with natural light by means of exterior glazed openings with an area equal to one-tenth of the total floor area, and natural ventilation by means of exterior openings with an area not less than one-twentieth of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system as specified in Section 605 and the applicable sections of SBC 7701 through 7736.

In all buildings or portions thereof where flammable liquids are used, exhaust ventilation shall be provided, sufficient to produce four air changes per hour. Such exhaust ventilation shall be taken from a point at or near the floor level.

In all enclosed parking garages, used for storing or handling of automobiles operating under their own power and on all loading platforms in bus terminals, ventilation shall be provided capable of exhausting a minimum of 3/4 cfm per square foot of gross floor area. The Building Official may approve an alternate ventilation system designed to exhaust a minimum of 14,000 cfm for each operating vehicle. Such system shall be based upon the anticipated instantaneous movement rate of vehicles but not less than 2.5 percent (or one vehicle) of the garage capacity. Automatic CO sensing devices may be employed to modulate the ventilation system to maintain a maximum average concentration of CO of 50 ppm during any 8 hour period, with a maximum concentration not greater than 200 ppm for a period not exceeding one hour. Connecting offices, waiting rooms, ticket booths, etc., shall be supplied with conditioned air under positive pressure.

EXCEPTION: In gasoline service stations without lubrication pits, storage garages and aircraft hangars not exceeding an area of 5,000 square feet, the Building Official may authorize the omission of such ventilating equipment where, in his opinion, the building is supplied with unobstructed openings to the outer air which are sufficient to provide the necessary ventilation.

Every building or portion thereof where persons are employed shall be provided with at least one water closet. Separate facilities shall be provided for each sex when the number of employees exceeds four and both sexes are employed. Such toilet facilities shall be located either in such building or conveniently in a building adjacent thereto on the same property.

Such water closet rooms in connection with food establishments where food is prepared, stored, or served, shall have a nonabsorbent interior finish on floors, walls and ceilings and shall have hand washing facilities therein or adjacent thereto.

All water closet rooms shall be provided with an exterior window at least three square feet in area, fully openable; or a vertical duct not less than 100 square inches in area for the first toilet facility with an additional 50 square inches for each additional toilet facility;

or a mechanically operated exhaust system, which is connected to the light switch, capable of providing a complete change of air every 15 minutes. Such systems shall be vented to the outside air and at the point of discharge shall be at least five feet from any openable window.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 1109 of the UBC is amended by adding a new paragraph (m):

(m) Every parking ramp or other parking facility shall include spaces for the parking of motor vehicles having a capacity of seven (7) to sixteen (16) persons. Such vehicles shall be classified as commuter vehicles for the transportation of employees to and from their place of employment or to or from a transit stop authorized by a local transit authority. The number of required spaces shall be determined by 2% of the gross designed parking area with a minimum of two spaces. Such spaces to accommodate commuter vehicles shall be at least 10 feet in width, 20 feet in length and a height clearance of 10'-6" on the entry level and shall not apply to other levels of a ramp.

Section 1205 of the UBC is amended to read as follows:

UBC 1205 Light, Ventilation, and Sanitation. All portions of Group B Division 4 Occupancies customarily used to human beings shall be provided with light and ventilation as specified in UBC 1105.

Every building or portion thereof where persons are employed shall be provided with at least one water closet. Separate facilities shall be provided for each sex when the number of employees exceeds four and both sexes are employed. Such toilet facilities shall be located either in such building or conveniently in a building adjacent thereto on the same property.

For other requirements on water closets, see UBC 510 and UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Section 1301 of the UBC is amended to read as follows:

UBC 1301 Group R Division 1 Occupancies shall be: hotels and apartment houses, convents and monasteries (each accommodating more than ten persons). Supervised living facilities, Class A as defined, for the mentally retarded, mentally ill, chemically dependent, and the physically handicapped (each accommodating five or more persons).

Section 1305(b) of the UBC is amended to read as follows:

UBC 1305(b) Sanitation. Every building shall be provided with at least one water closet. Every hotel and each subdivision thereof where both sexes are accommodated shall be provided with at least two water closets located in such building, which shall be conspicuously marked one for each sex.

Additional water closet shall be provided on each floor for each sex at a rate of one for every additional ten guests, or fractional part thereof, in excess of ten.

Every dwelling unit shall be provided with a kitchen equipped with a kitchen sink and with bathroom facilities consisting of a water closet, lavatory and either a bathtub or shower. Each plumbing fixture shall be equipped with running water necessary for its normal operation.

For other requirements on water closets, see UBC 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

Chapter 13 of the UBC is amended by adding a new section to read as follows:

UBC 1314 Sound Transmission Control. Sound transmission control shall be provided to meet the standards defined in UBC Appendix Chapter 35.

Chapter 13 of the UBC is amended by adding a new section to read as follows:

UBC 1315 Deadbolt Locks Required. All exit doors leading to public areas from all dwelling units and hotel units shall be provided with deadbolt locks, at least one of which must be capable of being locked from the exterior of said unit. For the purpose of this section, a "deadbolt lock" is a locking bolt which, when in the locked position, can only be moved positively by turning a knob, key, or sliding bolt.

Deadbolt locks having a bolt moved by turning a key shall be of the five-pin tumbler type or an approved equivalent. Lock throw shall be not less than three-quarters inch (¾"). Locks shall meet requirements of UBC 3303(c).

Section 1401 of the Uniform Building Code is amended to read as follows:

Section 1401 add the following paragraph:

Group R, Division 4 Occupancies: This use group shall include all one and two family dwellings built exclusively by the standards as established in the 1975 One and Two Family Dwelling Code as promulgated by the national model code organizations.

Section 1405(b) of the UBC is amended to read as follows:

UBC 1405(b) Sanitation. Every dwelling unit shall be provided with a kitchen equipped with a kitchen sink and with bathroom facilities consisting of a water closet, lavatory and either a bathtub or shower. Plumbing fixtures shall be provided with running water necessary for their operation.

For other requirements on water closets, see UBC 510 and 1711.

For additional sanitation facilities requirements, see UBC 1711(h).

UBC 1711(b) of the UBC is amended to read as follows:

UBC 1711(b) Toilet Facilities. Each water closet stool shall be located in a clear space not less than 30 inches in width and have a clear space in front of the water closet stool of not less than 24 inches.

For provisions for the physically handicapped see UBC 5501 through 5508.

Chapter 17 of the UBC is amended by adding a new section to read as follows:

UBC 1711(h) Sanitation Facilities. Sanitation facilities shall be provided for each Occupancy in accordance with Table 17-B and UBC Sections 605, 705, 805, 905, 1005, 1205, 1305 and 1405. Fixtures shall be provided for each sex in accordance with the percentage of occupants of each sex. When the percentage of each sex is not known, one-half for each sex shall be assumed.

Sec. 1807. (a) is amended to read as follows:

Special Provisions for Group B, Division 2 Office Buildings and Group R, Division 1 Occupancies.

Sec. 1807. (a) Scope. This Section shall apply to all Group B, Division 2 office buildings and Group R, Division 1 Occupancies each having floors used for human occupancy located more than 75 feet above the lowest level of Fire Department vehicle access. Such buildings shall be provided with either an approved automatic fire-extinguishing system in accordance with Section 1807(c), or safe areas of refuge (compartmentation) in accordance with Section 1807(l).

(b) Certificate of Occupancy. All mechanical and electrical equipment and other required life safety systems shall be approved and installed in accordance with approved plans and specifications pursuant to this Section and shall be tested and proved to be in proper working condition to the satisfaction of the building official before issuance of the Certificate of Occupancy.

(c) Automatic Fire-extinguishing System. When provided as required in Section 1807 (a), the automatic fire-extinguishing system shall be provided throughout the building. The sprinkler system shall be designed using the parameters set forth in UBC Standard No. 38-1 and the following:

1. Shutoff valves and a water flow device shall be provided for each floor. The sprinkler riser may be combined with the standpipe riser.

2. In Seismic Zones No. 2, No. 3, and No. 4, in addition to the main water supply a secondary on-site supply of water equal to the hydraulically calculated sprinkler design demand plus 100 gallons per minute additional for the total standpipe system shall be provided. This supply shall be automatically available if the principal supply fails and shall have a duration of 30 minutes.

(d) Smoke Detection Systems. At least one approved smoke detector suitable for the intended use shall be installed in:

1. Every mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar room.

2. In the main return and exhaust air plenum of each air-conditioning system and located in a serviceable area downstream of the last duct inlet.

3. At each connection to a vertical duct or riser serving two or more stories from a return air duct or plenum of an air conditioning system. In Group R, Divi-

Table No. 17-B REQUIRED SANITATION FIXTURES BASED ON OCCUPANCY AND OCCUPANT LOAD

OCCUPANCY	USE	S.F. per Occ.	WATER CLOSETS	URINALS	LAVATORIES	DRINKING FOUNTAINS	BATHTUBS OR SHOWERS	KITCHEN SINKS	SERVICE SINKS
	Auditoriums	30							
	Bowling Alleys	30	Churches	Churches	Churches				
Group A	Churches	60							
	Conference Rooms	80	1 for each 300 Men	1 for each 300	1				
Occupancies	Dance Floors	30	1 for each 300 Women						
	Dining, drinking	30				1 for each 300	—	—	—
	Exhibit Rooms	80							
ASSEMBLY	Gymnasiums	30	Other	Other	Other				
	Libraries	100	Occupants Fixtures	Occupants Fixtures	Occupants Fixtures				
	Lodge Rooms	80	1-100 1	1-200 1	1-200 1				
	Lounges	80	101-200 2	201-400 2	201-400 2				
	Rinks	30	201-400 3	401-750 3	401-750 3				
	Stadiums, Grandstands	80	Over 400 1 addt'nl each 500	Over 750 1 addt'nl each 300	Over 750 1 addt'nl for each				
	Theaters	30							
	Waiting Rooms	80							
Group E Occupancies SCHOOL	Elementary	130	Boys Girls						
	Secondary	85	1/ea. 60 1/ea. 60	1 for each 30	1 for each 60	1 for each 75	—	—	1 per floor
			1/ea. 90 1/ea. 30		1 for each 90				
Group I	Prisons, Jails	100	1 for each cell		1 in each cell		1 at each cell block floor		
	Hospitals, Nursing Homes	100	1 for each 8 patients	—	1 for ea. 10 patients	1 for each 100		—	1 per floor
Occupancies			1 in each waiting rm.				1 for each 20		
			Other	Other	Other		Other		
INSTITUTIONAL			1 for each 25 men	1 for each 50	1 for each 10		1 for each 10		
			1 for each 20 women						
Group H Occupancies INDUSTRIAL—High Hazard			Factories, Warehouses	Factories, Warehouses	Factories, Warehouses	Factories-Warehouses			
	Aircraft Hangars	500	Occupants Fixtures	Occupants Fixtures	Occupants For each				
	Factories	200	1-10 1	11-30 1	1-100 1-10	1 for each 75			
Group B Occupancies	Municipal Buildings	80	11-25 2	31-80 2	Over 100 1-15				
	Office Buildings	200	36-50 3	81-160 3			—	—	
COMMERCIAL	Sales	200	51-75 4	161-240 4					1 per floor
INDUSTRIAL	Service Stations	500	76-100 5						
	Storage Garages	500	Over 100 1 addt'nl for 30						
Moderate Hazard	Warehouses	500							

					Sales, Occupants	Offices Fixtures	Sales, Offices		
					1-15	1	1 for each 150		
			Sales, Office, etc.		16-35	2			
			Occupants	Fixtures	36-60	3			
Group B-4 Occupancies			1-15	1	61-90	4			
	Factories	200	16-35	2	91-125	5			
COMMERCIAL	Sales	200	36-55	3	Over 125	1 to 45			
INDUSTRIAL	Warehouses	500	56-80	4					
Low Hazard			81-110	5					
			111-150	6					
Group R-1 Occupancies	Dwelling Units, Apt.	—	1		1		1	1	1 laundry tray
	Motel, Hotel Units	—	1 for each 10		1 for each 10	—	1 for each 10	—	for each 10
RESIDENTIAL,	Rooming Houses	200	1 for each 10		1 for each 10		1 for each 10		dwelling units
MULTIPLE	Dormitories	200	1 for each 10		1 for each 10		1 for each 10		or guest rooms
Group R-3 Occupanices									
DWELLINGS	1 and 2 Family	—	1		1	—	1	1	—
Group M Occupancies	—	—	—		—	—	—	—	—
ACCESSORY									
TEMPORARY	—	—	1 for each 30		—		—	—	—
FACILITIES									

						1 for each 100			

Footnotes:

(1) Occupant load is computed using the equation:

$$\frac{A}{\text{S.F. per Occ.}} = \text{Occupant Load}$$

(2) Square feet per occupant is only for computing the occupant load to determine the plumbing fixtures required.

(3) Urinals may be furnished in place of water closets at the rate of one urinal for one water closet, but not to exceed one-third of the required water closets.

(4) 1 fixture for each 10 occupants.

(5) 1 fixture for each 15 occupants.

A — Area of building occupancy classification served

S.F. — per Occ. — from Column 3 of this table

sion 1 Occupancies, an approved smoke detector may be used in each return air riser carrying not more than 5000 cfm and serving not more than 10 air inlet openings.

The actuation of any detector required by this Section shall operate the voice alarm system and shall place into operation all equipment necessary to prevent the recirculation of somke.

(e) Alarm and Communication Systems. The alarm and communication systems shall be so designed and installed that damage to any terminal unit or speaker will not affect the operation of the remainder.

The voice alarm and public address system may be a combined system. When approved, the Fire Department communications system may be combined with the voice alarm system and the public address system.

Three communication systems which may be combined as set forth above shall be provided as follows:

1. Voice alarm system. The operation of any smoke detector, sprinkler, water flow device or manual fire alarm station shall automatically sound an alert signal to the desired areas followed by voice instructions giving appropriate information and direction to the occupants.

The central control station shall contain controls for the voice alarm system so that a selective or general voice alarm may be manually initiated.

The system shall be supervised to cause the activation of an audible trouble signal in the central control station upon interruption or failure of the audiopath including amplifiers, speaker wiring, switches and electrical contracts and shall detect opens, shorts and grounds which might impair the function of the system.

The alarm shall be designed to be heard clearly by all occupants within the building or designated portions thereof as is required for the public address system.

2. Public address system. A public address communication system designed to be clearly heard by all occupants of the building shall operate from the central control station. It shall be established on a selective or general basis to the following terminal areas:

A. Elevators

B. Elevator lobbies

C. Corridors

D. Exit stairways

E. Rooms and tenant spaces exceeding 1000 square feet in area.

F. Dwelling units in apartment houses

G. Hotel guest rooms or suites

3. Fire Department communication system. A two-way Fire Department communication system shall be provided for Fire Department use. It shall operate between the central control Station and every elevator, elevator lobby and entry to every enclosed exit stairway.

(f) Central Control Station. A central control station for Fire Department operations shall be provided in a location approved by the Fire Department. It shall contain:

1. The voice alarm and public address system panels.

2. The Fire Department communications panel.

3. Fire detection and alarm system annunciator panels.

4. Status indicator and controls for elevators.

5. Status indicators and controls for air-handling systems.

6. Controls for unlocking all stairway doors simultaneously.

7. Sprinkler valve and water flow detector display panels.

8. Standby power controls and status indicators.

9. A telephone for Fire Department use with controlled access to the public telephone system.

(g) Smoke Control. Natural or mechanical ventilation for the removal of products of combustion shall be provided in every story and shall consist of one of the following:

1. Panels or windows in the exterior walls which can be opened remotely from an approved location other than the fire floor. Such venting facilities shall be provided at the rate of 20 square feet per 50 lineal feet of exterior wall in each story and shall be distributed around the perimeter at not more than 50-foot intervals. Such windows or panels and their controls shall be clearly identified.

EXCEPTION: When a complete automatic fire-

extinguishing system is installed, windows or panels manually openable from within the fire floor or approved fixed tempered glass may be used in lieu of the remotely operated openable panels and windows. Such windows shall be clearly identified and shall be of the size and spacing called for in Section 1807(g)1.

2. When a complete and approved automatic fire-extinguishing system is installed, the mechanical air-handling equipment may be designed to accomplish smoke removal. Under fire conditions, the return and exhaust air shall be moved directly to the outside without recirculation to other sections of the building. The air-handling system shall provide a minimum of one exhaust air change each 10 minutes for the area involved.

3. Any other approved design which will produce equivalent results.

(h) Elevators. Elevators and elevator lobbies shall comply with the provisions of Chapter 51 and the following:

NOTE: A bank of elevators is a group of elevators or a single elevator controlled by a common operating system; that is, all those elevators which respond to a single call button constitute a bank of elevators. There is no limit on the number of cars which may be in a bank or group but there may be not more than four cars within a common hoistway.

1. Except for the main entrance level, all elevators on all floors shall open into elevator lobbies which are separated from the remainder of the building as is required for corridor construction in Section 3304(g) and (h).

2. Each elevator lobby shall be provided with an approved smoke detector located on the lobby ceiling. When the detector is activated, elevator doors shall not open and all cars serving that lobby are to return to the main floor and be under manual control only. If the main floor detector or a transfer floor detector is activated, all cars serving the main floor or transfer floor shall return to a location approved by the Fire Department and building official and be under manual control only. The smoke detector is to operate before the optical density reaches 0.03 per foot. The detector may serve to close the lobby doors.

3. A permanent sign shall be installed in each elevator cab adjacent to the floor status indicator and at each elevator call station on each floor reading "IN FIRE EMERGENCY, DO NOT USE ELEVATOR — USE EXIT STAIRS," or similar verbiage approved by the building official.

4. Elevator hoistways shall not be vented into an elevator machine room. Cable slots entering the machine room shall be sleeved beneath the machine room floor and extend to not less than 12 inches below the shaft vent to inhibit the passage of smoke into the machine room.

5. At least one elevator car serving all floors shall have a minimum inside car platform of 4 feet 3 inches deep by 6 feet 8 inches wide with a minimum clear opening width of 42 inches, unless otherwise designed and approved to provide equivalent utility to accommodate an ambulance stretcher having a minimum size of 22 inches by 78 inches in its horizontal position. This elevator shall be identified.

(i) Standby Power, Light and Emergency Systems. Standby power, light and emergency systems shall comply with the following:

1. Standby power. A permanently installed on-site power generation system conforming to U.B.C. Standard No. 18-1 shall be provided. All power, lighting, signal and communication facilities provided under the requirements of this Section, including an independent ventilating system for the standby power generator room, shall be transferable to the standby power source.

The electrical power requirements for sizing the standby power generation system shall include but not be limited to the following:

A. Fire protection equipment, including fire pumps.

B. Mechanical ventilation equipment required by this Section including power-operated windows.

C. Elevators designated for Fire Department use and as required by Chapter 51.

D. Standby lighting

E. The normal loads of all facilities classed as emergency. The regular light and power circuits supplying such facilities are classified as standby systems and shall be automatically transferable to the standby power generation system.

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2. Standby lighting. Standby lighting shall include but not be limited to the following:

A. Separate lighting circuits and facilities sufficient to provide light with an intensity not less than one footcandle measured at floor level in all exit corridors, stairways, smokeproof enclosures, elevators, elevator lobbies, and other areas which are clearly part of the escape route.

B. All circuits supplying lighting for the central control station, the standby power generator rooms, and other rooms housing control equipment for mechanical systems required by this Section shall be transferable to the standby power system.

3. Emergency systems. All electrical systems and facilities required by this Section and classified as emergency shall be installed in conformance with U.B.C. Standard 18-1. The following systems and lighting loads are classified as emergency facilities and shall operate within 10 seconds of primary power failure:

A. Exit sign and exit illumination as required by Section 3312.

B. Fire alarm and sprinkler alarm systems.

C. Fire detection systems

D. Elevator car lighting

E. Stairway door control systems

F. Voice communication systems

G. Electrical facilities classified as emergency by any other applicable code or ordinance.

(j) Exits. Exists shall comply with other requirements of this Code and the following:

1. All stairway doors which are to be locked from the stairway side shall have the capability of being unlocked simultaneously without unlatching upon a signal from the central control station.

2. A telephone or other two-way communications systems connected to an approved emergency service which operates continuously shall be provided at not less than every fifth floor in each required stairway where other provisions of this Code permit the doors to be locked.

3. Smokeproof enclosures may be eliminated if all enclosed stairways are pressurized, as provided for mechanically operated smokeproof enclosures, to a minimum of 0.15 and a maximum of 0.50 inch of water column in fully sprinklered buildings.

(k) Seismic Considerations. In Seismic Zones No. 2, No. 3 and No. 4, the anchorage of the following mechanical and electrical equipment shall be designed in accordance with Section 2312.

(l) Areas of Refuge (Compartmentation) Alternate. Areas of refuge conforming to the following may be provided as an alternate to the automatic fire-extinguishing system:

1. Every story shall be divided into two or more areas of approximately the same size with no single area exceeding 15,000 square feet. The wall and door shall be constructed as required for a horizontal exit in Section 3307.

2. Each area of refuge (compartmentation) shall contain one elevator to the main floor and a minimum of one enclosed exit stairway.

3. Openings in exterior walls, where such openings are within 5 feet of each other horizontally on vertically adjacent floors shall be protected by approved flame barriers either extending 30 inches beyond the exterior wall in the plane of the floor or by approved vertical panels not less than 3 feet in height above the floor.

4. Horizontal exit walls used for compartmenting a building shall have a fire-resistance rating of not less than two hours. Duct penetrations of this wall shall not be permitted. Ferrous or copper piping and conduit may penetrate or pass through the wall only if the openings are caulked with impervious noncombustible materials sufficiently tight to prevent the transfer of smoke or combustion gases from one side of the wall to the other and are so maintained. The fire door serving as the horizontal exit between compartments shall be so installed, fitted and gasketed that it will provide a substantial barrier to the passage of smoke.

5. The fire-resistive floor or the floor-ceiling construction shall extend to and be tight against the exterior wall so that the fire-resistive integrity between stories is maintained. No penetrations or other installations which will impair the fire-resistive integrity of the floor or floor-ceiling assembly shall be permitted.

6. A manual fire alarm system (pull boxes) shall be provided.

(m) Automatic Fire-Extinguishing System Alternatives. When a complete approved automatic fire-extinguishing system complying with this Section is

installed in a building, the following modifications of Code requirements are permitted:

1. The fire-resistive time periods set forth in Table No. 17-A may be reduced by one hour for interior bearing walls, exterior bearing and nonbearing walls, roofs and the beams supporting roofs, provided they do not frame into columns. Vertical shafts other than stairway enclosures and elevator shafts may be reduced to one hour when sprinklers are installed within the shafts at alternate floors.

2. Except for corridors in Group B, Division 2 and Group R, Division 1 Occupancies and partitions separating dwelling units or guest rooms, all interior nonbearing partitions required to be one-hour fire-resistive construction by Table No. 17-A may be of noncombustible construction without a fire-resistive time period.

3. Fixed tempered glass may be used in lieu of openable panels for smoke control purposes.

4. Travel distance from the most remote point in the floor area to a horizontal exit or to an enclosed stairway may be 300 feet.

5. The manually operated fire alarm system required in the compartmented building is not required.

6. Smokeproof enclosures are not required but all required stairways shall be pressurized to a minimum of 0.15 inch of water column.

7. Spandrel walls, eyebrows and compartmentation are not required; however, the fire resistance of the floors and juncture of exterior walls with each floor must be maintained.

8. Fire dampers, other than those needed to protect floor-ceiling assemblies to maintain the fire resistance of the assembly, are not required except for those which may be necessary to by-pass smoke to the outside, those provided to convert from recirculated air to 100 percent outside air, and those which may be required to protect the fresh air supply intake against smoke which may be outside the building.

9. Emergency windows required by Section 1304 are not required.

Section 1907 of the UBC is amended to read as follow:

Sec. 1907. Type II-F.R. buildings shall comply with the special provisions on high rise buildings in Section 1807.

EXCEPTION: The reduction provisions of roofs see Sec. 1807(m) Item 1.

Section 2305(d) of the UBC is amended to read as follows:

UBC 2305(d) Snow Loads. Snow loads full or unbalanced shall be considered where such loading will result in larger members of connections. A basic snow load of 40 pounds per square foot of horizontal projection is required in the following counties: Anoka, Carlton, Carver, Chisago, Cook, Dakota, Hennepin, Isanti, Lake, Pine, Ramsey, St. Louis, Scott and Washington. A basic snow load of 30 pounds per square foot of horizontal projection is required for all other counties not mentioned above. Potential accumulation of snow at valleys, parapets, roof structures, and offsets in roofs of uneven configuration shall be considered. Where snow loads occur, the snow loads shall be determined by the Building Official in accordance with Appendix C.

EXCEPTIONS:

1. The requirements of Appendix C shall not apply to Group R Division 3 and M Occupancies.

2. A basic snow load of 30 pounds per square foot of horizontal projection shall be acceptable for detached Group M, Division 1 Occupancies in all counties.

Snow loads in excess of 20 pounds per square foot may be reduced for each degree of pitch over 20 degrees by R as determined by the following formula:

$$R_S = \frac{S}{40} - \frac{1}{2}$$

where:

R_S = Snow load reduction in pounds per square foot per degree of pitch over 20 degrees.

S = Total snow load in pounds per square foot.

Section 2312(a) of the UBC is amended to read as follows:

UBC 2312(a) General. For the purpose of the Code this State shall be considered to be in Zone "O", No Damage Area. Every building or structure and every portion

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thereof shall be designed and constructed to resist stresses produced by lateral forces as provided in this Section. Stresses shall be calculated as the effect of a force applied horizontally at each floor or roof level above the foundation. The force shall be assumed to come from any horizontal direction.

Structural concepts other than set forth in this section may be approved by the Building Official when evidence is submitted showing that equivalent ductility and energy absorption are provided.

Where prescribed wind loads produce higher stresses, such loads shall be used in lieu of the loads resulting from earthquake forces.

Section 2907(a) of the UBC is amended to read as follows:

UBC 2907(a) General. Footings and foundations, unless otherwise specifically provided, shall be constructed of masonry or concrete and in all cases extend below the frost line. Footings shall be constructed of solid masonry or concrete. Foundations supporting wood shall extend at least six inches above the adjacent finish grade. Footings shall have a minmium depth below finished grade as indicated in Table 29-A unless another depth is recommended by a foundation investigation.

1. In the absence of a determination by an engineer competent in soil mechanics, the minimum allowable footing depth in feet due to freezing shall be five feet in Zone I and three and one-half feet in Zone II.

Zone I — Shall include the counties of: Aitkin, Becker, Beltrami, Carlton, Cass, Clay, Clearwater, Cook, Crow Wing, Douglas, Grant, Hubbard, Itasca, Kanabec, Kittson, Koochiching, Lake, Lake of the Woods, Mahnomen, Marshall, Mille Lacs, Morrison, Norman, Otter Tail, Pennington, Pine, Polk, Red Lake, Roseau, St. Louis, Todd, Traverse, Wadena, Wilkin.

Zone II — Shall include the counties of: Anoka, Benton, Big Stone, Blue Earth, Brown, Carver, Chippewa, Chisago, Cottonwood, Dakota, Dodge, Faribault, Fillmore, Freeborn, Goodhue, Hennepin, Houston, Isanti, Jackson, Kandiyohi, Lac Qui Parle, Le Sueur, Lincoln, McLeod, Martin, Meeker, Mower, Murray, Nicollet, Nobles, Olmsted, Pipestone, Pope, Ramsey, Redwood, Renville, Rice, Rock, Scott, Sibley, Sherburne, Stearns, Steele, Stevens, Swift, Wabasha, Waseca, Washington, Watonwan, Winona, Wright, Yellow Medicine. Lesser depths may be permitted when supporting evidence is presented by an engineer competent in soil mechanics.

2. Soil Under Slab on Grade for Accessory Buildings. When soil, natural or fill, is sand or pit run sand and gravel, and of depth in accordance with minimum footings depth requirements for each zone, slab on grade construction which supports roof and wall loads shall be permitted. Slab on grade construction for detached buildings Group M, Division 1 Occupancies may be placed on any soil except peat or muck.

UBC 3205(c) is amended to read as follows:

UBC 3205(c) Ventilation. Where determined necessary by the Building Official due to atmospheric or climatic conditions, enclosed attics and enclosed rafter spaces formed where ceilings are applied direct to the underside of roof rafters, shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. The net free ventilating area shall be not less than 1/150 of the area of the space ventilated, except that the area may be 1/300 provided at least 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.

UBC 3303(a) second paragraph is amended to read as follows:

Buildings as structures used for human occupancy and each dwelling unit or guest room leased for gain shall have at least one door which meets the requirements of subsection (d).

Section 3304(h) of the UBC is amended to read as follows:

UBC 3304(h) Openings. Where corridor walls are required to be of one-hour fire resistive construction by subsection (g) above, every door opening shall be protected by a tight-fitting smoke and draft control door assembly having a fire-protection rating of not less than 20 minutes when tested in accordance with UBC Standard No. 43-2 without the hose stream test. The door and frame shall bear an approved label or other identification showing the rating thereof, the name of the manufacturer, and the identification of the service conducting the inspection of materials and workmanship at the factory during fabrication and assembly. Doors shall be maintained self-closing or shall be automatic closing in accordance with Section 4306(b)2. Other interior openings shall be fixed and protected by approved 1/4 inch thick wired glass installed in steel frames. The total area of all openings, other than doors, in any portion of an interior corridor shall not exceed 25 percent of the area of the corridor wall of the room which it is separating from the corridor. For duct openings, see UBC 4306.

EXCEPTIONS:

1. Protection of openings in the interior walls of exterior exit balconies is not required.

2. In type I and II-F.R. buildings housing Group B-2 Occupancies, corridor walls may be of approved wired glass set in metal frames. The glass height shall not exceed 2/3 of the width of the corridor. A draft curtain of at least one hour fire-resistive construction and not less than 24 inches in height shall be provided to protect the corridor from the Group B-2 Occupancy area (tenant space). The draft curtain shall be located above the glass and extend a minimum of 24 inches below any finished ceiling in the tenant space. If the finished ceiling is not a fire-rated assembly, the draft curtain shall extend from the wire glass to a rated ceiling or floor assembly. When the B-2 Occupancy area (tenant space) is protected by an approved automatic fire-extinguishing system for a distance of twelve (12) feet in depth adjoining the corridor, and the corridor is not less than twelve (12) feet in width, glass other than wired glass may be approved. Open grille type gates and similar enclosing or security devices may be used in corridor walls of corridors not less than twelve feet in width, when the entire story is protected by an approved fire-extinguishing system.

In buildings of other than Type I or Type II-F.R. construction, this exception shall not be allowed, unless the entire building is provided with an approved automatic fire-extinguishing system.

Table 33A is amended to read as follows:

Delete the right hand column entitled "Egress by means of a ramp or an elevator must be provided for the physically handicapped as indicated."

Also delete footnotes 2, 3, 4, 5 and 6.

Section 3318(c) of the UBC is amended to read as follows:

UBC 3318(c) Corridors. The minimum clear width of a corridor shall be 44 inches, except that corridors serving any area housing one or more non-ambulatory persons shall be not less than eight feet in width. There shall be no change of elevation in a corridor serving non-ambulatory persons unless ramps are used.

In Group I, Division 1 Occupancies such as jails, prisons, reformatories and similar buildings with open barred cells forming corridor walls, the corridors and cell doors need not be fire resistive.

In Group I, Division 1 Occupancies such as jails, prisons, reformatories and similar buildings, doors to corridors used by the inmates need not be maintained self-closing or be automatic closing, may project into the required width of the corridor, but when fully opened shall not reduce the required width by more than seven inches.

Section 3801(c) of the UBC is amended by adding a new definition after the definition of Fire Department Hose Connection and before the definition of Wet Standpipe:

FIRE DEPARTMENT STANDPIPE is a fire line system with a constant water supply and pressure and equipped with Fire Department inlet and outlet connections and installed exclusively for the use of the Fire Department.

Section 3802(b)5 of the UBC is amended to read as follows:

3802(b) In all Group I Occupancies except jails, prisons and reformatories however, the respective increases for area and height specified in UBC 506(c) and UBC 507 shall be permitted.

EXCEPTIONS:

1. In hospitals of Types I and II F.R. construction, the automatic fire extinguishing system may be omitted from operating rooms, X-ray rooms, delivery rooms, cardiac and intensive care rooms and patient sleeping rooms not exceeding 600 square feet in area when each such room is provided with detectors of products of combustion other than heat, complying with UBC Standard No. 43-6.

2. In hospitals of Type II-1 hour construction, the automatic fire extinguishing system may be omitted from operating rooms, X-ray rooms, delivery rooms, cardiac and intensive care rooms when each such room is provided with detectors of products of combustion other than heat, complying with UBC Standard No. 43-6.

Add new Section 3802(d) of the UBC to read as follows:

3802(d) Special Automatic Fire-Extinguishing Systems. In all Occupancies having commercial cooking equipment (see NFPA no. 96A, 1973), automatic fire extin-

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guishing systems complying with UBC Standard 38-1 or 38-2 shall be installed for protection of duct systems, grease removal devices, hoods and over commercial cooking equipment which may be a source of ignition (such as fat fryers, ranges, griddles and boilers). Systems installed in accordance with the following standards are also permitted.

1. Standards for foam-water sprinkler systems and foam-spray systems, NFPA No. 16-1974.

2. Standard for dry-chemical extinguishing system, NFPA No. 17-1973.

EXCEPTION: These requirements shall not apply to Group R-3 Occupancies.

Section 3803(a) of the UBC is amended to read as follows:

3803(a) General. Fire Department Standpipes shall comply with the requirements of this section and NFPA 14-1974 for Class I standpipes.

UBC 3803(b) Where Required. All buildings three or more stories in height, shall be equipped with one or more Fire Department Standpipes.

UBC 3802(c) Location. There shall be one Fire Department Standpipe outlet connection located at every floor level landing above the first floor of every required enclosed stairway or smokeproof enclosure. Outlets at enclosed stairways shall be located within the enclosure. No point within a building requiring Fire Department Standpipes shall be more than 130 feet travel distance from a Fire Department Standpipe outlet connection.

Portions of Fire Department Standpipe systems not located within an enclosed stairway or smokeproof enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

UBC 3803(d) Detailed Requirements.

1. Construction. Fittings and connections shall be of sufficient strength to withstand 300 pounds per square inch of water pressure when ready for service. All Fire Department Standpipes shall be tested hydrostatically to withstand not less than 200 pounds per square inch of pressure for two hours, but in no case shall the pressure be less than 50 pounds per square inch above the maximum working pressure.

2. Size. The size of the standpipe shall conform to Chapter 2 of NFPA No. 14-1974 Edition.

3. Fire Department connections. All Fire Department Standpipes shall be equipped with a two-way siamese fire department connection. Fire Department connections shall be interconnected in the system and shall be located on a street front, not less than 18 inches nor more than 4 feet above grade and shall be equipped with an approved straightway check valve and substantial plugs or caps. All Fire Department connections shall be protected against mechanical injury and shall be visible and accessible. More than one fire department connection may be required.

4. Outlets. Each standpipe shall be equipped with an approved 2½ inch outlet not less than 2 feet nor more than 4 feet above the floor level of each story. All Fire Department Standpipes shall be equipped with a two-way, 2½ inch outlet above the roof line of the building when the roof has a pitch of less than 4 inches in 12 inches and installed in a stairway or heated location. All outlets shall be installed so that a 12 inch long wrench may be used in connecting the hose with clearance for the wrench on all sides of the outlet. Standpipes located in smokeproof enclosures shall have outlets located in the vestibule or on the balcony. Standpipe outlets in stairway enclosures or smoke towers shall be so located that the exit doors do not interfere with the use of the outlet. All outlets shall be equipped with an approved valve, cap and chains.

5. Water Supply. The standpipe system shall deliver a water supply as required by Chapter 5, Water Supplies, NFPA No. 14-1974.

Section 3803 has been amended to add a new subsection as follows:

Section 3803(e) Dry Standpipes, when approved by the Fire Chief, may be installed in lieu of Fire Department Standpipes and shall conform to Section 3803 unamended of the UBC 1976 Edition.

Section 3804(b) of the UBC is amended to read as follows:

3804(b) Where Required. Wet standpipes extending from the cellar or basement into the topmost story shall be provided in Group A Division 1, 2 and 2.1 Occupancies with an occupant load exceeding 1,000; in Groups I, H, B and B-4 Occupancies three or more stories in height; and in Groups H and B Occupancies having a floor area exceeding 20,000 square feet per floor.

EXCEPTIONS:

1. Wet standpipes are not required in buildings equipped throughout with an automatic fire-extinguishing system.

2. Wet standpipes are not required in basements or cellars equipped with a complete automatic fire-extinguishing system.

3. Wet standpipes shall not be required in assembly areas used solely for worship.

Sections 5001 through 5006 of the UBC are amended to read as follows:

Sections 5001 through 5006 of the UBC are deleted and replaced by SBC 301 through 337.

Sections 5101 through 5104 of the UBC are amended to read as follows:

Section 5101, 5102, 5103 and 5104 of the UBC, Elevators, Dumbwaiters, Escalators, Manlifts, Moving Walks, Hoists and Lifts are deleted. Refer to SBC 8801.

The UBC is amended by adding a new chapter as follows:

CHAPTER 55

FACILITIES FOR THE HANDICAPPED

UBC 5501 Where Required.

(a) General. In addition to other provisions in this Code, facilities for the handicapped shall be provided in accordance with this chapter. See Chapter 17 for additional requirements.

(b) Scope. Provisions of this chapter shall apply to all buildings except the following:

1. Group R-3 and M Occupancies.

2. Temporary buildings.

3. Buildings not exceeding 150 square feet in floor area need not be provided with sanitation facilities for the handicapped specified in UBC 5503.

4. One story buildings, other than service stations, not exceeding 2,000 square feet in floor area need not be provided with sanitation facilities for the handicapped specified in UBC 5503 when approved by the Building Official.

5. Floors of buildings not used by the general public and on which handicapped persons cannot be employed because of the nature of the work.

6. Group R-1 Occupancies in which dwelling units are individually owned, sanitation facilities for the handicapped specified in UBC 5503 and other facilities for the handicapped specified in UBC 5504, need not be provided.

7. Supervised living facility, Class A. Group H Occupancies for buildings with six (6) or fewer ambulatory residents.

UBC 5502 Building Accessibility

(a) Definitions.

1. Ramp is a sloped walking surface within a building or attached to a building connecting levels of the building and may be part of an exit in accordance with UBC 3306.

2. Walk is a continuous, permanently defined pathway at grade between public ways and buildings, parking areas and buildings, or between buildings.

3. Slip-resistant is any surfacing of a floor, ramp, or walk which has an anti-slip coefficient of not less than 0.40 as defined in Research Paper No. RP-1879 of the National Bureau of Standards.

(b) Site Approaches. Access to building entrances shall be by walks. Such walks shall be of concrete, asphaltic paving or similar permanent materials with slip-resistant surface, and shall be not less than 48 inches wide with a slope not to exceed one vertical to 20 horizontal.

(c) Building Entrances. At least one required exit of the building shall be accessible for use as ingress for the handicapped, and shall be identified for such use. Such building entrance shall be at the main lobby or corridor, or shall be accessible thereto by ramp or elevator.

(d) Access to the Other Stories. Access for the handicapped to other stories or levels of the building used by the general public and/or employees shall be by elevator or ramp, except the following:

1. Group R-1 Occupancies not exceeding three stories in height.

2. Other occupancies not exceeding two stories in height, and where the total occupant load is less than 100 on all floors other than the main floor.

Such ramp shall have a slip-resistant surface. It

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shall have a slope not to exceed one foot vertical to 12 feet horizontal and a landing at top and bottom, and where the rise exceeds three feet vertically, it shall have an intermediate landing located not to exceed two feet six inches vertically. Bottom landing shall have a minimum dimension of six feet measured in the direction of the ramp, and top and intermediate landings shall have a minimum of dimension of five feet measured in the direction of the ramp. Handrails and guardrails shall be provided as required for stairs.

(e) Automobile Parking Areas. Where automobile parking spaces are provided at least one space per 50 spaces or fraction thereof, shall be provided for the use of the handicapped, and shall be identified for such use. Such parking spaces shall be not less than 12 feet in width, and located as near as practicable to the building entrance specified in UBC 5502(c).

(f) Doors and Doorways. Doors and doorways serving buildings or portions thereof regulated by this chapter shall comply with the following:

1. Doorways or doors in an open position shall have a clear opening width of not less than 31 inches.

2. Doors shall be operable by a single effort with one hand.

3. In doorways consisting of two door leafs, at least one door leaf shall comply with the provisions of this section. See UBC 3303(d) for minimum exit door width.

4. Where access regulated by this chapter is through two or more sets of doors, as in a foyer, vestibule, or lobby, the space separating the doorways shall be not less than seven feet.

5. The floor or landing at doorways shall be level with, or not more than one-half inch lower than the threshold. Where the door swings over floor or landing such floor or landing shall extend not less than one foot beyond the door on the latch side.

6. In dwelling units specified in UBC 5503(a)1, entrances specified in UBC 5502(c), and toilet rooms or compartments specified in UBC 5503(c)1, door opening latch hardware shall have lever handles, and shall be not more than three feet six inches above the floor.

7. Doors serving toilet rooms or stalls shall be capable of being unlocked from either side.

(g) Stair Tread Nosing. Riser shall be slanted to meet the tread nosing edge, or where the tread extends beyond vertical risers, nosing shall be rounded and not project beyond the riser more than one inch.

(h) Aisles and Lanes. Where pedestrian aisles or lanes are defined with directional barriers, rails, benches, merchandise, tables, seats or fences, at least one shall have not less than 31 inches clear width for use of the handicapped and shall be identified for such use.

UBC 5503 Sanitation Facilities. Sanitation facilities may include toilets (water closets), urinals, lavatories, bathtubs, showers, sinks, and similar plumbing fixtures. For number and type of sanitation fixtures required in each occupancy, see Table 17-B.

(a) Where Required.

1. In Group R-1 Occupancies having eight or more dwelling units or guest rooms, sanitation facilities shall be provided in accordance with Table 55-A. In a multiple-building development, the dwelling units or guest rooms containing sanitation facilities shall not be located solely in one building.

2. In other buildings regulated by this chapter, at least one toilet room for each sex shall have not less than one toilet and lavatory complying with this section, and where urinals are provided, not less than one urinal complying with this section. In buildings having more than one toilet room for each sex, not less than two required toilet rooms for each sex shall comply with this section. Toilet rooms having plumbing fixtures required by this section shall be identified for use by the handicapped. Buildings having a posted room directory shall list the location of such toilet rooms in the directory.

(b) Location Other than Group R-1 Apartment Occupancies.

In buildings with an elevator or ramp, the sanitation facilities may be located at any level served by elevator or ramp. Where sanitation facilities are required in buildings without an elevator ramp, the sanitation facilities shall be conveniently located at the required entrance level, accessible without leaving or reentering the building.

(c) Sizes and Clearances.

1. Toilets. Toilet rooms or compartments shall have not less than 36 inches clear space at the front of the toilet and not less than 36 inches clear width between walls, free of door swing and other obstructions. Toilet seats shall be not less than 17 inches nor more than 20 inches above the floor. Grab bars shall be provided at both sides or one side and rear of the toilet. Such grab bars shall be securely fastened to support a load of not less than 250 pounds. They shall have an outside diameter of one and one half inches and shall

have one and one half inches clearance from walls and partitions.

A. A horizontal grab bar shall be mounted so that the lowest point is ten inches above the toilet seat, and extends not less than six inches in front of the toilet bowl. Grab bar shall be not less than 12 inches long.

B. A vertical grab bar shall be mounted 12 inches from the front of the toilet bowl extending from 12 inches above the height of the toilet seat to 30 inches above the toilet seat.

2. Urinals. When provided, urinals shall have a clear access width of not less than 31 inches. The front lip of the bowl of wall mounted urinals shall be not more than 18 inches above the floor.

3. Lavatories. Lavatories shall have a clear access width of not less than 31 inches, clear height of not less than 29 inches to the bottom of the fixture apron, clear height of not more than 34 inches to the rim of the fixture, and a clear depth of not less than 12 inches under the fixture exclusive of bowl and waste pipe. The water control valves shall have lever handles.

4. Bathtubs. When provided, and shower is not furnished, the bathtub shall be equipped with a flexible hose hand shower not less than six feet in length, and a vertical height adjustment bar for the shower head of not less than four feet in length. The bathtub shall have a seat, either folding, retractable or fixed, not less than 17 inches nor more than 20 inches above the tub floor and not less than 15 inches deep, and of water-resistive materials. Grab bars shall be provided at one side of the bathtub. Such grab bars shall be securely fastened to support a load of not less than 250 pounds. They shall have an outside diameter of one and one half inches and shall have one and one half inches clearance from walls and partitions.

A. A horizontal grab bar shall be mounted not less than four inches nor more than six inches above the rim of the bathtub. Grab bar shall be not less than 36 inches long.

B. A vertical grab bar shall be mounted 30 inches from the end of the tub extending from a height of nine inches to a height of three feet six inches above the rim of the tub.

Water valves shall be single lever control, and shall be accessible from the seat.

5. Showers. When provided, the shower stall shall be accessible for the handicapped with a lip or curb at entry no higher than one half inch above floor of room or stall. The shower stall shall have a seat, either folding, retractable or fixed, not less than 17 inches nor more than 20 inches above the shower floor, and not less than 15 inches deep, and of water-resistive material. Grab bars shall be provided at two sides of the shower compartment. Such grab bars shall be securely fastened to support a load of not less than 250 pounds. They shall have an outside diameter of one and one half inches and shall have one and one half inches clearance from walls and partitions.

A. A vertical grab bar shall be mounted on the wall opposite the seat extending from a height of three feet to a height of five feet above the floor of the shower.

B. A horizontal grab bar shall be mounted on the wall adjacent to the seat ten inches above the seat. Grab bar shall be not less than 18 inches long.

Water valves shall be single lever control and shall be accessible from seat.

6. Kitchen Sinks. When provided, kitchen sinks shall have a clear access width of not less than 31 inches, clear height of not less than 29 inches to the bottom of the fixture apron, clear height of not more than 34 inches to the rim of the fixture, and clear depth of not less than 12 inches under the fixture exclusive of bowl and waste pipe. The water control valves shall have lever handles.

UBC 5504 Other Facilities.

(a) Kitchen Facilities. In dwelling units in which sanitation facilities for the handicapped are required, kitchen facilities shall be provided as follows:

1. Space. Clear space of not less than five feet measured between walls, cabinets, appliances, or other obstructions shall be provided. Where cabinets have a base toe space of not less than deep and eight and three fourths inches high, the clear space may be measured from such toe space.

2. Range Controls. Range control handles shall be located at the front or side of the range.

3. Work Space. Work space shall have a clear access width of not less than 31 inches, clear height of not

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less than 29 inches to the bottom, clear height of not more than 34 inches to the top, and clear depth of not less than 12 inches under the work space. The work space shall have not less than four square feet of area with a minimum dimension of 24 inches. It may be fixed, folding or retractable.

(b) Toilet Room Accessories.

1. Mirror and/or Shelves. Where mirrors and/or shelves are provided, at least one shall be mounted so that the bottom is no higher than 40 inches above the floor.

2. Towel racks, Dispensers, Disposal Units. Where wall-mounted towel racks, dispensers, waste disposal containers or similar appliances are provided, at least one of each shall be mounted so that working height is no higher than 40 inches above the floor, and shall be free of interference by grab bars or other appliances or fixtures.

UBC 5505 Viewing Positions in Assembly Occupancies.

(a) Accessibility. Viewing positions required in this section shall be accessible for the handicapped by walk, ramp, or elevator, or combination thereof, through principal entrance.

(b) Number. Performance viewing positions in assembly occupanies with fixed seating shall be provided in accordance with Table 55-B.

(c) Space Requirements. One of the following shall be provided:

1. Clear spaces free of fixed or portable seats, or with removable fixed seats.

2. Spaces with readily removable portable seats.

(d) Location. Viewing positions shall be located at the main floor.

(e) Floor surface. Viewing positions shall have level floor surfaces.

UBC 5506 Controls and Electrical Switches.

(a) Height. The top of controls for elevator controls, thermostats, manual fire alarms, and similar equipment in all buildings regulated by this chapter and electrical switches and receptacles in dwelling units regulated by this chapter shall be no higher than five feet above the floor.

UBC 5507 Tactile Identification.

(a) Where Required. Spaces normally used by the general public shall have tactile identification, such as raised or recessed letters, labels or plaques. The tactile identification shall not be less than four feet six inches nor more than five feet six inches above the floor, mounted on the wall adjacent to the door of the space identified, on the side nearest the door handle.

(b) Floor Numbers at Elevators. Floor numbers shall be tactily identified for the visually handicapped by raised or recessed numbers attached to the elevator door jamb at each floor, not less than three feet six inches nor more than four feet six inches in height above the floor.

(c) Elevator Controls. Elevator controls shall have tactile identification by raised or recessed letters, labels or plaques.

(d) Door Handles. Door to stairs other than exit stairs, loading platforms, boiler rooms, stages, and doors serving other hazardous locations shall have knurled or similarly marked door handles.

UBC 5508 Figures. Figures 55-1 through 55-18 of this chapter are illustrative only. See appropriate chapter sections for specific provisions.

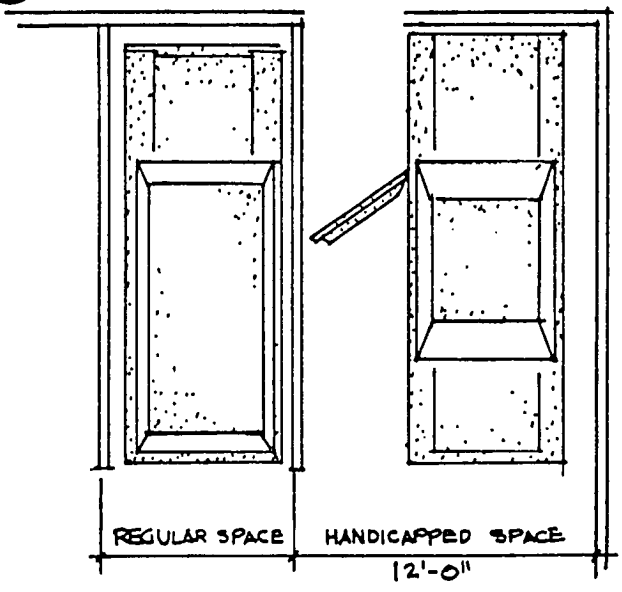
Table 55-A
Sanitation Facilities for the Handicapped

Number of Dwelling Units/ Guest Rooms in Building	Number of Dwelling Units/Guest Rooms requiring Sanitation Facilities
0- 7	0
8- 39	1
40- 59	2
60- 79	3
80- 99	4
100-119	5
120-139	6
140-159	7
160-179	8
180-199	9
200-	10 plus 1 per each 50 units exceeding 200

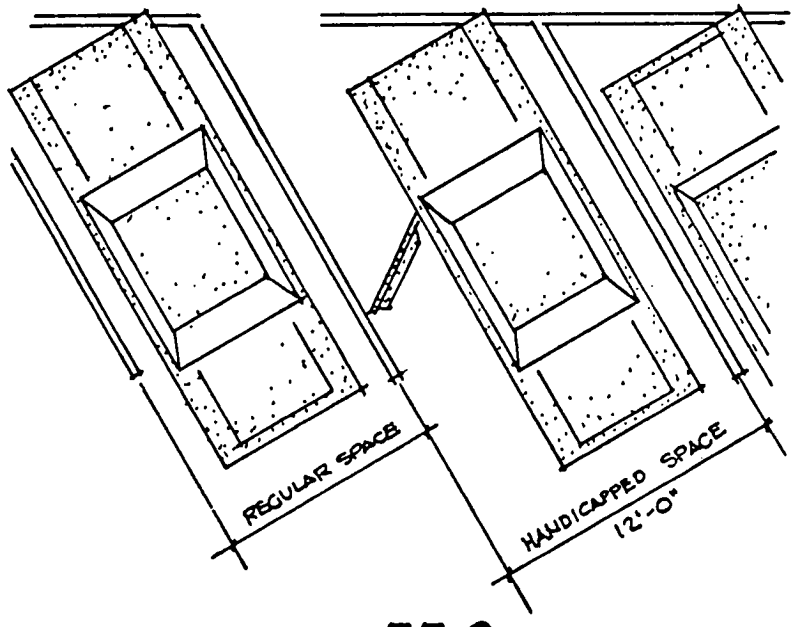
Table 55-B
Viewing Positions

Occupant Load	Minimum Viewing Positions
Motion Picture Auditoriums	
500 and Less	4
Over 500	8
Other Assembly Occupancies	
500 and Less	4
501-1000	12
1001-1500	16
Over 1500	16 plus 1 per 500 additional

UBC 5502(e) Automobile Parking Facilities

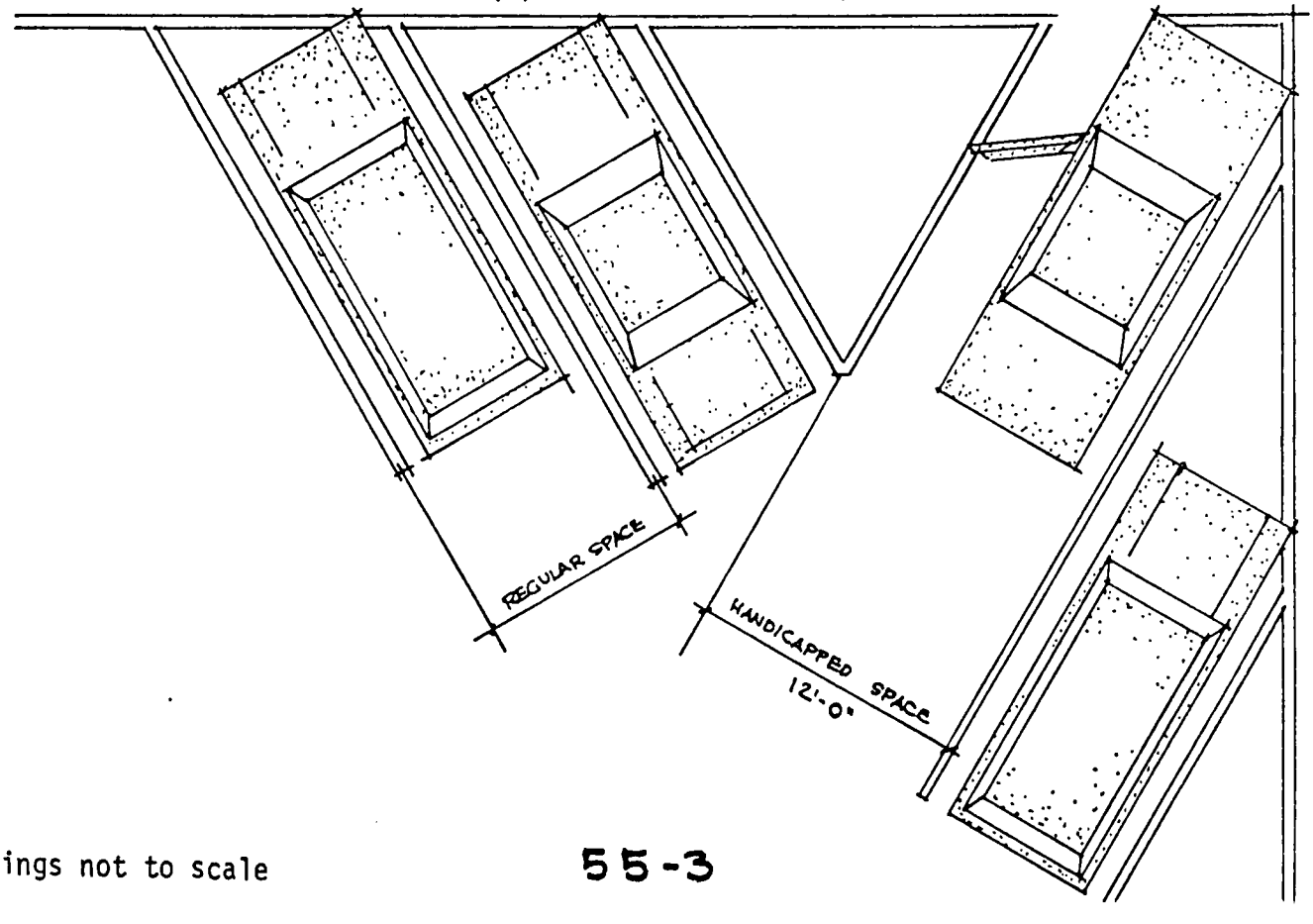


55-1



55-2

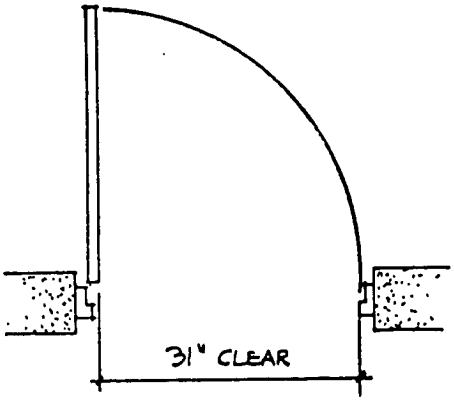
UBC 5502(e) Automobile Parking Facilities



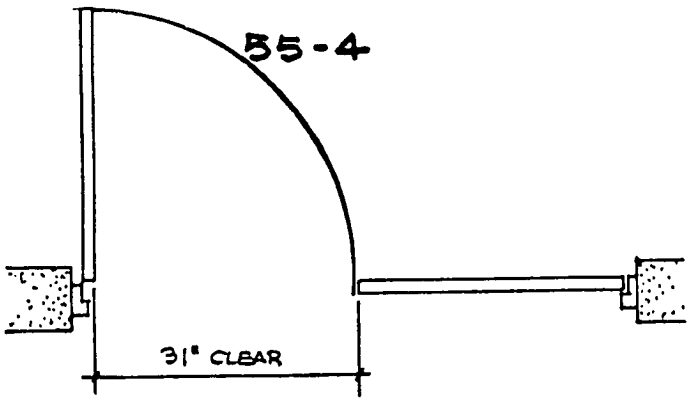
Drawings not to scale

55-3

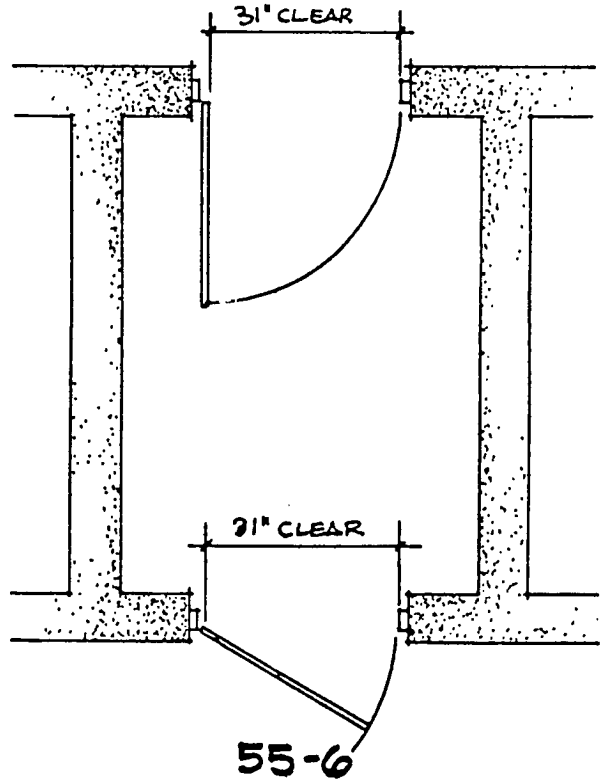
UBC 5502(f) Doors and Doorways



55-4

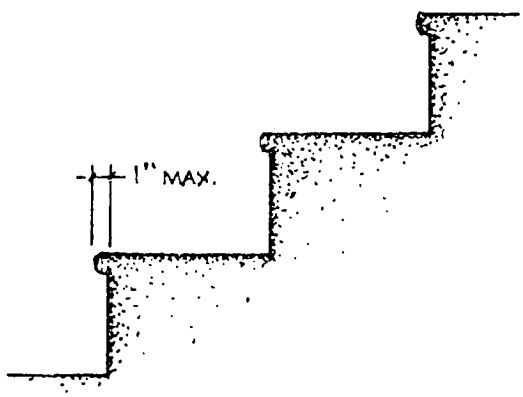


55-5

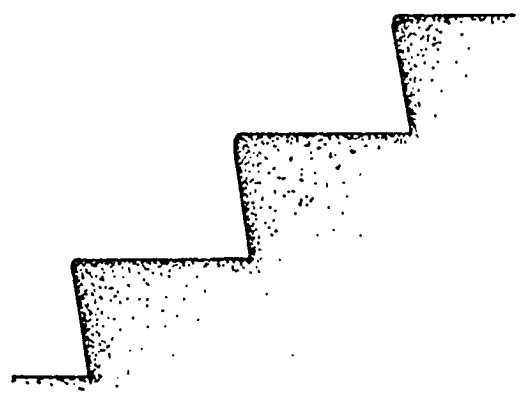


55-6

UBC 5502(g) Stair Tread Nosing



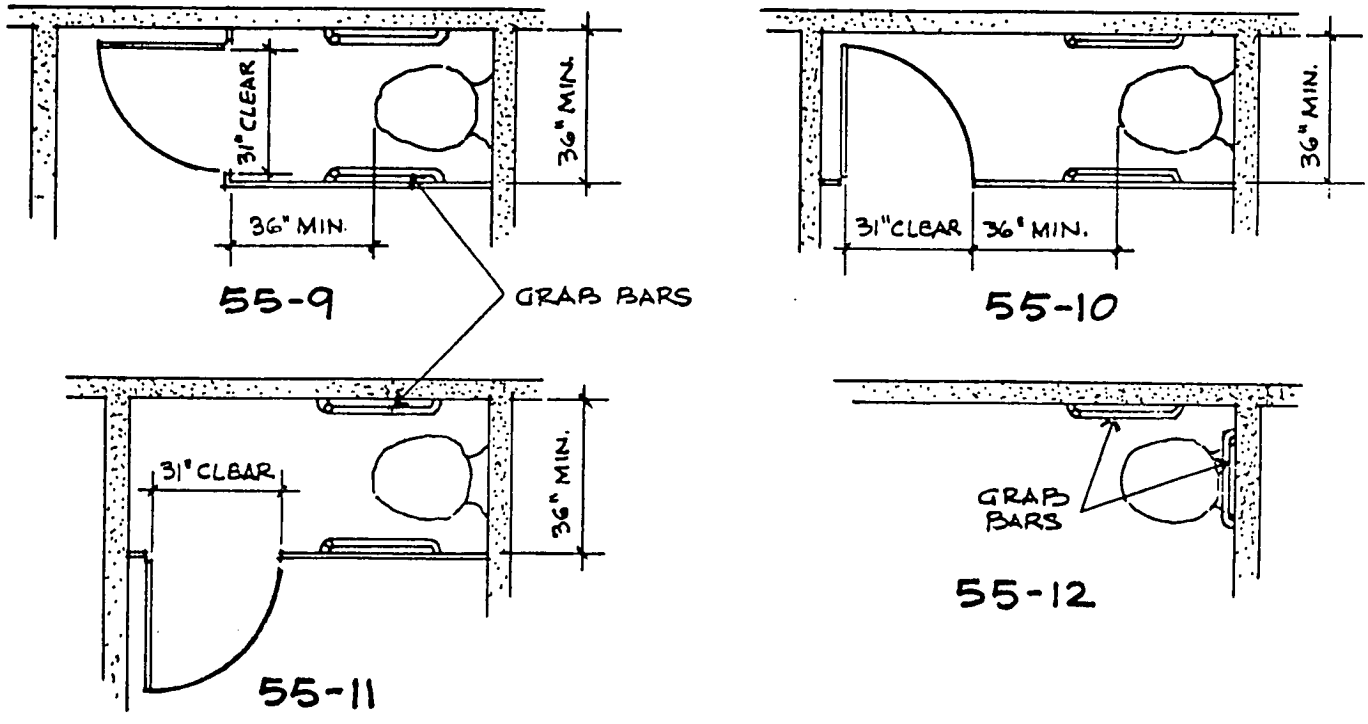
55-7



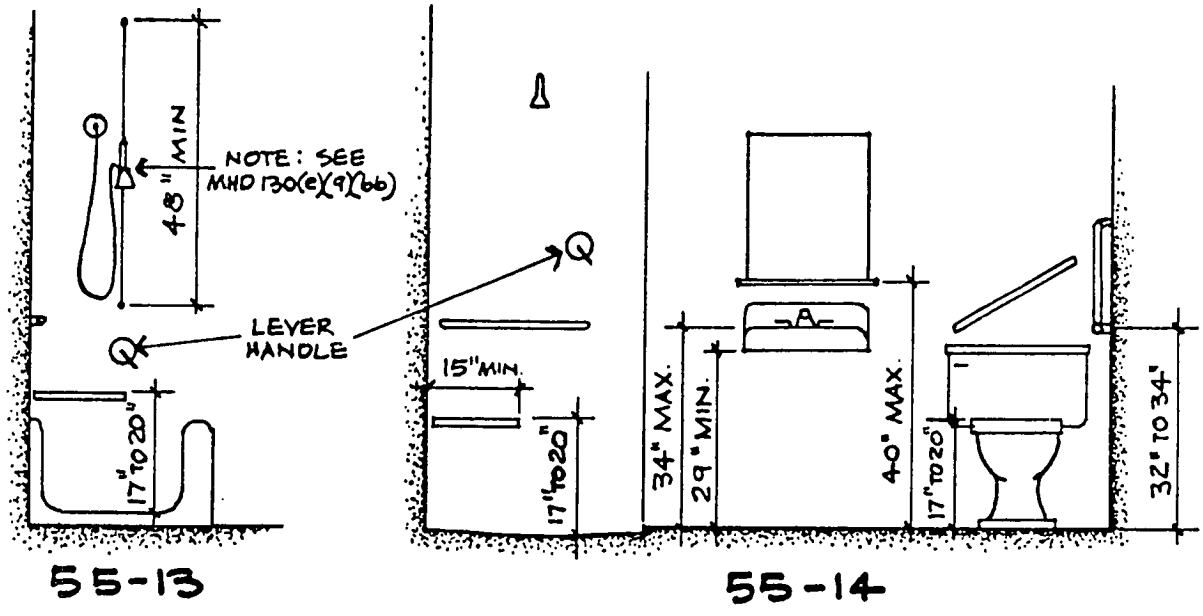
55-8

Drawings not to scale

UBC 5503(c) Sizes and Clearances

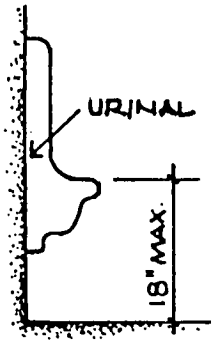


UBC 5503(c) Sizes and Clearances

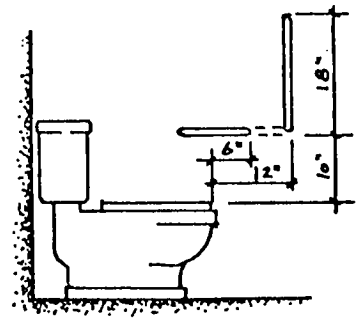


Drawings not to scale

UBC 5503(c) Sizes and Clearances

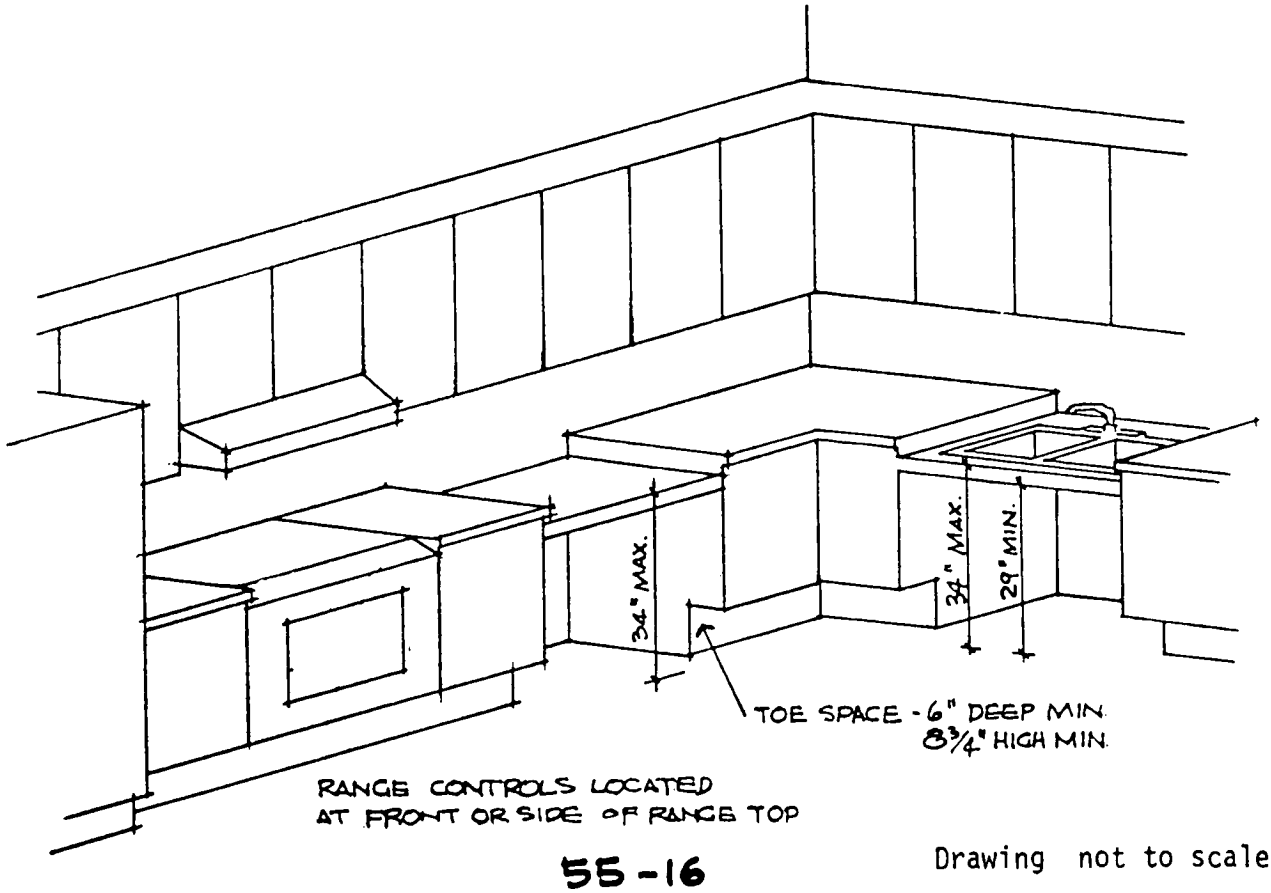


55-15a



55-15b

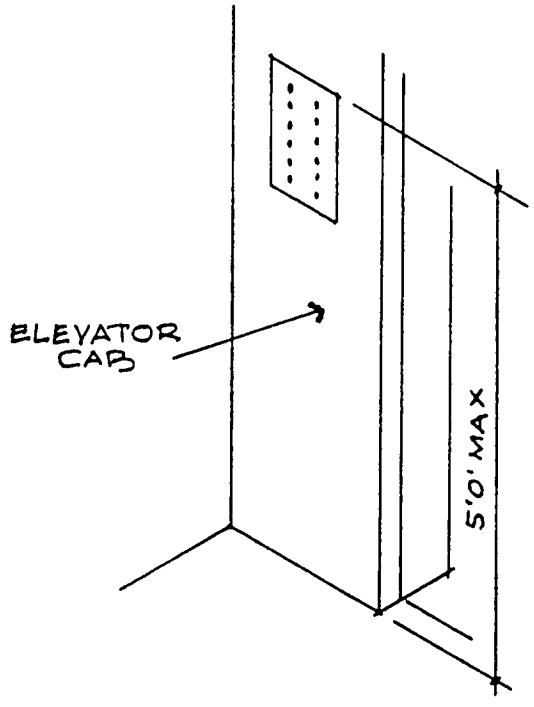
UBC 5504(a) Kitchen Facilities



55-16

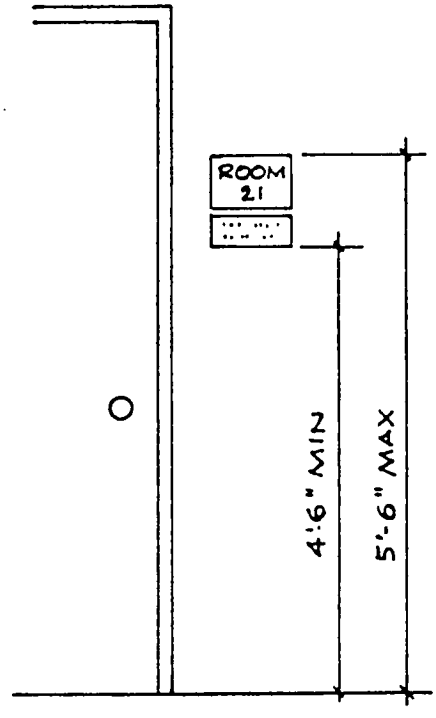
Drawing not to scale

UBC 5506(b) Elevator Controls



55-17

UBC 5507 Identification



55-18

Drawings not to scale

SBC 8601 Electrical. Scope. All new electrical wiring, apparatus and equipment for electric light, heat and power shall comply with the regulations contained in the 1975 Edition of the National Electrical Code as approved by the American National Standards Institute (ANSI CI-1975) and Minnesota Statutes 326.2453, and the State Building Code as promulgated by the Commissioner of Administration, namely:

1. UBC[1] Section 605 (circuit)
2. UBC Section 810 (fire alarms)
3. SBC[2] Section 201 amending Chapter 5 of the UBC Section 512 [(G.F.I. Roof Access)]
4. SBC[2] Section 201 amending Section 810 of the UBC (fire alarms)
5. SBC Section 201 amending 909 of UBC (fire alarms)
6. UBC Section 909 (fire alarms)
7. UBC Section 1302(b) (fire alarms)
8. UBC Section 1310 (fire detection)
9. UBC Section 1413 (fire warning system)
10. UBC Section 1807(j) (standby power)
11. UBC Section 3312 (exit signs and illumination)
12. UBC Section 4303[(a)] **(b)**6 (floor/ceiling system)
13. UBC Section 4305(b) (floor/ceiling —roof/ceiling)
14. SBC Section 8806-2K. (standby power)
15. **SBC Section 203 Electrical Requirements within the Flood Plain**
16. **SBC Section 201 Chapter 55 Electrical Requirements for the Physically Handicapped**
17. **SBC Section 6001 through 6006 Electrical Requirements for Energy Conservation**

[1]Uniform Building Code

[2]State Building Code

Amend SBC 304 to read as follows:

SBC 304 a. Approval. The State Building Inspector reserves to himself the responsibility for approving manufac-

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tured buildings, building systems and components for compliance with the Code. Such responsibility may be delegated by him to approved evaluation agencies.

b. Bi-annual approval Renewal. Manufacturers shall submit plans bi-annually for re-evaluation and approval.

c. Approval Expiration. Approvals shall expire when there are revisions to the Code under which the approval was granted. At such time the manufacturer shall:

1. Submit entire new documentation for evaluation and approval or;

2. Submit evidence that the plans as approved are in compliance with the Code as revised.

SBC 314(c) deleted in its entirety.

Amend SBC 326 to read as follows:

SBC 326 Plan Approval Procedures. A plan approval shall be obtained from the State Building Inspector or the evaluation agency for manufactured buildings and systems. Such approvals are mandatory for all closed construction. Approval for open construction is optional to the manufacturer. General requirements:

(a) Applications, plans, specifications and other documentation shall be submitted in sufficient copies as required. **Plan size shall not exceed 18 inches by 24 inches.**

Amend SBC 330 to read as follows:

SBC 330 Required Construction Details. Plans shall provide or show, but not be limited to, the following details:

(a) General

1. Details and method of installation of manufactured buildings or components to foundations or to each other.

2. All exterior elevations.

3. Cross sections as necessary to identify major building components.

4. Details of flashing, such as at openings and at penetration through roofs. Indicate flashing and gauge to be used.

5. Attic access and attic ventilation.

6. Exterior wall, roof and soffit material as well as finish.

7. Interior wall and ceiling finish material.

8. Fire separation details.

9. Sizes, locations and types of doors and windows.

10. Recommended foundation plans, vents and underfloor access.

11. **Evidence of compliance with the Energy Conservation Regulations SBC 6001 through SBC 6006.**

Amend SBC 335(d) to read as follows:

(d) Seal Fee [ten dollars (10.00)] **Twenty dollars (20.00)** per seal. [Replacement seals, one dollar and fifty cents (1.50) per seal.]

The following amendments to the State Building Code have been submitted by individuals or organizations and are included for consideration as amendments to the Code.

Item 1. Submitted by Sol J. Jacobs, Director of Inspections, City of Minneapolis. Amend UBC Section 3203(d)3 as follows:

3. Shingle; shake and tile roofs. A. General. Installation shall be in accordance with Table NO. 32-B. Underlayment, when required, shall be lapped horizontally and vertically so as to shed water.

In areas subject to roof ice build-up, underlayment consisting of two layers of Type 15 felt applied shingle fashion shall be installed and solid mopped together with approved cementing material between the plies extending from the eave up the roof to a point 24 inches inside the exterior wall line of the building.

The entire State of Minnesota shall be deemed an area subject to roof ice build-up.

Exception: For wood shingle or wood shake roofs the underlayment shall extend 36 inches inside the exterior wall line of the building.

B. Asphalt shingles. Asphalt shingles shall be [fastened] **applied** according to manufacturer's instructions to solidly sheathed roofs but not less than four nails per each strip shingle not more than nominal 36 inches wide and two nails per each individual shingle not more than 18 inches wide shall be used.

Underlayment may be omitted over existing roofs except where the roof slope is less than 4 inches in 12 inches.

The building official may use the application and eave flashing recommendations as set out in the publication

published by the Asphalt Roofing Manufacturers Association which is entitled "Manufacture, Selection, and Application of Asphalt Roofing and Siding Products", Twelfth Revised Edition, 1974, as the criteria for approved application as required by Paragraph B, above, and as an acceptable standard for underlayment as required for shingle, shake, and tile roofs. Adequate ventilation is essential in the unheated space directly below the roof so as to prevent condensation; ventilation and air circulation may be provided by louvres of sufficient size properly placed high in gables and/or by installing eaves and roof vents. The net free ventilating area should be not less than 1/50 of the area of the space ventilated, except that the area may be 1/300 provided at least 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents without the balance of the required ventilation provided by eave or cornice vents.

Item 2. Submitted by Council on Plumbing Code and Examinations.

Amend UBC Section 3207(c) as follows:

Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches above the low point of the roof, or overflow scuppers having three times the size of the roof drains may be installed in adjacent parapet walls with the inlet flow line located 2 inches above the low point of the adjacent roof and having a minimum opening height of 4 inches. Overflow drains shall be connected to drain lines independent from the roof drains, **and shall discharge above grade.**

Item 3. Submitted by Acme Awning, Minneapolis, and Department of Inspections, Minneapolis.

Amend UBC 4506(d) as follows:

(d) Clearances: All portions of any awning shall be at least [8] **7** feet above any public walkway.

Exception: Any valance attached to an awning shall not project above the roof of the awning at the point of attachment. [and shall not extend more than 12 inches below the roof of the awning at the point of attachment, but in no case shall any portion of a valance be less than 7 feet in height above a public way.]

The following are proposed amendments to the Minnesota Plumbing Code, recommended by the Council on Plumbing Codes and Examinations.

Item 1. Amend Table 123(c)(3) III by adding sections 3P and 3Q as follows:

3P Copper Alloy Water Tube ½ inch and ¾ inch ASTM B447

ASTM B-75

3Q Welded Brass Water Tube ½ inch and ¾ inch ASTM B587

Item 2. Amend Table 123(c)(3)V as follows:

50 Bituminized Fiber Drain and Sewer Pipe [D1860]D1861 SSP-1540A.

Item 3. Amend MHD 123(d)(3)(ee) to read as follows:

(ee) Copper tube 3E **or 3G** with 3N wrought fittings with provisions **that it be installed to allow for expansion or contraction and** that all stubs through concrete floors must be sleeved or protected by resilient material.

Item 4. Amend 123(d)(3)(ff) as follows:

Copper Tube 3H with 3N fittings **except that this material may not be buried under or embedded in a concrete slab.**

Item 5. Amend Table 123(c)(e) III 3J to read as follows:

3J Seamless copper tube, Type M hard **and soft** temper H23-1 B88

Item 6. Amend MHD 123(d)(e)(gg) to read as follows:

Copper 3J, 3Ja, 3Jb [or 3G] 3P or 3Q with 3N fittings may be installed exposed or in frame partitions, or in tunnels and shafts, except that this material may not be laid underground or imbedded in masonry or concrete.

Item 7. Amend MHG 123(d)(4)(cc) as follows:

Asbestos cement 5A and 5C and fittings laid on a continuous granular bed. [and only in yard area.]

Item 8. Amend MHD 123(d)(4)(ff) as follows:

Concrete 5N **and 5M and fittings.**

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

Item 9. Amend MHD 123(d)(4)(gg) as follows:

Plastic 6A, 6B, 6C(1) and 6C(2) laid on a granular bed. [in yard areas]

Item 10. Amend MHD 123(d)(6)(bb) as follows:

Concrete 5N **and 5M fittings**

Item 11. Amend MHD 123(d)(14) Special Materials by adding a new section (gg) to read as follows:

(gg) Plastic Tubular Traps, Plastic (ABS and PVC) Tube and Tubular Fittings for Waste Connections. All tubular fittings must comply with the requirements of ASTM Standard F409.

Item 12. Delete Table 127(b)(1).

Item 13. Amend MHD 127(b) to read as follows:

(b) **Required** [Recommended] Minimum of Fixtures

(1) Plumbing fixtures [should] **shall** be provided for the type of building occupancy and in the minimum number shown in Table **17-B of the Uniform Building Code**

[127(b)(1) Minimum Number of Plumbing Fixtures].

Types of building occupancy not shown, or special construction will be considered individually by the Administrative Authority.

Item 14. Amend Table 131(a)(2)A by adding footnote as follows:

No building sewer shall be less than 4 inches in diameter.

Item 15. Amend MHD 132(d)(2) as follows:

(2) Waterproof Flashings and Frost Closure. Each vent terminal shall be made watertight with the roof by proper flashing of copper, lead, galvanized iron, or other approved flashings or flashing materials. Vent pipes which pass through the roof shall be at least 2 inches in diameter. [and shall be encased in a frost proof jacket so arranged and installed that there will be an air space of at least 1 inch between the outside of the pipe and the inside surface of the frost jacket. The frost jacket shall extend from a point below the roof boards to the terminal of the vent it serves. The jacket below the roof boards shall be left open to allow warm air to enter, while the joint with the vent, above the roof, shall be made so as to be watertight and to minimize the loss of air. The jacket shall be so constructed that settling of the building or vent pipe will not destroy the joints nor the jacket.] When approved by the Administrative Authority, other materials or methods may be used which provide adequate protection.

Item 16. Amend MHD 133(g)(1) by adding a new section (bb) to read as follows:

(bb) Overflow Drains. For overflow drains refer to Section 3207(c) of the Uniform Building Code.

Item 17. Submitted by MG Coupling Company, 12353 Wilshire Blvd., Los Angeles, CA, recommended for approval by the Council on Plumbing Codes and Examinations.

Amend MHD 124(a)(2)(11-4) as follows:

(11-4) Mechanical Joints in Hubless Cast Iron Soil Pipe. Mechanical joints for hubless cast iron soil pipe and fittings [shall] **may** be made by using a neoprene sleeve and stainless steel retaining band as specified in CISPI standard 301, **or**

Mechanical joints for hubless cast iron soil pipe and fittings may be made by using a coupling consisting of the housing fabricated in two parts of grey-cast iron castings in accordance with ASTM A.48. The coupling gasket shall be molded neoprene rubber per ASTM C564. Coupling bolts and nuts shall be made of 18-8 stainless steel.

The following amendments to MHD 123(9)(ff), MHD 123(11)(hh), and MHD 124(11)(mm) have been submitted for public hearing by S. D. McCullough, Representative, Genova-Minnesota, Minneapolis, MN. They are recommended by the Council on Plumbing Codes and Examinations.

Item 1. (ff) Plastic 6A or 6B with corresponding fittings may be installed except that [no stack or] horizontal drain may exceed 35 feet in total length **without an Approved expansion and contraction joint or offset to be installed at each 35 feet of uninterrupted length.**

Item 2. (hh) Plastic 6A and 6B with corresponding fittings may be installed except that no [stack or] horizontal vent may exceed 35 feet in total length **without an approved expansion and contraction joint or offset to be installed at each 35 feet of uninterrupted length.**

Item 3. (mm) Plastic joints. Every joint in plastic piping shall be made with approved fittings by either solvent welded or fusion welded connections or with approved insert fittings and metal clamps and screws of corrosion resistant material or threaded joints according to accepted standards. All solvent materials must meet approved recog-

nized standards. **Expansion and contraction joints conforming to ASTM-2665 and ASTM 2661.**

The following are proposed amendments to the Minnesota Building Code. Recommended by the Elevator Code Subcommittee.

Item 1. Amend SBC 8806 as follows:

Elevators, Dumbwaiters, Escalators and Moving Walks

1. The eighth edition of American National Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks — ANSI A17.1-97 including supplements ANSI A17.1a-1972, ANSI A17.1b-1973, as amended herein, **ANSI A17.1e-1974, ANSI A17.1d-1975, ANSI A17.1e-1975 and ANSI A17.1f-1975,** are hereby incorporated by reference and made a part of this Code. All references in ANSI A17.1-1971 and **supplements** to the National Electrical Code Ansi C1-1968 **and ANSI C1-1971** shall be changed to read: "National Electrical Code" ANSI C1[1971] **1975** (NFPA 70[-1971]-**1975.**

Item 2. SBC 8806-2-1 is amended as follows:

SBC 8806-2-1. In each elevator lobby served by elevators complying with rule 211.3 of the supplement to the Elevator Code identified as ANSI A17.1b-1973, all automatic-operation elevators serving three or more [landings] **stories above or below the main floor** of having a travel of twenty five (25) feet or more **above or below the main floor,** at least one elevator car serving all floors in a building shall have a platform size that is standard for the elevator supplier, and capable of accommodating an ambulance stretcher in its horizontal position. The opening to the elevator car shall be capable of passageway for such ambulance stretcher. [Such elevator shall be provided for Fire Department emergency access to all floors and shall be so identified.]

Item 3. Amend rule 100.4a to read as follows:

100.4a Vents required

Hoistways of elevators serving more than three (3) floors shall be provided with means of venting smoke and hot gases to the outer air in case of fire. **Vents may be manually openable or remote control automatic vents.**

Exceptions:

Hoistways not extending into the top floor of the building, in buildings other than hotels, apartment houses, hospitals and similar buildings with overnight sleeping quarters, where the hoistways are equipped with approved automatic sprinklers connected to the building water-supply system or to an approved automatic sprinkler system (See NFPA No. 13-[1969] 1975 Sprinkler System).

Such systems shall be responsive to an accumulation of smoke as well as heat at the top of the hoistway.

Item 4. Amend rule 100.4b to read as follows:

100.4b Location of Vents

Vents shall be located:

1. In the side **or top** of the hoistway enclosure **or** directly below the floor or floors at the top of the hoistway, and shall open either directly to the outer air or through noncombustible ducts to the outer air; or

2. In the wall or roof of the pent-house or overhead machinery space above the roof, provided that openings have a total area not less than the minimum specified in Rule 100.4c **and vents passing through machine rooms must be in noncombustible ducts.**

When a hatch is installed in the roof of the hoistway, a protective grill shall be provided to prevent persons from falling into hoistway.

Item 5. Amend rule 204.2a 2 as follows:

204.2a 2.

Slow burning combustible materials for insulating, sound deadening or decorative purposes may be used for lining enclosures if firmly bonded flat to the enclosure. Such materials shall not be padded. [or tufted] **Materials used must have a Class I flame spread rating.**

Item 6. Amend SBC section 8806-9(g) as follows:

SBC 8806-9(g) One (1) car in each bank of automatic-operation elevators serving [three (3)] **five (5)** or more [landings] floors **above or below the main floor** [or having a travel distance of twenty five (25) feet or more] shall be provided with emergency service controls as specified in Rule 211.3a of this supplement.

Item 7. Amend rule 211.3a-4 of ANSI A17.1b-1973 as follows:

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Rule 211.3a-4

A **two** [three] position (off, **and** on, [and by pass]) key-operated switch shall be provided in or adjacent to an operating panel in each card and it shall be effective when the main floor key-operated switch (see 211.3a-1) is in the "on" position or a sensor has been activated and the car has returned to the main floor or other approved level. The key shall be removable only in the "off" position and when in the "on" position, it shall place the elevator on emergency [service] **operation.** [The switch shall be maintained in the bypass position by continuous pressure and when maintained in this position, shall by pass the car door electric contact and hoistway door interlocks and shall permit travel only toward the main floor or other approved level.]

Item 8. Amend SBC 8806-2 K to read as follows:

SBC 8806-2K

Standy power. In every building over one story and more than 75 feet in height, emergency power shall be provided for at least one **passenger** elevator in each bank. This emergency power shall be [automatically] transferable to any other elevator in the bank and shall be capable of operating the elevator with a full load at contract speed or not less than 150 feet per minute. Emergency power shall be provided by an approved self-contained generator set to operate whenever there is a loss of power in the normal power supply. The generator shall be in a separate room having at least a one-hour fire resistive occupancy separation from the remainder of the building and shall have **an on site** fuel supply adequate to operate the equipment for two hours. See UBC Standards 18-1.

Item 9. Amend SBC 8806 J to read as follows:

Exterior elevator call buttons shall be placed not higher than [42] **60** inches above the floor. No emergency stop switch, door opening and door closing buttons, or elevator floor buttons shall be placed higher than [48] **60** inches above the floor.

The UBC is amended by adding a new appendix Chapter 32 which reads as follows:

CHAPTER 32

RE-ROOFING

General.

Section 3209. All re-roofing shall conform to the applicable provisions of Chapter 32 of this Code.

Roofiing materials and methods of application shall comply with Uniform Building Code Standards or shall follow the manufacturer's installation requirements when approved by the Building Official.

Inspections

Section 3210. New roof coverings shall not be applied without first obtaining an inspection and written approval from the building official. A final inspection and approval shall be obtained from the building official when the re-roofiing is complete.

Built-up Roofs

Section 3211. (a) General. Built-up roof covering shall be completely removed before applying the new roof covering.

EXCEPTION: The building official may allow existing roof coverings to remain when inspection reveals that:

1. The structural design is sufficient to sustain the weight of an additional roof.

2. There is not more than one existing roof on the structure

3. The existing roof is securely attached to the deck

4. The roof deck is not rotted and is structurally sound.

5. Existing insulation is not water soaked.

(b) Preparation of Roof and Application of New Covering. When conditions specified in subsection (a) above have been met. The re-roofing shall be accomplished as follows:

1. Gravel surfaced. The roof shall be cleaned of all loose gravel and debris. All blisters shall be cut and made smooth. One-half inch insulation board shall be nailed or cemented to the existing roofing with coal tar pitch applied at the rate of 40 pounds per square foot over which a new roof complying with Section 3203 shall be installed; or, all existing gravel shall be removed to provide a smooth surface. All blisters shall be cut and cemented or nailed smooth. A base sheet as defined in the Code shall be nailed in place. The base sheet shall not be mopped to the old roofing. New roofing conforming to Section 3203 shall be applied.

2. Smooth or cap-sheet surfaced. All blisters and curled edges shall be cut and cemented or nailed smooth. A base sheet shall be nailed or, in the case of nonnailable decks, mopped to the existing roofing. New roofing conforming to Section 3203 shall be applied.

3. Flashing and edgings. Vent flashings, metal edgings, drain outlets, metal counterflashing and collars shall be removed and cleaned. Rusted metal shall be replaced. Metal shall be primed with cutback primer prior to installation. Collars and flanges shall be flashed per the roofing manufacturer's instructions.

4. Intersecting walls. All concrete and masonry walls shall be completely cleaned and primed to receive new flashing. All vertical walls, other than concrete or masonry, shall have the surface finish material removed to a height of 6 inches above the deck to receive new roofing and flashing. All rotted wood shall be replaced with new materials. Surface finish material shall be replaced to match original construction.

5. Cant strips. Where space permits, cant strips shall be installed at all angles. All angles shall be flashed with at least two more layers than in the new roof with an exposed finish layer of asbestos felt or mineral surfaced cap-sheet.

Shingles and Shakes

Section 3312. Based upon inspection of the existing roofing, the building official may permit a re-cover in accordance with the following provisions:

1. Asphalt shingle application. Not more than two overlays of asphalt shingles shall be applied over an existing asphalt shingle roof.

Not more than two overlays of asphalt shingle roofing shall be applied over wood shingles. Asphalt shingles applied over wood shingles shall have an overlay of not less than Type 30 nonperforated felt.

2. Wood shake application. Not more than one overlay of wood shakes shall be applied over an existing asphalt shingle or wood shingle roof (with one layer of 18-inch, 30 pound felt interlaced between each layer of shakes.)

3. Wood shingle application. Not more than one overlay of wood shingles shall be applied over existing wood shingles.

4. Application over shakes. New roof covering shall not be applied over an existing shake roof.

5. Flashing and edgings. Rusted or damaged flashing, vent caps and metal edgings shall be replaced with new materials as necessary.

Action:

Add a new appendix chapter to the Minnesota State Building Code (SBC) to be listed in SBC 110(a).2 and have the effect of being adopted without change at the discretion of any municipality.

Chapter 41

BUILDING SECURITY

Purpose

Sec. 4101. The purpose of this Chapter is to provide minimum standards of design, construction and quality of materials for all applicable buildings to safeguard life, property and the public welfare from the perils of burglary and other unlawful trespasses.

Scope

Sec. 4102. The provisions of this Chapter shall apply to all accessible openings into dwelling units or guest rooms of Groups H (R-1), I (R-3) and (R-4) occupancies.

Limitations

Sec. 4103. Building security methods which will create a hazard to life by obstructing any means of egress or any opening which could be used as an emergency exiting facility shall be prohibited.

The provisions of this Chapter shall not supersede the safety requirements relative to latching or locking devices on exit doors which would be contrary to the provisions of Chapter 33 nor shall the provisions of this Chapter be construed to waive any other provisions of this code.

Definitions

Sec. 4104. For the purposes of this Chapter, certain terms are defined as follows:

ACCESSIBLE OPENING is any opening, or part thereof, in a wall defining the perimeter of a dwelling unit or guest room, which is located within 12 feet (3.63 m) vertically or 6 feet (1.83 m) horizontally of any surface or building appendage which would tend to supply access to said opening from either ground level or adjacent occupancies or structures. This definition also includes openings leading from breezeways, porches or garage areas into dwelling units.

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SWINGING DOOR ASSEMBLY is a unit composed of a group of parts or components that make up a closure for a passageway through a wall. For the purposes of this chapter, a door assembly consists of the following parts: door, hinges, locking device or devices, operation contacts (such as handles, knobs, push plates), miscellaneous hardware and closers, the frame, including the head and jambs plus the anchorage devices to the surrounding wall.

HORIZONTAL SLIDING DOOR ASSEMBLY forms a closure for a passageway through a wall and consists of a frame, one or more operative panels that slide (roll) horizontally within the frame and ancillary hardware such as rollers and locking devices. Such assemblies may also contain fixed panels which are fastened to the frame and/or to the wall in which the frame is installed.

WINDOW ASSEMBLY is a unit composed of a group of parts or components that make up a closure for an opening in a wall to control light, air and other elements, and which normally includes: glazed sash, hinges or pivots, sash lock, sash operator, window frame, miscellaneous hardware and the anchorage between the window and the wall.

For additional definitions, see UBC Standards No. 41-1 and No. 41-2.

Swinging Doors

Sec. 4105. (a) General. All accessible prime swinging door assemblies shall be designed, constructed and installed so that, when in the locked position they shall not permit entry when subjected to the forces shown in Table 41-A and tested in accordance with UBC Standard No. 41-1 Part A.

(b) Entry Vision. All entry doors to dwelling units or guest rooms shall be arranged so that the occupant has a view of the area immediately outside the door through approved view ports or glazed openings when provided in compliance with UBC Chapter 33 and Sections 4105(i) and 4107 of this Chapter.

(c) Frames/Jambs. Door jambs shall be installed with solid backing in such a manner that no voids exist between the strike jamb and the frame opening for a vertical distance of 6 inches (150 mm) each side of the strike.

1. Hollow metal frames shall be filled with concrete or similar noncrushable substance on the strike side of the frame.

2. In wood framing, horizontal blocking shall be placed between studs at door lock height for 2 stud spaces each side of the door opening. Trimmers shall be full length from the header to the floor with solid backing against sole plates.

3. Jambs for inswinging doors shall have the stop and jamb of one piece or equivalent construction.

(d) Hinges. Hinges for outswinging doors shall be equipped with nonremovable hinge pins or a mechanical interlock to preclude removal of door from the exterior by removing the hinge pins. In wood framing, door frames shall be shimmed behind the hinges and such hinges shall be mounted with a minimum of 2 No. 8 size screws, or equivalent, penetrating at least 2 inches (5cm) into solid backing beyond the surface to which the hinge is attached.

(e) Bolts and Latches. A minimum of one deadlocking bolt and one deadlocking latch, or equivalent, shall be provided for all accessible single swinging doors. Such bolts shall have minimum projections of 1 inch (25 mm) and such latches shall have minimum projections of 1/2 inch (12 mm).

1. Pairs of swinging doors shall have the inactive leaf secured by vertical throw bolts with a minimum projection of 1/2 inch (12 mm), or equivalent, and the active leaf shall be subject to the same provisions as for single swinging doors.

Exception: Doors connecting directly between dwelling units or guest rooms shall be equipped with a minimum of one deadlocking bolt which shall be key operated from both sides or equivalent.

(f) Strikes. Metal strikes shall be required for all locking devices and shall have a minimum thickness of .062 inches (1.5 mm). In wood framing, such strikes shall be mounted with a minimum of 2 No. 8 size screws, or equivalent, penetrating at least 2 inches (5 cm) into solid backing beyond the surface to which the strike is attached.

1. Strikes used for dead latches shall not allow the dead-latch plunger to enter the strike hole with the latch after installation.

(g) Lock Activating Devices, Lock cylinders shall be so designed or protected as to preclude disassembly from the exterior by twisting, prying, pulling or other manipulation.

1. When key-in-knob locksets are constructed such that the deadbolt and dead latch are mechanically interconnected, such locksets shall be so designed or protected that the lock cannot be compromised by wrench-

ing the knob from the exterior or knocking the knob off to gain access to the locking means and manipulating the bolt and latch by hand or with the aid of a screwdriver to gain access.

(h) Keying Requirements. Keyed locks, other than master keyed locks, shall have a minimum of 5 tumblers or be of such design as to provide a minimum of 10,000 possible interchange-free combinations. Master-keyed locks shall provide a minimum of 1,000 interchange-free combinations.

1. A system of construction keying must be provided which will insure that the use of construction keys will be precluded after occupancy by a new tenant or resident.

2. All dwelling units or guest rooms grouped within a building or complex shall have access locks keyed differently.

(i) Door Panels and Glazing. Door panels or glazing materials located within 36 inches (900 mm) of the inside lock activating device of an accessible swinging door assembly shall withstand the required impacts in accordance with the appropriate provisions of UBC Standard 41-1 Part A, Sec. 41.1007(h).

Exceptions: 1. Openings in doors, when such openings do not exceed 2 inches (50 mm) in the smaller dim

Exceptions: 1. Opening in doors, when such openings do not exceed 2 inches (50 mm) in the smaller dimension.

2. When the glazing material is U.L. Listed Burglary Resisting Glazing Material (UL Standard 972) installed in an approved manner according to manufacturer's specifications.

3. When the opening is protected by approved metal bars or grilles having a pattern such that the minimum dimension of any opening on the bars or grilles does not exceed 2 inches (50 mm).

Horizontal Sliding Doors.

Sec. 4106. (a) General. All accessible prime horizontal sliding doors shall be designed, constructed and installed so that, when in the locked position they shall not permit entry when tested in accordance with UBC Standard No. 41-1 Part B.

Windows

Sec. 4107. (a) General. All accessible prime windows assemblies shall be designed, constructed and installed so that, when in the locked position they shall not permit entry when tested in accordance with UBC Standard No. 41-2.

Exceptions: 1. Fixed windows which are not designed to open; the glazing material of which may be installed in a sash, or may be installed directly into a window frame.

2. Windows located more than 36 inches (900 mm) from the inside lock activating device of a swinging door assembly when such windows have a clear cross section of 96 inches^2 (600 cm^2) or less and have as their smallest dimension a span of less than 6 inches (150 mm).

3. Windows protected by approved metal bars or grilles having a pattern such that the maximum dimension of any opening in the bars or grilles shall not exceed 2 inches (50 mm).

(b) Accessible louver or jalousie window shall be protected by approved metal bars or grilles.

Disassembly

Section 4108. All accessible prime door and window assemblies and components shall incorporate no screws, bolts, nails, staples or other mechanical fasteners which are accessible from the exterior and which could be removed by hand with the aid of a knife, screwdriver or pliers within a period of 5 minutes, thus permitting entry by disassembly.

Acceptance

Sec. 4109. The methods of installation and on-site assembly of swinging door units and other assemblies as described in this Chapter shall be deemed to meet the standards of this Chapter.

All assemblies and components which are otherwise subject to the Standards of this Chapter shall have a label or other identification indicating compliance with the applicable standards.

Exception: Such labeling requirements may be waived and the subject products deemed to qualify where proof of compliance satisfactory to the building official is sub-

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mitted as per American National Standard Practice for Certification by Producer or Supplier, ANSI Z34.2-1969.

Alternate Security Provisions

Sec. 4110. The provisions of this Chapter are not intended to prevent the use of any device or method of construction not specifically prescribed by this Chapter when such alternate provides equivalent security and has been approved as provided by SBC 103(7) and SBC 106.

TABLE NO. 41-A SWINGING DOOR ASSEMBLIES[1]

TEST	Measure	Level
Static Bold Load[2]	Resistance	150 lbf (670 N)
Hinge Pin Tensile Load[3]	Resistance	50 lbf (225 N)
Jamb/Wall Stiffness[4]	Force to Spread	1350 lbf (6000 N)
	Increase in Lockfront to Strike Space	0.375 In. (9.5mm)
Knob Torque[5]	Resistance (25 N-m)	18.5 lbf-ft
Cylinder Core Load	Resistance	290 lbf (1300 N)
Knob Impact[5]	Resistance	One blow of 74 ft-lbf (100 J)
Door Impact	Impact resistance at center and panel	2 blows of 59 ft-lbf (80 J)
	Impact resistance at glazing[6]	One blow of 74 ft-lbf (100 J)
Hinge Impact	Impact resistance at hinge	2 blows of 59 ft. lbf (80 J)
Bolt Impact	Impact resistance at bolt	2 blows of 59 ft-lbf (80 J)

[1] For test methods see UBC Standard No. 41-1, Part A.

[2] Minimum projection of 1 In. (25 mm) for bolts and ½ In. (12 mm) for latches.

[3] Applies to outswinging doors only.

[4] Bolt of latch must remain in strike.

[5] Applies to key-in-knob locksets where the bolt and the latch are mechanically interconnected such that a single action projects or retracts both.

[6] Does not apply when the glazing starts at a distance of 36 In. (900 mm) or more from the lock.

Note: lbf = pounds force.

Also:

Add new Uniform Building Code Standards as follows:

UNIFORM BUILDING CODE STANDARD NO. 41-1
TESTS FOR SECURITY OF DOOR ASSEMBLIES

Part A — Swinging Doors

Based on Standard Methods F476-76 of the American Society for Testing and Materials.

See Section 4105, Uniform Building Code

Scope

Sec. 41.1001. Part A of this Standard covers test methods for swinging door assemblies that are required for building security by the Uniform Building Code.

The wall assembly described in Section 41.1005 is considered suitable for the scope of these methods of test. Wall construction different in dynamic response from that described in Section 41.1005 may require testing according to Section 41.1007(d).

Definitions

Sec. 41.1002. BOLT is a metal bar which, when actuated, is projected (or "thrown") either horizontally or vertically into a retaining member, such as a strike plate, to prevent a door from moving or opening.

BOLT PROJECTION (OR BOLT THROW) is the distance from the edge of the door, at the bolt center line, to the farthest point on the bolt in the projected position, when subjected to end pressure.

COMPONENT, as distinguished from a part, is a subassembly which combines with other components to make up a total door assembly. The prime components of a door assembly include: door, lock, hinges, jamb/wall, jamb/strike and wall.

CYLINDER is the cylindrical subassembly of a lock containing the cylinder core, tumbler mechanism and the keyway. A double cylinder lock is one which has a key-actuated cylinder on both the exterior and interior of the door.

CYLINDER CORE (OR CYLINDER PLUG) is the central part of a cylinder containing the keyway, which is rotated by the key to operate the lock mechanism.

DEADBOLT is a lock bolt which does not have a spring action as opposed to a latch bolt, which does. The deadbolt must be actuated by a key and/or knob or thumb turn and when projected becomes locked against return by end pressure.

DEAD LATCH (OR DEADLOCKING LATCH

BOLT) is a spring-actuated latch bolt having a beveled end and incorporating a plunger which, when depressed, automatically lock the projected latch bolt against return by end pressure.

DOOR ASSEMBLY is a unit composed of a group of parts or components which make up a closure for an opening to control passageway through a wall. For the purposes of this standard, a door assembly consists of the following parts: door; hinges; locking device or devices; operation contacts (such as handles, knobs, push plates); miscellaneous hardware and closers; the frame, including the head and jambs plus the anchorage devices to the surrounding wall and a portion of the surrounding wall extending 36 inches (900 mm) from each side of the jambs and 16 inches (400 mm) above the head.

JAMB is a vertical member of a door frame to which the door is secured.

JAMB/STRIKE is that component of a door assembly which receives and holds secure the extended lock bolt; the strike and jamb used together are considered a unit.

JAMB/WALL is that component of a door assembly to which a door is attached and secured; the wall and jamb, used together, are considered a unit.

KEY-IN-KNOB is a lockset having the key cylinder and other lock mechanisms such as a push or turn button contained in the knobs.

LATCH (OR LATCH BOLT) is a beveled, spring-actuated bolt, which may or may not have a deadlocking device.

LOCK (OR LOCKSET) is a keyed device (complete with cylinder, latch or deadbolt mechanism, and trim such as knobs, levers, thumb turns, escutcheons, etc.) for securing a door in a closed position against forced entry. For the purposes of this Standard, a lock does not include the strike plate.

LOCK FRONT is the outer plate through which the locking bolt projects and which is usually flush with the edge of the door.

PART, as distinguished from component, is a unit (or subassembly) which combines with other units to make up a component.

STRIKE is a metal plate attached to, or mortised into, a door or door jamb to receive and to hold a projected latch bolt and/or deadbolt in order to secure the door to the jamb.

SWINGING DOOR is a stile (side) hinged door.

Samples for Testing

Sec. 41.1003. Specimens shall be representative and the construction shall be verified by assembly drawings and bill of materials. Complete manufacturer or fabricator installation instructions and full-size or accurate scale templates for all items or hardware shall be included.

Test Equipment Performance

Sec. 41.1004. (a) Door Ram. The door ram shall be a pendulum system with a cylindrical weight capable of delivering horizontal impacts of 59 ft-lbf (80 J). The striking end of the weight shall be hemispherical and have a diameter of approximately 6 inches (150 mm). The impact nose may be made of any durable impact resistant material such as epoxypolyamide resin.

(b) Component Ram. The component ram shall be a pendulum system capable of delivering horizontal impacts of 74 ft-lbf (100 J). The pendulum weight shall be cylindrical with a maximum diameter of 3 inches (7.6 cm) and a striking end consisting of a ¼ inch (6 mm) carriage bolt, or equivalent.

(c) Vertical Impactor. The vertical impactor shall be a rigid pendulum system consisting of a weight with a flat rectangular striking surface capable of delivering downward impacts of 74 ft-lbf (100 J).

(d) Torque Applicator. The portable torque applicator shall be capable of delivering and measuring up to 18.5 lbf-ft (25 N-m) of torque to door knobs. The torque-loading adapter shall be designed to grip the knob.

(e) Tension-Loading Device. The tension-loading device shall be capable of delivering and measuring tensile forces of up to 290 lbf (1300 N).

(f) Compression-Loading Device. The compression-loading device shall be capable of delivering and measuring compressive forces of up to 150 lbf (670 N).

(g) Jamb-Spreading Device. The jamb-spreading de-

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vice shall be capable of delivering to door jambs and measuring spreading forces of up to 1350 lbf (6000 N) with a means of measuring up to ½ inch (12 mm) of spread in the door opening. The device shall have on each end either a loading-bearing plate or pressure foot which provides a minimum contact surface of 1½ by 5 inches (38 mm by 125 mm).

(h) Instrument Accuracy. All test monitoring equipment shall be calibrated to an accuracy of ± 5 percent. The impact energy of each pendulum system shall be controlled to within ± 1 percent.

(i) Manipulation Tools. Tools used for manipulation tests of this Standard shall consist of the following: a knife or spatula with a thin blade approximately 1/32 inch (0.8 mm) thick, not more than 1 inch (25 mm) wide and no longer than 6 inches (150 mm); slotted and phillips type screw drivers not exceeding 10 inches (250 mm) in length; common hand and needle nose pliers not exceeding 8 inches (200 mm) in length; and a piece of stiff steel wire with a diameter of approximately 1/16 inch (1.6 mm) and length of not in excess of 3 feet (900 mm).

Construction and Size

Sec. 41.1005. The construction and size of the test door assemblies, consisting of single doors, doors in pairs, special-purpose doors (such as Dutch doors), jambs and headers, and all hardware components shall be representative of that for which acceptance is desired.

The test fixture for door, door jamb, hinge, lock strike and other components shall consist of a vertical wall section constructed from 2 by 4 wood studs, 16 inches (410 mm) on center with double studding around the rough openings and outer edges of the fixture. The test fixture shall be covered with ½ inch (12 mm) exterior grade plywood sheathing on the exterior and ½ inch (12 mm) gypsum board on the interior and shall be secured to a supporting fixture and to the laboratory floor such as to simulate the rigidity normally provided to a door assembly in a building by the ceiling, floor and walls.

An alternate test fixture for lockset components consisting of a small door assembly may be used. The frame shall be fabricated from steel angle and plate at least 3/16 inch (5 mm) thick. The test panel shall be 24 inches (600 mm) square and 1¾ inches (45 mm) thick, made by bonding three pieces of plywood together or by cutting a section from 1¾ inch (45 mm) solid wood core door. A 2 by 2 by ⅛ inch (50 by 50 by 3-mm) steel angle shall be bolted to the hinge edge of the door panel, and a removable steel strike plate shall be bolted to the frame at the lock position of the door panel.

Test fixture for static bolt load tests shall consist of a vertical panel fabricated from wood attached to a stable horizontal base. The top edge shall be about 1¾ inches (45 mm) thick and the top edge shall be prepared to permit the lockset which is being tested to be mounted in the panel in accordance with the manufacturer's instructions.

Mounting for Test

Sec. 41.1006. Prepare doors and door jambs for the installation of locksets and hinges in conformance with the manufacturer's instructions. Follow the manufacturer's instructions for fastening the jamb to the test fixture described in Section 41.1005.

To test doors, door jambs, hinges, and jamb/strikes as components, install them in the component test fixture described in Section 41.1005. Except when testing hinges, hinge the door with one and one-half pair of 4½ inch (115 mm) steel butt hinges, and fix it in the closed-lock position (at the normal lock point) with a real or simulated latch bolt having sufficient strength and stiffness to prevent it from failing during test. In the absence of other construction specifications, make the clearances on the lock side, hinge side and top of the door 1/8 ± 1/64 (3.2 ± .04 mm). Clearance at the threshold is not considered critical in these tests.

To test locksets as components, install them in the alternate component test fixture described in Section 41.1005. Fix the test panel in the closed-locked position at the normal locking point. Hinge the test panel with two 4½ inch (115 mm) steel butt hinges.

To test locksets for static bolt load, install them in the test fixture described in Section 41.1005.

Conduct of Tests

Sec. 41.1007. (a) Test Sequence. Perform tests in the same sequence as presented below, as appropriate for the item under test, using new components for each destructive test.

(b) Static Bolt Load Test. To test locks as components, mount the lock in the test fixture described in Section 41.1006. Lock the door lock with the deadbolt and dead latch in the fully projected position. If the lock incorporates a dead latch plunger, attach a ¼ inch (6.5 mm) spacer to the lock front. Allow the dead latch plunger to project flush with the top of the spacer, and hold it in that position with a piece of tape or by other suitable means.

Place the test fixture and lock in a compression-testing machine, or mount it on a firm, level surface with the compression-loading device directly above it, the loading

face parallel to the lock front, and the axis of the hydraulic ram perpendicular to the lock front. Apply an increasing compressive load to the end of the latch bolt or the deadbolt to the required resistance load and note the bolt or latch projection (the distance between the lock front surface to the farthest point on the bolt or latch at the center line). Such projection shall not be less than ¼ inch (6.5 mm) while under load.

To test for bolt projection, apply end pressure to the projected deadbolt or latch and measure the distance from the lock front surface to the farthest point on the bolt or latch at the center line.

Following the test of a lock incorporating a dead latch, place the strike plate over the latch of a dead latch to determine whether it is possible for both the dead latch and the dead latch plunger to enter the hole in the strike simultaneously.

(c) Hinge Pin Tensile Load. Drill a hole into the end of the exposed hinge pin with a No. 21 drill, centered on and aligned with the axis of the pin to a depth of 0.5 inch (12 mm). Tap the hole with a 10-32 tap and attach the tensile-loading adapter to it with a hardened cap screw. Clamp one leaf of the hinge in a vice so that the hinge pin is in the horizontal plane. Attach the tensile-loading device to a rigid load-bearing support in front of the hinge and align the pulling axis with the axis of the hinge pin. Attach the tensile-loading adapter to the tensile device and apply the required load.

(d) Jamb/Wall Stiffness Test. Prepare the test specimen in accordance with Section 41.1006 using the full-size test fixture. Position the jamb-spreading device between the door jambs at lock height. Apply increasing force as required and measure the space between the lock front and strike.

While the required load is being applied, or the lock front-to-strike distance increased, push or pull on the door to determine whether the deadbolt or dead latch is engaged with the strike.

(e) Knob Torque Test. Prepare the test specimen in accordance with Section 41.1006 and lock the door or test panel in the closed position. Attach the torque-loading adaptor to the knob and connect the torque applicator to it. Alternately subject the knob to a torque of up to the required torque once in both the clockwise and counter-clockwise directions, applying the torque as rapidly as possible. Inspect the lock to determine whether the bolt is retracted from the strike when the torque is applied. If the knob is broken off, attempt to open the door or test panel by manipulating the lock mechanism by hand or with the aid of manipulation tools as described in Section 41.1004(i) (such lock mechanism shall resist manipulation for a period of not less than 5 minutes.)

With the door or test panel open, and the deadbolt or dead latch in the projected, locked position, attempt to (1) depress the deadbolt by applying hand pressure to its end or (2) depress latch and dead latch plunger fully, allow the latch to extend, then slowly allow the plunger to project until the last point of dead locking is reached.

(f) Cylinder Core Tension Test. Prepare the test specimen in accordance with Section 41.1006 and lock the door or test panel in the closed position. Using a No. 21 drill, drill a hole in the cylinder core adjacent to the keyway to a minimum depth of ½ inch (12 mm). Tap this hole with a 10-32 thread. Attach the tensile-loading device to a rigid load-bearing support in front of the cylinder and align the pulling axis with a 10-32 hardened cap screw fully threaded into the tapped hole. Connect the cylinder tensile-loading device to the adaptor and apply the required tensile force to the cylinder. Following this test, release the load and attempt to open the door or test panel by manipulating an exposed lock mechanism for a period of 5 minutes by hand or with the aid of manipulation tools as described in Section 41.1004(i). If the core or cylinder is not damaged, open the door and test the dead latch and deadbolt for end pressure resistance as in Section 41.1007(e).

(g) Knob Impact Test. Prepare the test specimen in accordance with Section 41.1006 and lock door or test panel in the closed position. Position the vertical impactor so that the pendulum arm is horizontal when the striking weight contacts the top of the door knob, and its center of gravity is in the vertical center-line through the knob. Raise the weight to the height necessary to deliver the required impact and release it. Deliver the required number of impacts to the knob. After each impact, attempt to open the door or test panel by turning the knob, and if the knob is broken off, by manipulating the exposed lock mechanism by hand or with the aid of manipulation tools as described in Section 41.1004(i). Such lock mechanism shall resist manipulation for a period of not less than 5 minutes. Open the door and test the dead latch and deadbolt for end pressure resistance as in Section 41.1007(e).

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

(h) Door Impact Test. Prepare the test specimen in accordance with Section 41.1006, using the full-size test fixture, and lock the door in the closed position. Set up the door ram pendulum weight so that its axis is horizontal, and perpendicular to the face of the door at a point defined by the intersection of the vertical center line of the door and a line of the door and a line from the center of the bolt to the center of the mid-height hinge (or the midpoint between hinges, when the door is hung with two hinges).

Attach to the door, centered on the impact point, a rigid foamed polystyrene impact buffer which has a diameter of 6 inches (150 mm), a thickness of 2 inches (50 mm) and a density of 2 lbs/ft^3 (32 Kg/m^3). Position the door ram such that its striking nose just touches the surface of the buffer when at rest. Pull back the pendulum weight to the height necessary to produce the required impact, and release it. Subject the door to two impacts at each required impact level, attaching a new buffer for each impact. If the door is forced open by the test, without damaging the jamb/strike or lock component, the door specimen fails the test. If the door surface is broken, attempt to reach inside the door and unlock it from the inside.

If the door has one or more recessed panels, subject the one closest to the lock to two impacts at each required impact level. Locate the impact point on the corner of the panel closest to the lock, 3 inches (75 mm) in from the vertical and horizontal edges of the panel. Perform the test as described above, attaching a new impact buffer for each impact. If the panel is broken, attempt to open the door by reaching through the opening and unlocking the door from the inside.

To test glazing panels, set up the component ram pendulum weight so that, at rest, its striking nose just touches the front surface at a point located long a line from the center of the inside lock activating device through the closest point on the perimeter of the glazing panel, which is within 36 inches (900 mm), and just far enough onto the panel to ensure that the impactor clears the edge of the door and the panel. Pull back the pendulum weight to the height necessary to produce the required impact and release it. If the panel is broken, reach through the opening and attempt to open the door by unlocking it from the inside.

Following the door impact test, inspect the door to determine whether there is enough damage to invalidate the subsequent tests; if there is, replace it.

(i) Hinge Impact Test. Prepare the test specimen in accordance with Section 41.1006 using the full-size test fixture and lock the door in a closed position. When testing hinges incorporating a mechanical interlock between the leaves in the closed position and door assemblies using such hinges, remove the hinge pin during this test. Set up the door ram pendulum weight so that its axis is horizontal, and perpendicular to the exterior face of the door at a point 8 inches (200 mm) from the bottom hinge on a horizontal line through the midpoint of the hinge.

Attach an impact buffer as described in section 41.1007(h) to the face of the door, centered on the impact point, and position the pendulum so that its striking nose just touches the surface of the buffer when at rest. Pull back the pendulum weight to the height necessary to produce the required impact and release it. Subject the door to two impacts at each required impact level, attaching a new buffer for each impact. After each impact, try to open the door.

A door component failure consists of any splitting or fracture of the door which allows it to be opened; a jamb component failure consists of any splitting, fracture or pullout of the attachment screws which allows the door to be opened; a hinge component failure consists of any damage to the leaves or pin of the hinge which allows the door to be opened.

Following the hinge impact test, inspect the components to determine whether there is sufficient damage to invalidate the subsequent test; if there is, replace those damaged.

(j) Bolt Impact Test. Prepare the test specimen in accordance with Section 41.1006 and lock the door in the closed position. Set up the door ram pendulum weight so that its axis is horizontal, and perpendicular to the face of the door at a point defined by the intersection of a vertical line 8 inches (200 mm) from the lock edge, and a line from the center of the bolt to the center of the mid-height hinge (or the midpoint between hinges when the door is hung with two hinges).

Attach an impact buffer as described in Section 41.1007(h) to the face of the door, centered on the impact point, and position the pendulum so that it just touches the surface of the buffer when at rest. Pull back the pendulum weight to the height necessary to produce the required impact and release it. Subject the door to two impacts at each required impact level, attaching a new buffer for each impact. After each impact, try to open the door or test panel by turning the knob, and test the deadbolt and dead latch for end pressure resistance as in Section 41.1007(e).

Acceptance Criteria

Sec. 41.1008. (a) General. An item shall fail a test if an individual can open the door from the outside by push-

ing or pulling on it, by turning the knob, by manipulating an exposed lock mechanism, by reaching through damaged portions of the door and unlocking it from the inside; or can enter through damaged portions of the door even though it might not be possible to open the door; or if the dead latch or deadbolt can be depressed by a static load applied by hand after being subjected to the levels of energy set forth in the Uniform Building Code.

A jamb/strike component failure consists of a pullout or fracture of the strike attachment screws or any splitting, bending or fracture of the door jamb at the strike which permits the door to be opened; a door component failure consists of any splitting or fracture of the door which allows it to be opened; a lock component failure consists of any damage to the lock mechanism or bolt which allows the door to be opened after being subjected to the levels of energy set forth in the Uniform Building Code.

(b) Disassembly. Door assemblies and components shall incorporate no screw, bolt, nail, staple or other mechanical fastener which is accessible from the outside and which could be removed by hand or with the aid of manipulation tools as described in Section 41.1004(i) within a period of 5 minutes thus permitting entry by disassemby.

(c) Strike Hole Size. For locks incorporating dead latches, the size of the latch retaining hole in the strike shall be such that it shall not be possible for both the dead latch and dead latch plunger to enter the hole together when the latch is fully extended.

(d) Bolt Pressure Resistance. When locks are tested, the force required to depress the latch or deadbolt from the locked and projected position shall not be less than specified in the Uniform Building Code.

Report

Section 41.1009. The test report shall include:

(a) Name and Address of the facility or laboratory performing these tests and issuing the report as well as the dates of testing and issuance of the report.

(b) Identification of the sample tests (e.g., name of manufacturer, model and/or series number of product and other information as may be pertinent).

(c) Final assembly drawing(s) and components list relative to type, size, location and number of anchors, locking devices and mounting screws used.

(d) Statement indicating that specimen either passed or failed these tests.

(e) Statement that all tests were conducted in accordance with these procedures.

Part B — Horizontal Sliding Doors

Based on Architectural Aluminum Manufacturer's Association Specifications AAMA 1303.4-1973 (Second Printing) for Forced-Entry Resistance of Aluminum Sliding Glass Doors and National Woodwork Manufacturer's Association Standard I.S.3-70 as amended October, 1974, for Forced-Entry Resistance of Wood Sliding Patio Doors.

See Section 4106, Uniform Building Code

Scope

Sec. 41.1011. Part B of this Standard covers test methods for sliding door assemblies that are required for building security by the Uniform Building Code.

Test Equipment

Sec. 41.1012. Four tension-loading devices capable of delivering and measuring tensile forces of up to 300 lbf (1340 N) with an accuracy of + 5 percent for each applied load level are required for these tests.

Manipulation tools shall consist of: a knife or spatula with a thin blade approximately 1/32 inch (0.8 mm) thick, not more than 1 inch (25 mm) wide and no longer than 6 inches (150 mm); slotted and phillips type screw drivers not exceeding 10 inches (250 mm) in length; common hand and needle nose pliers not exceeding 8 inches (200 mm) in length; and a piece of stiff steel wire with a diameter of approximately 1/16 inch (1.6 mm) and a length of not in excess of 3 feet (900 mm).

Disassembly

Sec. 41.1013. Door assemblies and components shall incorporate screw, bolt, nail, staple or other mechanical fastener which is accessible from the outside and which could be removed by hand or with the aid of manipulation tools as described in Section 41.1012 within a period of 5 minutes thus permitting entry by disassembly.

Samples for Testing

Sec. 41.1014. Specimens shall be representative, and the construction shall be verified by assembly drawings and bill of materials. Complete manufacturer or fabricator installation instructions and full-size or accurate scale templates for all items and hardware shall be included.

Construction and Size

Sec. 41.1015. The construction and size of the test door assemblies, jambs and headers, and all hardware components shall be representative of that for which acceptance is desired.

The door assembly and mounting in the support fixture shall simulate the rigidity normally provided to a door assembly in a building by the ceiling, floor and walls.

Tests

Sec. 41.1016. Sample doors submitted for testing shall be glazed. Panels shall be closed and locked. Holes may be drilled at convenient locations on the assembly to attach load adapter brackets and the glazing may be taped to prevent possible injury from shattering under load. Loads may be applied from either the interior or exterior side of the door.

Prior to testing, remove from the sliding door assembly all mechanical fasteners which can be removed from the exterior by hand or with the aid of manipulation tools, as described in Section 41.1012, within a period of 5 minutes.

Tests shall be performed in the following order:

Test I. With the panels in the normal position, a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the door. Remove the load and determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test II. With panels in the normal position, a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical pull stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the door while, simultaneously, an additional concentrated load of 150 pounds (670 N) is applied to the same area of the same stile in a direction perpendicular to the plane of glass toward the interior side of the building. Remove the load and determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test III. With the panels in the normal position, a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical pull stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plan of the glass that would tend to open the door while, simultaneously, an additional concentrated load of 150 pound (670 N) is applied to the same area of the same stile in the direction perpendicular to the plane of the glass toward the exterior side of the door. Remove the load and determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test IV. With the movable panel lifted upward to its full limit within the confines of the door frame (a force of 150 pounds [670 N], plus the weight of the panel, shall be divided equally and applied to the bottom rail within 6 inches (150 mm) of the corners to move panels upward), a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical pull stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the door. With the loads applied, determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test V. With the movable panel lifted upward to its full limit within the confines of the door frame as described in Test IV, a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical pull stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the door while, simultaneously, an additional concentrated load of 150 pounds (670 N) is applied to the same area of the same stile in the direction perpendicular to the plane of the glass toward the interior side of the door. With the loads applied, determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test VI. With the movable panel lifted upward to its full limit within the confines of the door panel as described in Test IV, a concentrated load of 300 pounds (1340 N) shall be applied separately to each vertical stile incorporating a locking device, at a point on the stile within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the door while, simultaneously, an additional concentrated load of 150 pounds (670 N) is applied to the same area of the same stile in the direction per-

pendicular to the plane of the glass toward the exterior side of the door. With the loads applied, determine if the locking device can be unlocked by manipulation as described in Test VIII.

Test VII. For inside sliding doors, repeat Test V while simultaneously applying a concentrated load of 50 pounds (220 N) at the end of the movable bottom rail near the interlock stiles and inward. For outside sliding doors, repeat Test VI while simultaneously applying a concentrated load of 50 pounds (220 N) at the end of the movable bottom rail near the interlock stiles and outward.

Test VIII. Examine the assembly and determine a method and position for inserting a tool through the door assembly from the outside so as to contact the locking device or the latch. Determine whether it is possible to insert or manipulate with any of the manipulation tools described in Section 41.1012 so as to unlock the door. Such assemblies shall resist manipulation for a period of not less than 5 minutes.

Test IX. Repeat Tests I, II and III for fixed panels locating the load point at the midpoint of the stile opposite the meeting stile of the panel under test.

Performance Requirements

Sec. 41.1017. A sliding door assembly shall fail these tests if at any time during or after the test the sliding door assembly does not remain engaged, intact and in the closed and locked position; or if one can enter by manipulating an exposed component or through displaced or damaged portions.

Report

Sec. 41.1018. See Section 41.1009.

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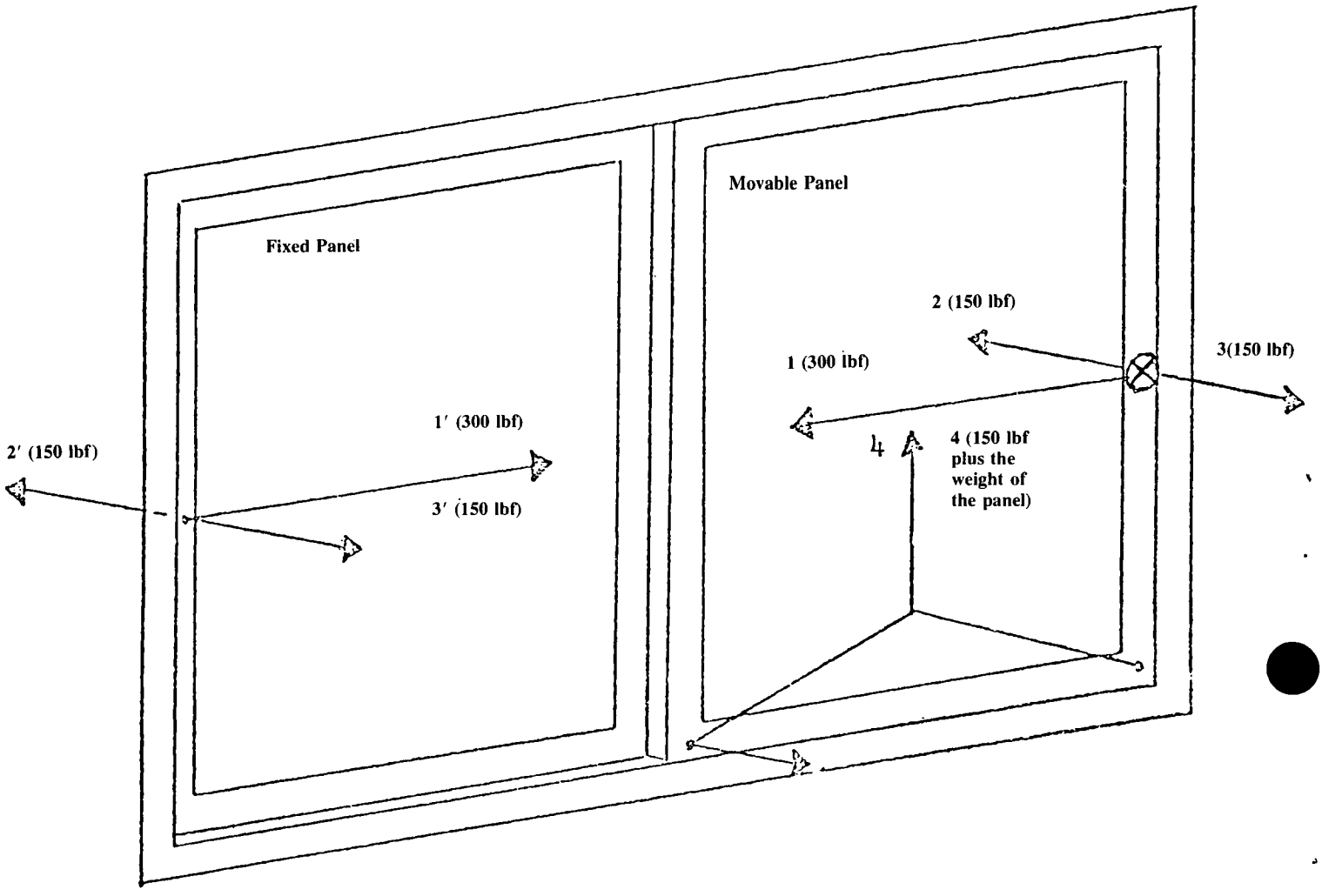
DIRECTIONS AND POINTS OF LOAD APPLICATION FOR TESTING OF HORIZONTAL SLIDING DOORS



Movable and Fixed Panel Tests:

Test I	Apply load 1
Test II	Apply loads 1 & 2
Test III	Apply loads 1 & 3
Test IV	Apply loads 4 & 1
Test V	Apply loads 4, 1 & 2
Test VI	Apply loads 4, 1 & 3
Test VII	Apply loads 4, 1, 3 & 5
Test VIII	Manipulation Described
Test IX	For fixed panels repeat Tests I, II & III with the load point at the midpoint of the stile opposite the meeting stile of the door panel being tested.

FIGURE 1

UNIFORM BUILDING CODE STANDARD 41-2 TESTS FOR SECURITY OF WINDOW ASSEMBLIES

Based on Architectural Aluminum Manufacturer's Association Specifications AAMA 1302.4-1973 for Forced-Entry Resistant Aluminum Prime Windows and Recommended Standards of the International Conference of Building Officials.

See Section 4107, Uniform Building Code

Scope

Sec. 41.2001. This Standard covers test methods for window assemblies that are required for building security by the Uniform Building Code. For the purpose of this Standard, windows are classified as follows: Type A window assemblies incorporate one or more sashes that open by sliding in the plane of the wall in which the window is installed.

Type B window assemblies incorporate one or more framed sashes which are hinged at or near two corners of the individual sash and open toward the exterior of the wall.

Type C are window assemblies which incorporate one or more sashes which open toward the interior and are hinged at or near two corners of the sash.

Type D are window assemblies which incorporate one or more sashes which are hinged or pivot near the center so that part of the sash opens into the interior wall and part opens toward the exterior.

Definitions

Sec. 41.2002. JAMB—See WINDOW FRAME.

LOCKING DEVICE is a part of a window assembly which is intended to prevent movement of the movable sash, which may be the sash lock or sash operator.

MULLION is a window frame member which meets with and provides structural support to a pair of adjacent sashes at their meeting edges.

MUNTIN is a structural member of a sash which extends either horizontally between the stiles or vertically between the rails to support individual panes of glazing material when the sash incorporates two or more panes.

RAIL is a horizontal member of a sash frame. A meeting rail is one which mates with a rail of another sash or a framing member of the window frame when the sash is in the closed position.

SASH is an assembly of stiles, rails, and sometimes, muntins assembled into a single frame which supports the glazing material. A fixed sash is one which is not intended to be opened. A movable sash is intended to be opened.

SILL is the lowest horizontal member of a window frame.

STILE is a vertical framing member of a sash. A meeting stile is one which mates with a stile of another sash, or a vertical framing member of the window frame when the sash is in the closed position.

WINDOW ASSEMBLY is a unit which includes a window and the anchorage between the window and the wall.

WINDOW FRAME is that part of a window which surounds and supports the sashes and is attached to the surrounding wall. The members include side jambs (vertical), head jamb (upper, horizontal), sill and mullions.

Test Equipment

Sec. 41.2003. Four tension-loading devices capable of delivering and measuring tensile forces of up to 150 lbf (670 N) with an accuracy of ± 5 percent for each applied load level are required for these tests.

Manipulation tools shall consist of: a knife or spatula with a thin blade approximately 1/32 inch (0.8 mm) thick, not more than 1 inch (25 mm) wide and no longer than 6 inches (150 mm); slotted and phillips type screw drivers not exceeding 10 inches (250 mm) in length; common hand and needle nose pliers not exceeding 8 inches (200 mm) in lenght; and a piece of stiff steel wire with a diameter of approximately 1/16 inch (1.6 mm) and length of not in excess of 3 feet (900 mm).

Disassembly

Sec. 41.2004. Window assemblies and components shall not include screws, bolts, nails, staples or other mechanical fasteners which are accessible from the exterior and which could be removed by hand or with the aid of manipulation tools as described in Section 41.2003 within a period of 5 minutes thus permitting entry by disassembly.

Samples for Testing

Sec. 41.2005. Specimens shall be representative, and the construction shall be verified by assembly drawings and bill of materials. Complete manufacturer or fabricator installation instructions and full size or accurate scale templates for all items and hardware shall be included.

Sample Preparation

Sec. 41.2006. Following the manufacturer's installation instructions, install the window assembly in a rigid test fixture which simulates the rigidity normally provided to a window assembly in a building. The unit shall be fully glazed. Holes may be drilled in the sash at convenient locations to attach load adapter brackets and the glazing may be taped to prevent possible injury from shattering under load. Loads may be applied from either the interior or exterior side of the window.

Before performing any test, remove from the window assembly all screws, bolts, hinge pins, rigid snap galzing beads or other mechanical fasteners which can be removed from the exterior by hand or with the aid of manipulation tools as described in Section 41.2003. Sashes shall be closed and locked.

Tests for Sliding Windows

Sec. 41.2007. Tests for Type A window assemblies shall be performed in the following order:

Test I. With each sliding sash in the normal position, a concentrated load of 150 pounds (670 N) shall be applied separately to each sash member incorporating a locking device, at a point on a sash member within 6 inches (150 mm) of the locking device, in a direction parallel to the plane of the glass that would tend to opening the window. Remove the load and apply the manipulation test described in Section 41.2010.

Test II. With each sliding sash in the normal position, a concentrated load of 150 pounds (670 N) shall be applied separately to each sash member incorporating a locking device, at a point on a sash member within 6 inches (160 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the window while, simultaneously, an additional concentrated load of 75 pounds (340 N) is applied in the same area of the same sash member in the direction perpendicular to the plane of the glass toward the interior side of the window. Remove the load and apply the manipulation test described in Section 41.2010.

Test III. With each sliding sash in the normal position, a concentrated load of 150 pounds (670 N) shall be applied separately to each sash member incorporating a locking device, at a point on the sash member within 6 inches (150 mm) of the locking device, in a direction parallel to the plane of the glass that would tend to open the window while, simultaneously, an additional concentrated load of 75 pounds (340 N) is applied to the same sash member in a direction perpendicular to the plane of the glass toward the exterior side of the window. Remove the load and apply the manipulation test described in Section 41.2010.

Test IV. For horizonal sliding windows, move the sliding sash upward by applying a force of 75 pounds, plus the weight of the sash, divided equally between the lower corners of the sash. For vertical sliding or hung type windows, move the sash toward the side offering the least resistance by applying a force of 75 pounds (340 N) to the side corners opposite the frame member towards which the window is being moved. Simultaneously, apply a concentrated load of 150 pounds (670 N) to each sash member incorporating a locking device, at a point on the sash within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the window. With the assembly under load, apply the manipulation test described in Section 41.2010.

Test V. With the sliding sash moved upward (for horizontal sliding windows) or to the side (for vertical or hung-type windows) within the confines of the window frame as described in Test IV, a concentrated load of 150 pounds (670 N) shall be applied separately to each sash member incorporating a locking device, at a point on the sash within 6 inches (150 mm) of the locking device, in a direction parallel to the plane of the glass that would tend to open the window while, simultaneously, an additional concentrated load of 75 pounds (340 N) is applied to the same area of the same sash in the direction perpendicular to the plane of the glass toward the interior side of the window. With the assembly under load, apply the manipulation test described in Section 41.2010.

Test VI. With the sliding sash moved upward (for horizontal sliding windows) or to the side (for vertical sliding or hung-type windows) within the confines of the window frame as described in Test IV, a concentrated load of 150 pounds (670 N) shall be applied separately to each sash member incorporating a locking device, at a point on the sash member within 6 inches (150 mm) of the locking device, in the direction parallel to the plane of the glass that would tend to open the window while, simultaneously, an additional concentrated load of 75 pounds (340 N) is applied to the same sash member in the direction perpendicular to the plane of the glass toward the exterior side of the window. With the assembly under load, apply the manipulation test described in Section 41.2010.

Test VII. For inside sliding windows, repeat Test V

while simultaneously applying a concentrated load of 25 pounds (110 N) at the end of the movable sash member located opposite the frame member toward which the sash is either moved or lifted and near the corner which is furthest from the locking device; such load shall be applied perpendicular to the sash and toward the interior. For outside sliding windows, repeat Test VI while simultaneously applying a concentrated load of 25 pounds (110 N) located in the same manner as for inside sliding windows, but applied in the opposite direction or toward the exterior.

Test VIII. Repeat Tests I, II and III for fixed sashes, which are part of a Type A window assembly, locating the load point at the midpoint of the stile or rail opposite the meeting stile or rail of the sash under test.

Tests for Hinged Window Assemblies

Sec. 41.2008. Tests for Types B and C window assemblies shall be performed in the following order:

The manipulation test described in Section 41.2010 shall be applied after Tests I and II while the sash is under load and after Test IV with the loads removed.

Test I. With the swinging sash in the normal position, simultaneously apply a concentrated load of 75 pounds (340 N) within 3 inches (75 mm) of each end of the rail or stile which is opposite the hinged side, in the direction perpendicular to the plane of the glass that would tend to open the window.

Test II. Repeat Test I and simultaneously apply a load of 75 pounds (340 N) on the outside within 1 inch (25 mm) of each end of the stile or rail which is opposite the hinge side, in a direction parallel to the plane of the glazing which would tend to disengage the lock. Remove the loads.

Test III. With the swinging sash in the normal position, apply a concentrated load of 150 pounds (670 N) on the rail or stile containing the locking device within 6 inches (150 mm) of the lock in a direction perpendicular to the place of the glass that would tend to open the window.

Test IV. Repeat Test III and simultaneously apply a load of 75 pounds (340 N) on the outside within 1 inch (25 mm) of each end of the stile or rail which is opposite the hinge side, in a direction parallel to the plane of the glazing which would tend to disengage the lock.

Tests for Pivoted Window Assemblies

Sec. 41.2009. Tests for Type D window assemblies shall be performed in the following order:

The manipulation test described in Section 41.2010 shall be applied after Tests I and II while the sash is under load and after Tests III and IV with the loads removed.

Test I. With the sash in the normal position, simultaneously apply a concentrated load of 37.5 pounds (170 N) within 3 inches (75 mm) of both ends of each rail or stile which is perpendicular to the pivot sides in the direction that would tend to open the sash. Remove the loads.

Test II. With the sash in the normal position, apply a concentrated load of 75 pounds (340 N) on a rail or stile containing a pivot within 1 inch (25 mm) of the pivot in a direction parallel to the pivots tending to disengage the pivot under test.

Test III. Repeat Test II, applying the load to the opposite rail or stile. Remove the load.

Test IV. With the sash in the normal position, apply a concentrated load of 150 pounds (670 N) on the rail or stile containing the locking device within 6 inches (75 mm) of the lock in a direction perpendicular to the sash and tending to open the window.

Test V. Repeat Test IV while simultaneously applying the load specified in Test II. Repeat Test IV while simultaneously applying the load specified in Test III above.

Manipulation of Locking Device

Sec. 41.2010. Examine the assembly and determine a method and position of insertion of a tool through the window assembly from the outside so as to contact the locking device. Determine whether it is possible to insert any of the manipulation tools as described in Section 41.2003 and manipulate with them so as to unlock the window. Such window assemblies shall resist manipulation for a period of not less than 5 minutes.

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Performance Requirements

Sec. 41.2011. A window assembly shall fail these tests if at any time during or after the tests the assembly does not remain engaged, intact and in the closed and lock position such as to preclude human entry.

Report

Sec. 41.2012. The test report shall include:

(a) Name and address of the facility or laboratory performing these tests and issuing the report as well as the dates of testing and issuance of the report.

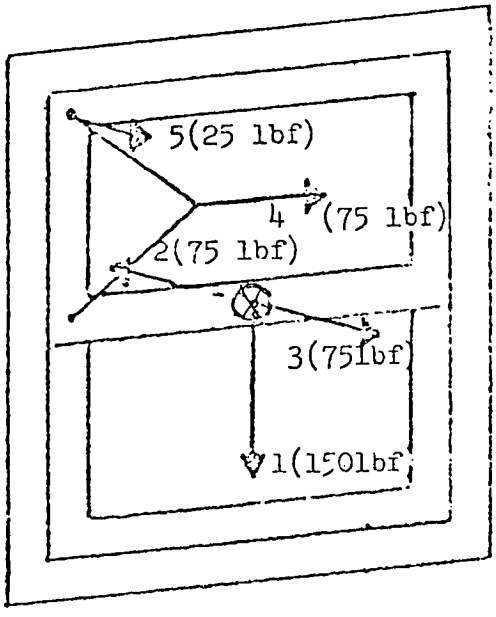
(b) Identification of the sample tested (e.g., name of manufacturer, model and/or series number of product and other information as may be pertinent).

(c) Final assembly drawing(s) components list relative to type, size, location and number of anchors, locking devices and mounting screws used.

(d) Statement indicating that specimen either passed or failed these tests.

(e) Statement that all tests were conducted in accordance with these procedures.

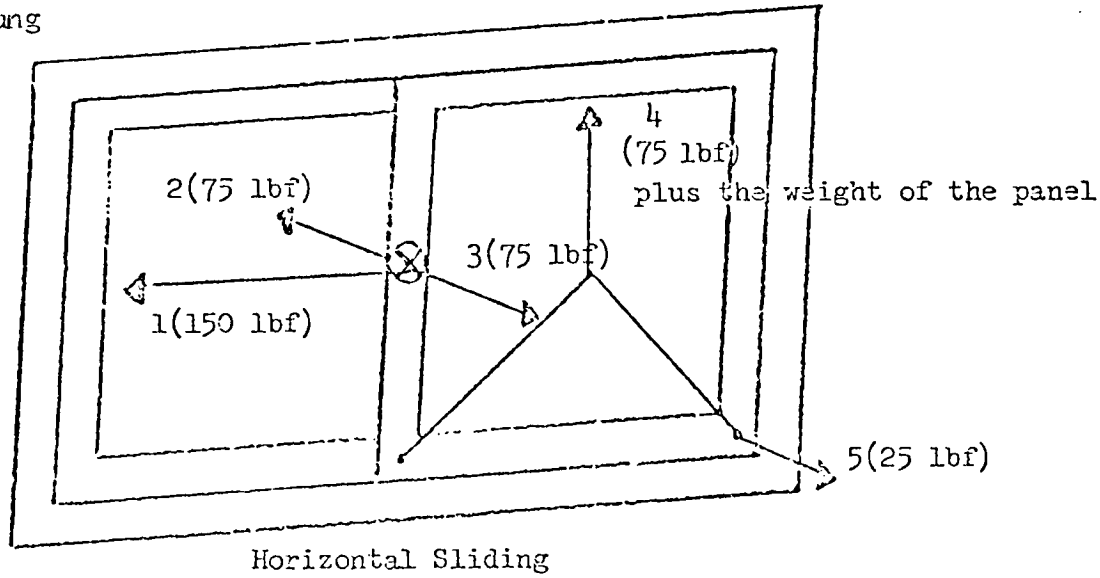
DIRECTIONS AND POINTS OF LOAD APPLICATION FOR TESTING OF TYPE A WINDOWS



Double Hung

Sliding Sash Tests

Test I	Apply load 1
Test II	Apply loads 1 & 2
Test III	Apply loads 1 & 3
Test IV	Apply loads 4 & 1
Test V	Apply loads 4, 1 & 2
Test VI	Apply loads 4, 1 & 3
Test VII	Apply loads 4, 1, 3 & 5
Test VIII	For fixed sashes locate the load point at the midpoint of the stile or rail opposite the meeting stile or rail of the sash under test and apply loads as described in Tests I, II & III.



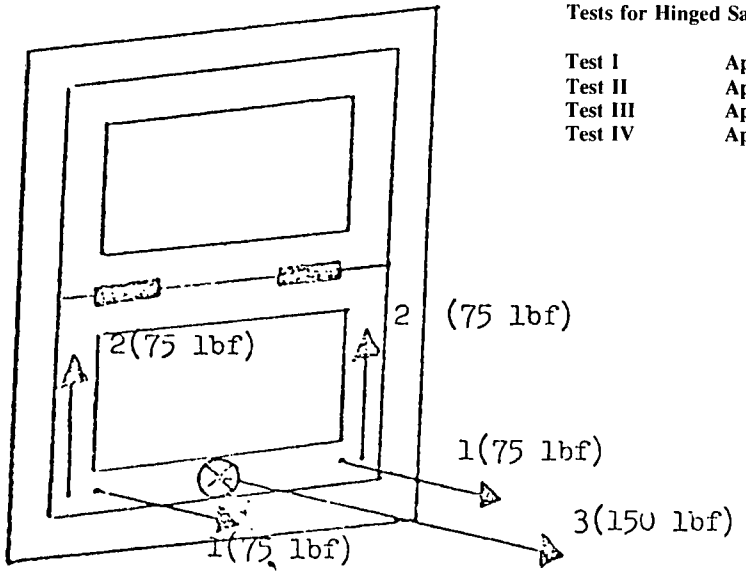
Horizontal Sliding

FIGURE 2

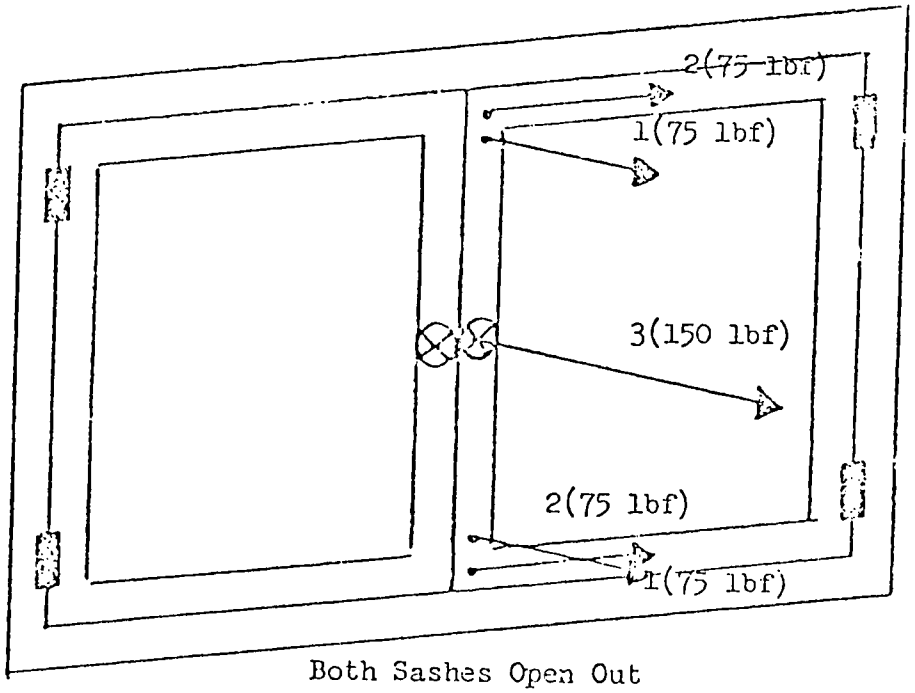
DIRECTIONS AND POINTS OF LOAD APPLICATION FOR TESTING OF TYPES B AND C WINDOWS

Tests for Hinged Sashes

Test I	**Apply load 1's**
Test II	**Apply load 1's and load 2's**
Test III	**Apply load 3**
Test IV	**Apply load 3 and load 2's**



Lower Sash Swings Out
Awning Type

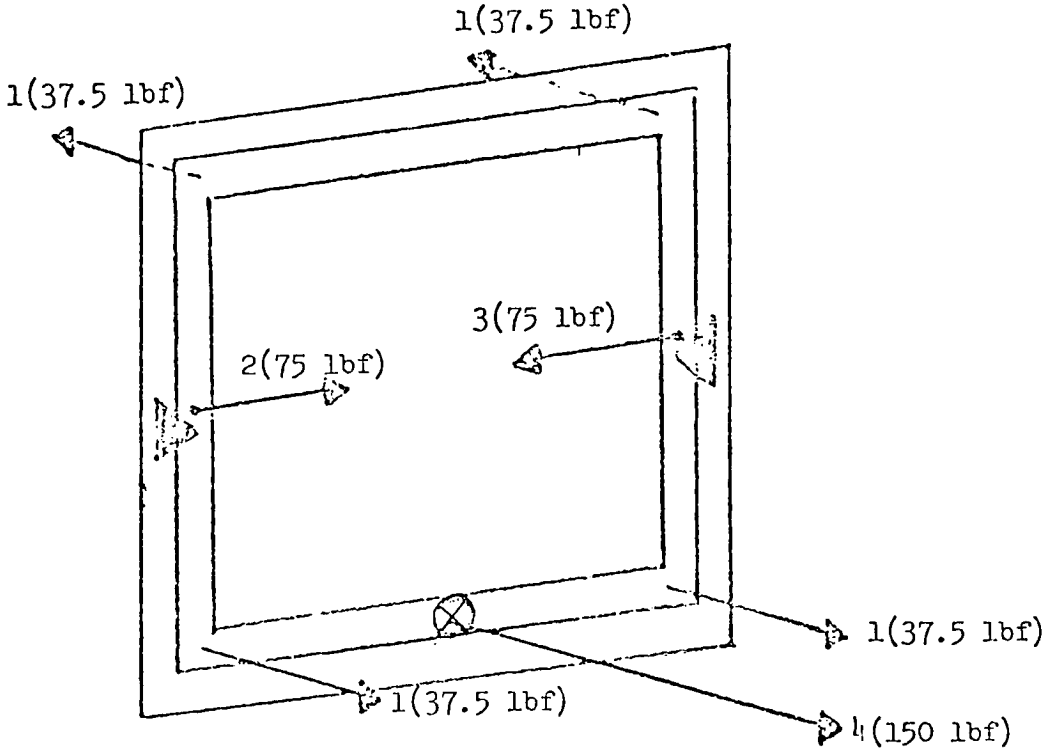


Both Sashes Open Out
Casement Type

FIGURE 3

KEY: Existing rules are printed in standard type face. Proposed additions to existing rules are printed in **boldface**, while proposed deletions from existing rules are printed within [single brackets]. Additions to proposed rules are **underlined and boldfaced**, while deletions from proposed rules are printed within [[double brackets]].

DIRECTIONS AND POINTS OF LOAD APPLICATION FOR TESTING OF TYPE D WINDOWS



As shown, pivots are represented as triangles and sash pivots out from the bottom and in at the top.

Pivoting Sash Tests:

Test I	Apply load 1's
Test II	Apply load 2
Test III	Apply load 3
Test IV	Apply load 4
Test V	Apply loads 4 & 2, then remove load 2 and apply loads 4 & 3

FIGURE 4

Department of Public Safety
Fire Marshall Division
Placement of Smoke Detectors in Dwellings, Apartment Houses, Hotels, and Lodging Houses

Notice of Hearing

Notice is hereby given that a public hearing in the above-entitled matter will be held in Room 83 State Office Building, St. Paul, Minnesota on November 28, 1977, commencing at 8:30 a.m., and continuing until all persons have had an opportunity to be heard concerning adoption of the proposed rules captioned above.

All interested or affected persons or representatives of groups or organizations will have an opportunity to participate, by submitting either oral or written data, statements, or arguments. Written materials may be submitted by mail to Peter Erickson, Office of Hearing Examiners, 1745 University Avenue, St. Paul, MN, either before the hearing or within 20 days after the close of the hearing.

The Commissioner proposes to adopt rules relating to placement of smoke detectors in dwelling units, apartment houses, hotels and lodging houses, pursuant to Laws of 1977, ch. 333, § 2. The proposed rules apply to such buildings, remodeled, rented, or offered for rent after January 1, 1980. With slight modifications, the proposed rules are essentially the same as the Uniform Building Code requirements for smoke detector placement in newly constructed buildings.

One free copy of the proposed rules is available and may be obtained by writing to Diane Hamilton, Department of Public Safety, 210 Transportation Building, St. Paul, Minnesota 55155. Additional copies will be available at the door on the date of the hearing.

A Statement of Need explaining the need for and reasonableness of the proposed rules and a Statement of Evidence outlining the testimony the department will be introducing at the hearing will be filed with the Office of Hearing Examiners at least 25 days prior to the hearing and will be available there for public inspection.

Please be advised that Minn. Stat. ch. 10A, requires each lobbyist to register with the Ethical Practices Board within five days after he commences lobbying. Lobbying includes attempting to influence rulemaking by communicating or urging others to communicate with public officials. A lobbyist is generally any individual who spends more than $250 per year for lobbying or any individual who is engaged for pay or authorized to spend money by another individual or association and who spends more than $250 per year or five hours per month at lobbying. The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, St. Paul, Minnesota 55155, phone (612) 296-5615.

Edward G. Novak
Commissioner of Public Safety

Rules as Proposed

Chapter Six: Smoke Detectors

11 MCAR § 1.5067 Purpose and scope.

A. The purpose of these rules is to specify the placement of smoke detectors in dwelling units, apartment houses, hotels, and lodging houses.

B. These rules are enacted pursuant to Laws of 1977, ch. 333, § 2, subd. 2.

§ 1.5068 Definitions.

A. Administrative authority. The fire chief, or his authorized representative, of the fire department having jurisdiction, or the state fire marshal or his authorized representative.

B. Alarm signal. An audible signal indicating a fire condition.

C. Smoke detector. A device which detects visible or invisible products of combustion.

§ 1.5069 Smoke detector placement. All detectors shall be located within 12 inches of the ceiling but not closer than 6 inches to the ceiling. Care shall be exercised to insure that the installation will not interfere with the operating characteristics of the detector. When actuated, the detector shall provide an alarm signal in the dwelling unit or guest sleeping room.

A. In dwelling units, smoke detectors shall be mounted on the ceiling or wall at a point centrally lo-

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cated in the corridor or area giving access to rooms used for sleeping purposes.

B. In a hotel guest sleeping room, hotel suites and lodging houses, the detector shall be centrally located on the ceiling of the main room or hotel guest sleeping room. Where sleeping rooms are on an upper level, the detector shall be placed at the center of the ceiling directly above the stairway.

§ 1.5070 Alternate locations. The administrative authority may approve alternate locations provided the proposed locations are substantially equivalent to the requirements of these rules so as not to alter the operating characteristics of the detector.

Department of Transportation

Proposed Temporary Rules of the Department of Transportation Relating to Public Transit Subsidy and Demonstration Grant Programs

Notice of Request for Public Comment

Laws of 1977, ch. 454, § 20 requires that the Commissioner of Transportation establish by rule the procedures and standards for review and approval of applications for financial assistance submitted to the Commissioner pursuant to Minn. Stat. §§ 174.21-174.27 (1976), as amended. Section 25 of the Act provides that the Commissioner may exercise emergency rulemaking authority pursuant to Minn. Stat. § 15.0412, subd. 5 to implement the provisions of Minn. Stat. §§ 174.21 to 174.27; which rules are to be effective until permanent rules are adopted pursuant to Minn. Stat. ch. 15 or until July 1, 1978, whichever occurs first.

Section 25 of the Act further required the Commissioner to solicit information or opinions from sources outside of the Department of Transportation prior to the adoption of any emergency rules.

NOTICE was given that the Department requested information and comments concerning the subject matter of the proposed rules on July 5, 1977 (1 S.R. 1875), and no comments were received.

Laws 1977, Ch. 443 now requires that all interested persons or groups be allowed to submit for consideration their comments relating to the proposed rules set forth below. Comments (either written or oral) should be addressed to the Minnesota Department of Transportation, Office of Transit Administration, 419 Transportation Building, Saint Paul, Minnesota 55155; or by calling Mr. Richard L. Brown, at 612-296-2533. Matters submitted for consideration should be pertinent to the proposed rules. Any comments received by the Department of Transportation will become a part of the record of proceedings leading to the adoption of permanent rules. All comments must be received on or before November 7, 1977.

PLEASE BE ADVISED that Minnesota Statutes, Chapter 10A, requires each lobbyist to register with the Ethical Practices Board within five days after he commences lobbying. Lobbying includes attempting to influence rulemaking by communicating or urging others to communicate with public officials. A lobbyist is generally any individual who is engaged for pay or authorized to spend money by another individual or association and who spends more than $250 per year for lobbying or any individual who is engaged for pay or authorized to spend money by another individual or association and who spends more than $250 per year or five hours per month at lobbying. The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, Saint Paul, Minnesota 55155, phone (612) 296-5615.

Jim Harrington
Commissioner of Transportation

Rules as Proposed

Implementation of Public Transit Subsidy and Demonstration Grant Programs

14 MCAR § 1.4025 General provisions.

A. Authority. The Minnesota Department of Transportation is authorized to adopt rules necessary to carry out the Public Transit Subsidy Program, Paratransit Demonstration Program and the Regular Route Demonstration Program pursuant to Laws of 1977, ch. 454, §§ 18-25. This law amends Laws of 1974, ch. 534, §§ 4 and 5 and amends the rules that were adopted for that program. Laws of 1977, ch. 454, § 25 gives the Commissioner of the Department the authority to establish emergency rules for section 18 to 24 of chapter 454.

B. Definitions. The following terms as used in these Rules shall have the following meanings:

1. "Act" means the Minnesota Public Transit Assistance, Paratransit Demo Program and Regular Route Demo Program per Laws of 1977, ch. 454, §§ 18.25.

2. "Department" means the Department of Transportation that has been directed to administer the Act.

3. "Demonstration assistance" means state financial assistance granted to an eligible recipient in accordance with the "Paratransit Service Demonstration Grant Program" and "Regular Route Demonstration Program."

4. "Public transit" or "transit" means general or specific transportation service provided to the public on a regular and continuing basis. "Public transit" or "transit" includes paratransit and regular route transit. For the purposes of these rules, this term does not include air or rail transit.

5. "Subsidy assistance" means state financial assistance granted to an eligible recipient in accordance with the Public Transit Subsidy Program.

6. "Operating deficit" means the amount by which the total operating expenses incurred in the operation of the public transit system exceeds the amount of operating revenue derived therefrom and the amount of any social fare reimbursement pursuant to Laws of 1977, ch. 454, § 21, subd. 4. Any financial assistance received from any agency of the federal government for the operation of a public transit system shall be treated as revenue for the purpose of determining the operating deficit.

7. "Commuter van" has the meaning given it in M.S.A. 221.011, § 22 (1).

8. "Metropolitan council" means the council established by M.S.A. 473.123.

9. "Metropolitan transit commission" means the commission established by M.S.A. 473.404.

10. "Paratransit" means the transportation of passengers by motor vehicle or other means of conveyance by persons operating on a regular and continuing basis and the transportation or delivery of packages in conjunction with an operation having the transportation of passengers as its primary and predominant purpose and activity, but excluding regular route transit. "Paratransit" includes transportation by car pool and commuter van, point deviation and route deviation services, shared-ride taxi service, dial-a-ride service, and other similar services.

11. "Regular route transit" means transportation of passengers for hire by a motor vehicle or other means of conveyance by any person operating on a regular and continuing basis as a common carrier on fixed routes and schedules. "Regular route transit" does not include transportation of children to or from school or of passengers between a common carrier terminal station and a hotel or motel, transportation by common carrier railroad or common carrier railroads or by taxi, transportation furnished by a person solely for his or its employees or customers, or paratransit.

C. Program applications. The Program application procedure shall consist of a preliminary and final application.

The preliminary application must be submitted to the appropriate Regional Development Commission for review and approval only for consistency with regional transportation plans and development guides prior to the department approving the application. Any Regional Development Commission that does not have an approved transportation plan may review and not approve. The Regional Development Commission must transmit its comments to the department within thirty days of the receipt of the application. No comments from the Regional Development Commission will constitute a positive comment from the RDC. The preliminary application must also be submitted to the local transit authority, commission or system for review and comment as to consistency with its approved transportation development program. That review must be submitted to the department within thirty days of receipt. After considering those comments the department within sixty days shall determine and notify the applicant of its eligibility to submit a final application.

The final application must also be submitted to the RDC and transit authority, commission or system for comment. The department will allow any Regional Department Commission or Transit System to withdraw their approval or comment for any final application that deviates significantly from the preliminary application. Those comments must be submitted to the department within 10 days of receipt.

D. Regulation of use of subsidy and demonstration assistance.

1. State audits. The financial records of the eligible recipient will be audited by the Department. A benchmark audit of the recipient's book shall be required at

the beginning of the first contract period. Another audit shall be required at the end of the contract period to establish an approved total operating deficit. The Department shall conduct an interim audit of an approved total operating system that is sold during the contract period as of the effective date of the ownership transfer. Other audits may be made by the Department. The eligible recipient will be required to conduct an audit of the participating public transit system financial records.

2. Record keeping. The eligible recipient and participating public transit system shall maintain accounting and other records as required by the Department. These records will be as a minimum expenses, revenues, patronage, miles and hours.

3. Project evaluation. The Department shall use the management plan as a basis for monitoring and evaluating the performance of the participating public transit system during the contract period. Public transit policy management decisions made and actions taken during the contract period shall conform with the management plan. Any proposed deviations from the management plan shall be reported to the Department for approval prior to implementation. Failure to secure approval will jeopardize continued subsidy or demonstration assistance.

4. Third-Party contracts. Private and public organizations may participate in projects by contract with the eligible recipient.

5. Penalties. When the eligible recipient fails to faithfully comply with the terms and conditions of the contract, the Department may terminate all or part of the subsidy or demonstration assistance awarded to the eligible recipient.

§ 1.4026 Public transit subsidy program.

A. Purpose. The purpose of the Public Transit Subsidy Program is to supplement local effort in financing public transit systems in order to preserve and develop public transit and a balanced transportation system in the state.

B. Eligibility.

1. Eligible recipients. Any legislatively established public transit commission or authority, any county or statutory or home rule charter city providing financial assistance to or operating public transit, any private operator of regular route transit, or any combination thereof is eligible to receive financial assistance through the public transit subsidy program.

2. Eligible factors. A public transit system with a total operating deficit projected for the contract period shall be eligible for subsidy assistance. Deficits incurred prior to this period shall not be eligible for subsidy assistance. When a legislatively established public transit commission or authority is in existence, any application for the area under the jurisdiction of the Commissioner Authority must be submitted by that commission or authority, except any private operator of regular route transit in the metropolitan transit taxing district as defined in Minn. Stat. § 473.446 (2) may apply directly to the department.

C. Application for subsidy assistance.

1. General. The application for subsidy assistance shall be submitted in two stages: preliminary and final applications. The Department shall assist the applicant in the preparation of the application upon request. Subsidy assistance may not be used to pay any costs incurred by the applicant in the preparation, submission or processing of the preliminary application. The department may assist and allow the expenses incurred in the preparation of the final application to be included in the final application.

2. Preliminary application. The preliminary application shall be submitted to ascertain the probable eligibility of the applicant, including projected total operating deficit and projected availability of state and local financial assistance. For a particular public transit system, only one preliminary application shall be submitted on behalf of all units participating in the system. The preliminary application shall be in the form and manner prescribed by the Department and shall contain the information required by the Department, including the following:

a. The applicant's legal name;

b. The official name of the public transit system for which the supplemental assistance would be used;

c. The common carrier certificate number of public transit system prescribed by the Minnesota Public Service Commission; and

d. The amount of supplemental assistance requested;

e. A narrative describing the transit service.

3. Final application. The final application shall be submitted to determine the subsidy assistance to be granted and basic elements in the agreement. It shall be submitted by an applicant who has received notice that, based on its preliminary application, it is an eligible recipient. It shall be submitted to the Department in the

form and manner prescribed by the Department and shall include the elements specified in 14 MCAR § 1.4028. When the eligible recipient has submitted or anticipates submitting an application for assistance under the demonstration program 14 MCAR § 1.4027, during the contract period, that project must be identified in the application.

D. Determination of subsidy assistance.

1. Total operating deficit. To determine the total operating deficit of a public transit system, the following shall apply:

a. Generally accepted accounting principles and practices shall be applied;

b. Depreciation on capital equipment that was purchased with state or federal financial assistance shall be excluded in the computation of total operating expenses to the extent of the federal or state assistance;

c. While the total operating deficit shall be projected on the basis of the deficit incurred during a twelve (12) month period preceding the proposed contract period, subsidy assistance shall be awarded on the basis of the total projected deficit of the contract period;

d. A deficit incurred as the result of increased services shall be considered in determining eligibility;

e. An eligible recipient shall treat any financial assistance received from any agency of the federal government for the operation of a public transit system as revenue for the purposes of determining its total operating deficit.

2. Factors in subsidy assistance. The Department shall review the application and determine the amount of subsidy assistance, if any, that shall be given to the eligible recipient. The Department shall use the management plan as identified in 14 MCAR § 1.4028 as a basis for allocation of subsidy assistance to an eligible recipient. In the allocation of subsidy assistance, the Department may consider population, transit ridership, relative need for public transit, new developments, prior local assistance, and other factors. Subsidy assistance shall not exceed two-thirds of the total operating deficit of the public transit system, as approved by the Department. The eligible recipient shall establish to the satisfaction of the Department that at least one-third of the total operating deficit will be available from local sources during the contract period. When more than one unit contributes assistance to the operation of the public transit system, the share contributed by each shall be specified. In the Minneapolis-St. Paul Metropolitan transit taxing district as defined in Minn. Stat. § 473.446, subd. 2 private operators of transit service that are eligible recipients may receive a grant for up to 100% of their operating deficit.

E. Contract.

1. Content. The subsidy assistance contract shall be based upon the final application. It shall specify the amount of subsidy assistance that shall be awarded to the eligible recipient and shall be effective for a period of no more than one (1) year. It shall include the assurance of the eligible recipient that it will provide the required local share. For a particular public transit system, only one contract shall be executed on behalf of all units participating in the system.

2. Disbursement schedule. The contract shall specify a monthly or quarterly disbursement schedule at the pleasure of the recipient. The disbursement will be based on the estimate in the final application and any payment will not be allowed to exceed the estimate. The actual disbursement will reimburse the recipient based on the actual experience of the monthly or quarterly reporting period. If the actual experience exceeds the estimated cost the Department will, upon application amend the contract to reflect the actual costs. The actual disbursements will consider the accumulated deficit.

A portion of the final payment of the transit subsidy shall be withheld pending a final audit of the public transit system's books by the Department at the termination of the contract. The final audit shall be used by the Department to determine whether the subsidy assistance exceeds two-thirds of the transit system's total operating deficit. When the supplemental assistance is more than two-thirds of the total operating deficit, the final payment shall be reduced accordingly. Any overpayment by the State shall be returned to the State Treasury at the request of the Department. When the operating deficit is greater than the estimate, a subsequent application may be submitted to amend the contract.

§ 1.4027 Paratransit service and regular route demonstration grant program.

A. Paratransit purpose. The purpose of the Para-

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transit Service Demonstration Grant Program is to plan, promote, demonstrate, and evaluate the effectiveness, cost, and efficiency of paratransit as a means of accomplishing program objectives.

B. Paratransit objectives. The primary objectives of the Paratransit Service Demonstration Grant Program are:

1. To provide transportation services which improve the accessibility and productivity of regular route transit;

2. To provide transportation services in those areas inefficiently or inadequately served by regular route transit;

3. To provide transportation services for persons who because of age or incapacity are unable to drive a private automobile or use existing modes of public transit.

4. To show how existing single occupant auto drivers can be diverted to paratransit or other public transportation modes.

5. To determine the most effective manner of providing paratransit services.

A potential demonstration project shall be designed to meet directly one or more of these program objectives.

C. Eligible recipients. Any public or private agency, entity, or person is eligible to receive financial assistance through the Paratransit Service Demonstration Program.

D. Regular route programs purpose. The Regular Route Transit Demonstration Grant Program has two purposes:

1. To demonstrate new regular route transit services;

2. To demonstrate methods of improving the patronage and productivity of existing regular route transit services.

E. Regular route program objectives. The primary objective of the Regular Route Transit Demonstration Grant Program is to demonstrate improvements in the accessibility, quality, economic performance, or patronage or regular route transit service by the following means:

1. Expansion of existing routes and addition of new routes in areas that previously have not been served or have been served inadequately by regular route transit;

2. Management and operations improvements without expanding existing routes or adding new routes.

A potential demonstration project shall be designed to meet program objectives by one of these two methods. Not less than 40 percent nor more than 60 percent of the total financial assistance available shall be granted to projects to demonstrate each method.

F. Eligible recipients. Any organization that qualifies under 14 MCAR § 1.4025 B.1. who operates, intends to operate, or assists in the operation of regular route transit services is eligible to receive financial assistance through the regular route transit demonstration program.

G. Eligible projects. An eligible project for Paratransit Service and Regular Route Demonstration Grants shall meet the following requirements:

1. It shall be designed to have potential for general applicability throughout the State;

2. It shall demonstrate the effect of improved public transit service; and

3. It shall meet one or more of the program objectives in 14 MCAR § 1.4027 B. and E.

An application may include requests for funding predemonstrational planning as well as funding for an ongoing evaluation of the project.

H. Determination of demonstration assistance.

1. General. The application for demonstration assistance shall be submitted in two stages: preliminary and final applications. The Department shall assist the applicant in the preparation of application upon request. Demonstration assistance may not be used to pay any costs incurred by the applicant in the preparation, submission or processing of the preliminary application. The Department may assist and allow the expenses incurred in the preparation of the final application to be included in the final application.

2. Preliminary application. The preliminary application shall be submitted to ascertain the probable eligibility of the applicant, including projected availability of state and local financial assistance. For a particular public transit system, only one preliminary application shall be submitted on behalf of all units participating in the system. It shall be in narrative form and shall contain the following:

a. Project objectives. A narrative describing the purpose of the proposed project shall include the man-

ner in which it will meet one or more of the program objectives.

b. Project description. The following must be discussed:

(1) The content of the project;

(2) The time schedule proposed for completion of the project;

(3) The public transit service including identifying proposed service levels and daily hours of operation;

(4) The compatibility of the project with any existing transit service;

(5) The potential for continuation of the project beyond the demonstration phase;

(6) A project budget, by categories of expenditure, including sources and amounts of non-state funding;

(7) A description of the applicant's organization including the key personnel and their experience.

(8) Identification of the market to be served, including the proposed daily and weekly patronage.

The preliminary application shall be submitted to the Department and appropriate Regional Development Commission and transit systems as required in 14 MCAR § 1.4025 C. The Department will assist in the planning of a system or the preparation of the applications if requested.

3. Final application. The final application shall be submitted to determine, the demonstration assistance to be granted and the basic elements of the agreement. It may be submitted only by an applicant who has received notice that, based on its preliminary application, it is an eligible recipient. It shall be submitted to the Department in the form and manner prescribed by the Department and shall include the elements specified in 14 MCAR § 1.4028. When the eligible recipient has submitted or anticipates submitting an application for assistance under the Public Transit Subsidy Program, 14 MCAR § 1.4026, during the contract period, this should be briefly discussed in the application.

4. Application evaluation. The primary criteria that shall be used by the Department to evaluate proposed demonstration projects are:

a. Potential for meeting one or more of the program objectives;

b. Potential in demonstrating specific concepts that are applicable in other areas of the State;

c. Degree of innovation incorporated;

d. Compatibility and coordination with existing regular route and paratransit systems;

e. Potential for integration with existing transit service;

f. Evidence of local government and public support;

g. Ability to continue a successful project beyond the demonstration phase; and

h. Efficiency in the use of energy resources to accomplish objectives.

5. Project funding. The applicant is expected to share in the cost of a demonstration project. Demonstration assistance normally will not exceed 90 percent of the cost of approved demonstration projects. The Department reserves the authority to fund up to 100% of a project that it feels is unique and needs to be demonstrated but lacks the necessary local financial support. When in the Department's judgment, a proposed demonstration project has potential national significance, the Department may require the eligible recipient to submit an application to the Federal Government, in addition to the State application. The project cost shall include the projected operating deficit as well as capital equipment needed for the demonstration. The projected operating deficit may include an amount not to exceed 10% of the total expenses for contingencies.

I. Contract.

1. Content. The demonstration contract shall be based upon the final application. It shall specify the amount of the demonstration assistance that shall be awarded to the eligible recipient and shall be effective for at least one year. It shall include the assurance of the eligible recipient that it will provide the required local share and carry out the management plan. For a par-

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ticular public transit system, one contract shall be executed on behalf of all units participating in the system.

2. Disbursement schedule. The contract shall specify a disbursement schedule either monthly or quarterly at the pleasure of the recipient. The disbursement will be based on the estimate in the final application and any payment will not be allowed to exceed the estimate. The actual disbursement will reimburse the recipient based on the actual experience of the monthly or quarterly reporting period. If the actual experience exceeds the estimated costs the Department will amend the contract to reflect the actual costs. The actual disbursements will consider the accumulated deficit.

A portion of the final payment of the demonstration assistance shall be withheld pending an audit of the transit system's books by the department at the termination of the contract. This final audit shall be used by the department to determine whether the demonstration assistance exceeds the approved limit of the transit system's total costs. When the demonstration assistance is more than the approved limit of the total cost, the final payment shall be reduced accordingly. Any overpayment by the State shall be returned to the State Treasury at the request of the department. When the total cost is greater than the estimate, the eligible recipient may submit a subsequent application to amend the contract.

§ 1.4028 Final application for subsidy and demonstration assistance.

A. Final application. The final application for the subsidy program or for the demonstration program shall be on a form as prescribed by the department and shall contain the following:

1. Management plan. The basic component of the final application shall be a management plan that details all of the planned and anticipated events that will affect the public transit system's operating revenue and expenses during the contract period.

a. Purposes. The essential purposes of a management plan are:

(1) To document the maintenance or improvement of public transit services;

(2) To identify and implement policies and practices to increase the efficiency of public transit operations; and

(3) To insure that state assistance will be spent wisely;

b. Content. The final application shall include the following elements which may vary in detail with the size of the public transit system:

(1) Ownership. The ownership of the participating transit system during the contract period should be described.

(2) Levels of service. The levels of service provided by the participating public transit system during the contract period should be described.

(3) Fares. The fare structures anticipated during the contract period should be described.

(4) Marketing. A proposed marketing program should be described in general terms, including the costs benefits of the major elements. Elements of a marketing program may include:

(a) Market research;

(b) Public information;

(c) Promotion;

(d) Advertising;

(e) Community relations; and

(f) Employee relations.

(5) Capital improvements. Any actual or anticipated capital improvements in the participating public transit system during the contract period should be described. Capital improvements include, but are not limited to: buses, fare-boxes, communications equipment, storage and maintenance facilities and equipment, passenger shelters, and bus-stop signs.

(6) Non-capital improvements. Any anticipated non-capital improvements proposed in the participating public transit service area during the contract period should be described. Non-capital improvements include, but are not limited to:

(a) Staggering work hours;

(b) Regulating supply and prices of off-street parking; and

(c) Increasing daytime parking rates on workdays.

(7) Revenue contracts. Revenue producing contracts relating to the public transit services provided by or for the eligible recipient should be decreased. A copy of the contract will be required as part of the final application.

The following types of contracts should be discussed:

(a) Contracts with private and public schools, colleges and universities;

(b) Contracts with private and public organizations that guarantee a minimum revenue on regular or special route(s);

(c) Contracts with private and public organizations that purchase rides for employees or patrons; and

(d) Advertising contracts.

(8) Traffic improvements. Any traffic improvements made in the public transit service area during the contract period that will affect directly the speed and reliability of transit services should be described. Examples of traffic improvements include:

(a) Use of exclusive or preferential streets, bus lanes, or expressway ramps;

(b) Control of traffic lights by buses;

(c) Provision of fringe parking spaces with express or improved bus services;

(d) Provision of bus turnouts; and

(e) Priority snow-plowing of transit routes.

The discussion of each type of traffic improvement should include the following:

(a) The date the traffic improvement is expected to be made; and

(b) The expected impact of the traffic improvement upon estimated public operating revenues and expenses.

(9) Expense contracts. Any contracts for services and goods relating to the public transit services provided by or for the eligible recipient and others should be described.

The types of contracts to be discussed include:

(a) Contracts for management and consulting services;

(b) Contracts for storage and maintenance of buses;

(c) Contracts for the lease or purchase of tires and tubes;

(d) Contracts for fuel and lubricants;

(e) Contracts for liability and property insurance; and

(f) Contracts, union and non-union, with transit system employees.

A copy of each contract will be required as part of the final application.

(10) Preventive maintenance. The participating public transit system's planned preventive maintenance program for the contract period should be described. Elements of a preventive maintenance program typically include:

(a) Defect reporting by drivers;

(b) Daily fueling inspection;

(c) Mileage inspection; and

(d) Iventory controls.

2. Organization. The local institutional or organizational structures established to carry out the management plan should be described, including a description of the technical policy and decision-making organizations responsible for directing, controlling, reviewing, and implementing the management plan. The relationships between these various organizations should be illustrated in a simple diagram following narrative. In addition, the following questions should be answered:

a. Who is directly responsible for the day-to-day management and operation of the transit system?

b. Who is directly responsible for negotiating wage contracts with the employees of the transit system?

c. Where more than one local unit of government participates in the program, who represents the applicant public body in negotiations with surrounding communities? Who represents the surrounding communities?

d. Who will represent the applicant public body in negotiating an assistance contract with the State, and how shall a contract be ratified by the applicant public body?

e. Who is responsible for filing reports for the transit system with the Minnesota Public Service Commission?

3. Financial conditions. Financial data shall be reported in the form and manner prescribed by the Department. The accrual accounting method shall be used to report financial data unless the Department approves the use of a different method.

a. For the transit subsidy program, this financial data shall contain the audited figures for a twelve (12) month period preceding the contract period and estimated figures for the contract period.

b. For the demonstration programs, the financial data shall contain estimated figures. When the demonstration project is associated with an existing public transit system, the financial data shall include the audited figures for a twelve (12) month period preceding the contract period.

4. Financial statement. A detailed breakdown of operating expenses shall be required. The projection of revenues and expenses should reflect the policies and practices outlined in the management plan.

5. Operating statistics. The actual and anticipated operational characteristics of the public transit system in a twelve (12) month period preceding the contract period and the contract period shall be described. This discussion shall include the revenue passengers, including monthly ridership, total miles; revenue hours; and other information required by the Department.

6. Sources of local funds. The sources and type of revenue that the eligible recipient and each participating unit will use to match the supplemental or demonstration assistance shall be identified.

7. Fuel supplies. Existing and potential problems that the public transit system faces in obtaining adequate fuel supplies during the contract period should be identified, including the status of contracts with fuel suppliers, the prospects for securing contracts for the contract period, the time between deliveries under normal and anticipated conditions, and any other pertinent facts.

OFFICIAL NOTICES

Department of Administration

Notice of Intent to Solicit Outside Opinion Governing 911 Emergency Telephone Service

Notice is hereby given that the Minnesota Department of Administration is considering proposed rules governing 911 Emergency Telephone Systems. To adequately determine the nature and applicability of such rules, the Department of Administration hereby requests information and comments from all interested individuals or groups concerning the subject matter of the proposed rules.

Statements of information and comment may be made orally or in writing. Written statements of information and comment may be addressed to:

Mr. Herman G. Hamre
Minnesota Department of Administration
G-4 State Administration Building
50 Sherburne Avenue
St. Paul, Minnesota 55155

Oral statements of information and comment will be received during regular business hours by telephone at 612/296-7104 and in person at the above address.

All statements of information and comment must be received by November 25, 1977. Any written material received on or before this date will become part of the hearing record.

The proposed rules, if adopted, would establish procedures and guidelines for implementation of locally planned 911 Emergency Telephone Systems and define eligibility for possible funding assistance.

Herman G. Hamre
911 Project Director

Department of Commerce Banking Division

Banking Division Bulletin No. 1781: Maximum Lawful Rate of Interest for Mortgages for the Month of November, 1977

Notice is hereby given that the Banking Division, Department of Commerce, State of Minnesota, pursuant to Section 47.20, Minnesota Statutes, the Conventional Home Loan Assistance and Protection Act, as amended by Laws of 1977, Ch. 350, hereby determines that the maximum lawful rate of interest for home mortgages for the month of November, 1977, is nine (9.00) percent.

Robert A. Mampel
Commissioner of Banks

Energy Agency

Notice of Intent to Solicit Outside Opinion

In the Matter of the Proposed Adoption of Rules of the Minnesota Energy Agency Governing Contents of Applications for Certificate of Need and Criteria for Assessment of Need for Large Liquified Gas Storage Facilities, Large Underground Gas Storage Facilities, and Large Gas Pipelines, Minn. Regs. EA 701-791.

Notice is hereby given that the Minnesota Energy Agency (hereinafter the "Agency") is seeking information or opinions from sources outside the Agency in preparing to propose the adoption of rules governing contents of applications for certificates of need and criteria for assessment of need for large liquified gas storage facilities, large underground gas storage facilities, and large gas pipelines.

The rules are required by Minn. Stat. § 116H.13, subd. 1 (1976). The Agency requests comments and information concerning the subject matter of the proposed rules.

Interested or affected persons or groups may submit statements of information and comment orally or in writing. Written statements may be addressed to:

Leticia A. Chard
Energy Facility Analyst
Minnesota Energy Agency
740 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101

Oral statements will be received during regular business hours over the telephone at (612) 296-8438, and in person at the above address.

A draft set of rules are available for public inspection during regular business hours at the above address. Single copies will also be sent upon request.

All statements of information and comment must be received by November 18, 1977, and will be used in writing the proposed rules. Any written material received by the

Agency shall become part of the hearing record in the event that the rules are promulgated.

Richard A. Wallen
Director
Certificate of Need Program

Energy Agency

Notice of Intent to Solicit Outside Opinion

In the Matter of the Proposed Amendment of Rules of the Minnesota Energy Agency Governing Contents of Applications for Certificate of Need and Criteria for Assessment of Need for Large Oil Storage Facilities, Large Oil Pipelines, and Oil Refineries, Minn. Regs. EA 1001-1091.

Notice is hereby given that the Minnesota Energy Agency (hereinafter the "Agency") is seeking information or opinions from sources outside the Agency in preparing to amend rules governing contents of applications for certificates of need and criteria for assessment of need for large oil storage facilities, large oil pipelines, and oil refineries.

The amendments would reflect changes in Minn. Stat. § 116H (1976) and would also effect better coordination between the subject set of rules and proposed rules governing large gas pipeline and storage facilities.

Interested or affected persons or groups may submit statements of information and comment orally or in writing. Written statements may be addressed to:

Leticia A. Chard
Energy Facility Analyst
Minnesota Energy Agency
740 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101

Oral statements will be received during regular business hours over the telephone at (612) 296-8438, and in person at the above address.

All statements of information and comment must be received by November 30, 1977. Any written material received by the Agency shall become part of the hearing record in the event that amendments to the rules are promulgated.

Richard A. Wallen
Director
Certificate of Need Program

Office of the Governor Statewide Health Coordinating Council

Nominations Solicited

Notice is hereby given that nominations are being accepted by the Governor to fill vacancies on the Statewide Health Coordinating Council (SHCC). Membership of individuals appointed to the SHCC for one year will expire in November, 1977. Pursuant to the provisions of the National Health Planning and Resources Development Act of 1974 (Public Law 93-641) and the SHCC operating procedures, the Governor appoints members to fill those vacancies. Each of these appointments to the SHCC will be for a term of three years. Consistent with SHCC operating procedures, any such vacancies hereafter will be filled by the Governor using this same nomination procedure.

Minnesota's SHCC has been established in accordance with P.L. 93-641, Section 1524 and Title 42 Code of Federal Regulations, Part 123.301-303, and Minnesota Executive Order 60A. The SHCC consists of 35 members representing both consumers and providers of health care. Twenty-one of these members are representatives of the state's seven health systems agencies (HSAs). Two of the HSA representatives are consumers of health care and one is a provider of health care. There are 13 at-large members and one representative of the Veterans Administration facilities in the state.

To comply with federal requirements and to insure an effective Council in the state, the Governor's office has reissued guidelines for selection of nominees to the SHCC. The process for selecting nominees to the SHCC from each HSA must be consistent with these guidelines:

1. Of the three representatives entitled to each HSA, two must be consumers of health care and one must be a provider of health care. In order to maintain this composition requirement, the HSA must submit to the Governor for his consideration, nominees to fill the appropriate consumer or provider vacancy.

a. To replace a provider representative at least five nominees must be submitted who are providers of health care representing each of the following categories:

i. health professionals

ii. health care institutions

iii. health care insurers

iv. health professions schools

v. allied health professions

b. To replace a consumer representative at least five nominees must be submitted who are consumers of health care. An effort should be made to include nominees representing the area's population (social, linguistic and racial) and local elected officials.

2. Each nominee will be required to complete a biographical sketch to accompany the nomination. The terms "consumer" and "provider" have those definitions set forth in the regulations of P.L. 93-641 and the operating procedures of the SHCC.

3. The governing body of each HSA will be responsible for the selection and submission of nominees to the SHCC. The list of nominees must be accompanied by a letter indicating official action taken by the governing body to approve these nominees.

4. Nominees must be residents of the appropriate health service area and the state of Minnesota. Persons employed as staff or as consultants to the HSA may not be nominated for appointment to the SHCC.

5. Nominations must be submitted to the Governor by December 9, 1977.

6. Nominations for members-at-large (members appointed by the Governor who do not represent HSAs) will be accepted from professional organizations, consumer organizations, and other interested parties.

7. Nominations are to be submitted to:

Office of the Governor
Room 130 State Capitol
St. Paul, Minnesota 55155
Attention: Ruth Michelson

Copies of nominations are to be submitted to:

State Planning Agency
101 Capitol Square Building
550 Cedar Street
St. Paul, Minnesota 55101
Attention: John Dilley

Questions concerning this process should be directed to Mr. Dilley at (612) 296-2407.

Department of Health
Commissioner of Health

Notice of Intent to Solicit Outside Opinion Regarding Rules Regulating the Operations of Health Facilities

Notice is hereby given, pursuant to the provisions of Minn. Stat. § 15.0412, subd. 6 (1976) that the Minnesota Commissioner of Health will propose the adoption of new rules and the amendment and revision of existing rules.

All interested parties desiring to submit data or views relating to the proposed adoption, amendment or revision of the rules noted below should address their comments (either written or oral) to the Minnesota Department of Health, Division of Health Facilities, 717 Delaware Street S.E., Minneapolis, Minnesota 55440, by writing or calling the persons designated. Evidence submitted for consideration should be pertinent to the matter at hand. Written material received by the Department of Health will become part of the hearing record.

1. Rules implementing the provisions of Laws of 1977, ch. 218, relating to the licensing and regulation of nonhospital health facilities which offer emergency medical services 24 hours a day, seven days a week.

Contact: Daniel J. McInerney, Jr.
Phone: (612) 296-5511

2. Rules implementing the provisions of Laws of 1977, ch. 37, relating to the licensing and regulation of ambulance services.

Contact: James Stoffels
Phone: (612) 296-5281

Department of Health
Water Well Contractors Advisory Council

Notice of Meeting

The Minnesota Water Well Contractors Advisory Council will hold a meeting on November 1, 1977, at 10:00 a.m., Minnesota Department of Health Building, 717 Delaware Street S.E., Minneapolis, Minnesota, in Room 408.

Paul B. Johnson, Representative
Department of Health

Department of Natural Resources

Notice of Intent to Solicit Outside Opinion Regarding Inclusion of the Cloquet River in the Minnesota Wild Scenic and Recreational Rivers System

Notice is hereby given that the Department of Natural Resources has begun consideration of the possible designation of the Cloquet River as a state Wild and Scenic River. In order to adequately determine the nature and utility of any rules associated with this designation, the Department of Natural Resources hereby requests information and comments from all interested individuals or groups concerning the subject matter of this proposed designation.

All interested or affected persons or groups are requested to participate. Statements of information and comments may be made orally or in writing.

Please address these comments to:

Department of Natural Resources
Rivers Section
B-95 Centennial Office Building
St. Paul, Minnesota 55155

Oral statements of information and comment will be received during regular business hours over the phone at 612-296-6784, and in person at the above address.

No final action on this proposal can be taken until public hearings are conducted according to the rule making provisions of Minn. Stat. ch. 15. Sixty days notice of these public hearings will be published in the State Register. All statements of information and the comment will be received until the hearing record closes.

Any proposed rules, if adopted, could regulate land uses, recreational development, and use of this river. Designation as a state Wild and Scenic River would also give the Department of Natural Resources the authority to purchase riverside lands or interests in land from willing sellers.

William B. Nye
Commissioner

Department of Natural Resources

Notice of Intent to Solicit Outside Opinion Regarding Inclusion of the St. Louis River in the Minnesota Wild Scenic and Recreational Rivers System

Notice is hereby given that the Department of Natural Resources has begun consideration of the possible designation of the St. Louis River as a state Wild and Scenic River. In order to adequately determine the nature and utility of any rules associated with this designation, the Department of Natural Resources hereby requests information and comments from all interested individuals or groups concerning the subject matter of this proposed designation.

All interested or affected persons or groups are requested to participate. Statements of information and comments may be made orally or in writing.

Please address these comments to:

Department of Natural Resources
Rivers Section
B-95 Centennial Office Building
St. Paul, Minnesota 55155

Oral statements of information and comment will be received during regular business hours over the phone at 612-296-6784, and in person at the above address.

No final action on this proposal can be taken until public hearings are conducted according to the rule making provisions of Minn. Stat. ch. 15. Sixty days notice of these public hearings will be published in the State Register. All statements of information and the comment will be received until the hearing record closes.

Any proposed rules, if adopted, could regulate land uses, recreational development, and use of this river. Designation as a state Wild and Scenic River would also give the Department of Natural Resources the authority to purchase riverside lands or interests in land from willing sellers.

William B. Nye
Commissioner

Department of Transportation

Petition of the Chicago and Northwestern Transportation Company for Authority to Retire and Remove ICC Track No. 160, 557 Feet Long with Turnout, Located at Minneopa, Minnesota

Notice of Application and of Opportunity for Hearing

Notice is hereby given that the Chicago and Northwestern Transportation Company with offices at 4200 IDS Center, 80 South 8th Street, Minneapolis, Minnesota 55402 has filed a petition with the Commissioner of Transportation

pursuant to Minn. Stat. § 219.741 (1976) (as amended) and § 218.041, Subd. 3 (10) (1976) (as amended) to retire and remove ICC Track No. 160, 557 feet long with turnout located at Minneopa, Minnesota. The petition recites among other matters that: "The subject track is no longer needed for rail transportation service, and it constitutes a continuing and burdensome maintenance expense. The subject track has not been in use for over two and one half years, and is not in use at the present time, and there is no prospect that the subject track will be needed in the future."

Any person may file a written objection to the proposed action by means of a letter addressed to the Commissioner of Transportation, Transportation Building, Saint Paul, Minnesota 55155, not later than the date specified below. An objection must be received on or before November 14, 1977. The objection should state specifically how the objector's interest will be adversely affected by the proposed action.

Upon receipt of a written objection, the Commissioner will, with respect to the named petitioner, set the matter down for hearing. If no objections are received, the Commissioner may grant the relief sought by the petitioner.

If this matter is set for hearing, any person who desires to become a party to this matter must submit a timely petition to intervene to the Hearing Examiner pursuant to Minn. Reg. HE 210, showing how the person's legal rights, duties and privileges may be determined or affected by the decision in this case. The petition must also set forth the grounds and purposes for which intervention is sought. All parties have the right to be represented by legal counsel or any other representative of their choice. In the event the objecting party does not do so, or otherwise does not participate in the hearing, the statements contained in the application filed may be taken as true.

Jim Harrington
Commissioner of Transportation

Water Resources Board

Notice of Hearing

Upon referral by the Honorable Judge Zimmerman, Judge of the District Court, Fifth Judicial District, pursuant to Minn. Stat. § 105.751, the Board has consented to intervene in a matter involving Petitioner Schwermann, Objector Reinhart and Objector Department of Natural Resources, relating to the establishment of a proposed County Ditch, designated as County Ditch No. 93, in Nicollet County, Minnesota.

At its public hearing the Board will hear questions of public water policy together with seeming attendant underlying contradictions in the law.

The Board's hearing on the matter is scheduled to begin at 2:00 p.m., November 2, 1977, at the Courtland Community Hall, Courtland, Minnesota, 56021.

The Board's consent document will be published in full in the Lafayette-Nicollet Ledger, Lafayette, Minnesota, 56054, and the New Ulm Daily Journal, New Ulm, Minnesota, 56073 on October 13, and October 20, 1977.

Department of Transportation

In the matter of the Petition of Burlington Northern Incorporated to close the station at Halstad Minnesota.

Amended Order for Hearing and Notice Thereof

A request for a change in the scheduled time for the above captioned proceeding has been granted by the Hearing Examiner appointed to serve in this matter.

Please be advised that the hearing originally scheduled for 10:00 A.M. will now be held at 1:00 P.M., in Halstad High School, Halstad, Minnesota 56548.

The hearing will be held before Mr. Bernard Singer, 1745 University Avenue, Saint Paul, Minnesota 55104, a Hearing Examiner appointed by the Chief Hearing Examiner of the State of Minnesota. All parties have the right to be represented by legal counsel or any other representative of their choice throughout the contested case proceeding. The hearing will be conducted pursuant to the contested case procedures set out in Minn. Stat. § 15.0411 through Minn. Stat. § 15.052 and Minn. Rule HE 201 through 222. Questions concerning the issues raised in this Order or concerning informal disposition or discovery may be directed to Mr. Gordon W. Boldt, Chief, Railroad Operations Section, 419 Transportation Building, Saint Paul, Minnesota 55155.

The purpose of the hearing is to ensure that under the provisions of Minn. Stat. § 219.85 (1976) all parties and potential parties of interest are given an opportunity to be heard on the proposed closing of the Halstad Freight Station. The petition recites among other matters that:

"Petitioner proposes to close the Halstad Freight Station and to change the headquarters of the Direct Service Agent from Halstad to Crookston and include Halstad as a station handled by said Direct Service Agent.

The aforementioned closure of the Halstad Freight Agency will in no way affect the station agent's duties at Crookston.

The depot building at Halstad will be retained and maintained for internal railroad use."

All parties are advised that if a party intends to appear at the hearing scheduled for October 27, 1977 at 1:00 P.M., the Notice of Appearance form enclosed with the Order must be completed and returned to the Hearing Examiner at least 10 days before the hearing date. Should a party fail to appear at the hearing, the allegations made in the petition may be taken as true.

The above cited procedural rules are available at the Office of Hearing Examiners or may be purchased from the Documents Section of the Department of Administration, 140 Centennial Building, Saint Paul, Minnesota 55155 (Telephone: 612-296-2874). They provide generally for the procedural rights of the parties including: rights to advance notice of witnesses and evidence, right to a prehearing conference, rights to present evidence and cross-examine witnesses, and right to purchase a record or transcript. Parties are entitled to issuance of subpoenas to compel witnesses to attend and produce documents and other evidence.

Persons attending the hearing should bring all evidence bearing on the case including any records or other documents.

If persons have good reason for requesting a delay of the hearing, the request must be made in writing to the Hearing Examiner at least 5 days prior to the hearing. A copy of the request must be served on the agency and any other parties.

Jim Harrington
Commissioner of Transportation

Notice of Appearance

Date of Hearing: October 27, 1977.
Name and Telephone Number of Hearing Examiner:

Mr. Bernard Singer
1745 University Avenue
Saint Paul, Minnesota 55104
612-296-8110

To the Hearing Examiner:
You are advised that the party named below will appear at the above hearing.

Name of Party: _____

Address: _____

Telephone Number: _____

Party's Attorney or Other Representative: _____

_____

Signature of Party or Attorney: _____

_____

Date: _____

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