

DEPT. OF INDUSTRY, LABOR & HUMAN RELATIONS 261
Appendix

APPENDIX A

The material contained in this appendix is for clarification purposes only. The notes, illustrations, etc. are numbered to correspond to the number of the rule as it appears in the text of the code.

A-50.10-50.25 FORMS. The following forms (SB2, 8, 8A, 118, 198, 224B and SBD-4927) are referred to in sections Ind 50.10, 50.12, 50.14, 50.18, 50.20 and 50.25. Copies of these forms are available from the Division of Safety and Buildings, P.O. Box 7946, Madison, Wisconsin 53707.

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SN 2
REV. 7/74

Department of Industry, Labor and Human Relations

Inspection Report and Orders

INSPECTION DATE		FILE NO. E ..	
OWNERS NAME		OCCUPANCY INSPECTED	
MAILING ADDRESS		LOCATED AT STREET ADDRESS	
CITY	STATE	ZIP CODE	COUNTY

An inspection of the above occupancy discloses violations of orders of the Dept. of Industry, Labor & Human Relations promulgated under authority of Chapter 101 of the Revised Statutes of Wisconsin.

SEE REVERSE SIDE FOR APPLICABLE WISCONSIN STATUTES

NOTE	ITEM	ORDER	REQUIREMENTS	<input type="checkbox"/> Building	<input type="checkbox"/> Safety

IMPORTANT

- Please report when orders are completed ● Avoid Delay
- Forfeiture for violations are \$10 to \$100 each day for each violation.
- Keep us informed

"Failure of an employer reasonably to enforce compliance by employees with such statute or order of the Department shall constitute failure by the employer to comply with such statute or order." Sec. 102.57 Wis. Stats.

COMPLIANCE DATE	VIOLATIONS EXPLAINED TO:	TITLE
By	Deputy	DISTRICT NO. Safety & Buildings Division

Address all Correspondence Safety and Buildings Division, Department of Industry, Labor and Human Relations, P.O. Box 7946 Madison, Wisconsin 53707

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SB-816/77)
PETITION FOR MODIFICATION
OF A RULE IN THE
WISCONSIN ADMINISTRATIVE CODE

WISCONSIN DEPARTMENT OF
INDUSTRY, LABOR AND HUMAN RELATIONS
DIVISION OF SAFETY & BUILDINGS
P. O. BOX 7946, MADISON, WI 53707

PETITION REVIEW FEE -- \$75.00

Name of Owner	Building Occupancy or Use	Agent, Architect or Engineering Firm
Company	Tenant Name, if any	Street & No.
Street & No.	Building Location, Street & No.	City State & Zip
City State & Zip	City County	Phone

1. Rule Ind. _____ of the Wisconsin Administrative code cannot be entirely satisfied because:

2. In lieu of complying exactly with the rule, the following alternative is proposed as a means of providing an equivalent degree of safety:

3. Supporting arguments are:

Verification by owner:

_____, being duly sworn, says he is the petitioner herein, thus he has read the foregoing petition and that the same is true, as he verily believes.

signature of owner

subscribed and sworn to me this ____ day of _____, 19____, in _____ County, Wisconsin.

Notary Public

My commission expires: _____

--PETITION IS VALID ONLY IF NOTARIZED

Commission Action	
Secretary	Date

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POSITION STATEMENT:
To be compiled by
Chief of Fire Department
SB 8-A (2-77)

WISCONSIN DEPARTMENT OF
INDUSTRY, LABOR AND HUMAN RELATIONS
DIVISION OF SAFETY & BUILDINGS
P.O. BOX 7946 MADISON WI 53707

Name of Owner		Building Occupancy or Use		Agent, Architect or Engineering Firm	
Company		Tenant Name, if any		Street & No.	
Street & No.		Building Location, Street & No.		City	State & Zip
City	State & Zip	City	County	Phone	
1. I have read the petition for modification of rule: Ind					
2. I recommend (Check appropriate box)		Denial	Approval	Conditional Approval	No Comment*
3. Explanation for Recommendation:					
<p>* If desired, Fire Departments may indicate "No Comment" on non-fire safety issues such as sanitary, energy conservation, structural, barrier free environments, etc.</p>					
4. <input type="checkbox"/> I find no conflict with local rules and regulations <input type="checkbox"/> I find that the petition is in conflict with local rules and regulations					
Explanation					
Signature of Fire Chief				Date	

PLEASE COMPLETE AND SUBMIT PROMPTLY TO DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS AT THE ADDRESS SHOWN ABOVE.

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PLANS APPROVAL APPLICATION
SB - 118 (Rev. 8/77)

Department of
INDUSTRY, LABOR AND HUMAN RELATIONS

Safety & Building Division
Box 7946
201 E. Washington Avenue
Madison, Wisconsin 53707

INSTRUCTIONS: Fill in all applicable data. Submittal of Plan Approval Application form is required with each plan submittal. Examination and inspection fees, as determined on back of form, are required to be submitted with a minimum of three sets of plans. Data required on plans is described in code section Ind 50.12.
Codes can be purchased from the Department of Administration, Document Sales, 202 S. Thornton Ave., Madison, 53703

1. THIS APPLICATION IS FOR: Building Plan Approval Heating Plan Approval Other _____

2. PLANS FOR: New Building Addition Alteration Structural Footing & Foundation
 Revision to previously approved plans Other _____

3. PROJECT INFORMATION

Name of Owner	Building Occupancy or Use	Designer or Design Firm
Company	Tenant Name, if any	Street & No.
Street & No.	Building Location, Street & No.	City State & Zip
City State & Zip	City <input type="checkbox"/> Village <input type="checkbox"/> Town <input type="checkbox"/>	County Phone
Previous Owner if any	Return Plans to <input type="checkbox"/> Owner <input type="checkbox"/> Designer	

**4. DETERMINATION OF FEES-SEE CHAP. IND. 69 FOR FULL SCHEDULE
SEE BACK OF PAGE FOR FEE CALCULATION AND ABBREVIATED FEE SCHEDULE**

FOR OFFICE USE ONLY

Total Volume	4a Building Plan Fee	\$ _____
	4b Heating Ventilation Fee	\$ _____
	4c Other	\$ _____
	4d Inspection	\$ _____
	4e TOTAL	\$ _____

Amount Rec'd _____
Date Rec'd _____
Receipt No _____

5. OTHER INFORMATION

5a Type of Construction

Fire Resistive Type A Metal Frame Protected Exterior Masonry Wood Frame Protected
 Fire Resistive Type B Heavy Timber Metal Frame Unprotected Wood Frame Unprotected

5b Mechanical Information Type of Heating _____ Net Rating of Heating Units _____

5c SOIL BEARING CAPACITY (See Ind 53.21)

Method used to determine capacity.

Check One Verified Presumptive
Check Value Used PSF 2000 3000 4000
6000 12000 Other _____

Yes	No
<input type="checkbox"/>	<input type="checkbox"/> Sprinkler System Provided?
<input type="checkbox"/>	<input type="checkbox"/> Fire Alarm Provided?
<input type="checkbox"/>	<input type="checkbox"/> Other Detection System Provided?
<input type="checkbox"/>	<input type="checkbox"/> Emergency Power Provided?

6. DESIGN AND SUPERVISION (IND 50.13)

The design, plans, computations and specifications for this project have been prepared under my supervision. I am registered as an Architect Engineer Designer in Wisconsin as provided in Section 443.01 of the Wisconsin Statutes. I am not registered. If this building, existing and additions, contains over 50,000 cu. ft. total volume, it must be designed by a registered person.

Signature of designer	Registration Number	Date
-----------------------	---------------------	------

If this building, existing and additions, contains over 50,000 cu. ft. total volume, the construction of this project shall be under the supervision of a Wisconsin registered architect, engineer or in the case of heating and ventilating, designer.

Plans for buildings over 50,000 cu. ft. will not be approved until the name of the supervising professional is known.

Name of Supervising Professional	Registration Number
----------------------------------	---------------------

NOTE: The supervising professional shall file a written report with the Department upon completion of construction. [Ind 50.13 (3) (c)]

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4. DETERMINATION OF FEES

INSTRUCTIONS:

1. Refer to fee schedule shown below.
2. Enter area of each floor in appropriate space.
3. Enter height of each floor (Height includes attic and space between floors).
4. Compute volume of each floor/attic space and total volume for building.*
5. Compute building and/or heating fee per building.
6. Enter other fee (if any) in space per building.
7. Compute inspection fees per building.
8. Total fees and transfer information to front page.

*The "total volume" is determined by the overall outside dimensions of length, width and height.

EXAMINATION FEES PER BUILDING

- Building Plan Fee: Fee, .60 per 1000 cu. ft.
Minimum Fee \$25.00
- Heating & Ventilating Plan Fee: Fee, .40 per 1000 cu. ft. Minimum Fee \$25.00
- Alterations to bldg: Fee \$1.50 per \$1,000 est. cost. Minimum fee \$25.00
- *Structural Plans \$25.00 per Bldg.
- Revision to approved Plan \$25.00
- *Exhaust Systems \$25.00 per plan (Govt. Owned only)
- *Spray Booths \$25.00 per Plan (Govt. Owned only)
- Permit to Start Construction (SB-198) \$35.00 per Bldg.
- *Footing & Foundation Plans \$25.00 per Bldg.
- *Stadium, Grandstand, Bleacher \$10.00/1000 Seats
Minimum Fee \$25.00
- *Fire Escapes \$25.00 per fire escape

NOTE

- (1) Heating & Ventilating Plans submitted separately require an inspection fee of \$44.00.
- * (2) Plans other than building or heating require an inspection fee of \$26.00.
- (3) Warehouses-Reduce plan examination fees (Not inspection fees) by 30%.
- (4) Building plan fee for Bldgs. exceeding 1,000,000 cu. ft. is \$600 plus \$0.40 per 1,000 cu. ft. in excess of 1,000,000 cu. ft..
- (5) Heating & Ventilation plan Fee for Buildings exceeding 1,000,000 cu. ft. is \$400 plus \$0.25 per 1000 cu. ft. in excess of 1,000,000 cu. ft.

INSPECTION FEES PER BUILDING:

Building Volume/Alt. Cost	Fee
Up to 25,000 cu. ft./dollars	\$60.00
25,001 - 100,000 cu. ft./dollars	\$75.00
100,001 - 500,000 cu. ft./dollars	\$100.00
500,001 - 1,000,000 cu. ft./dollars	\$125.00
In excess of 1,000,000 cu. ft./dollars	\$150.00

No. of Floors	Area	Height	Total each Floor	Total Vol./1000	x	Exam Fee	Building Plan Fee
Basement/Ground	x	=	cu. ft.	Total Vol./1000	x	.60	\$
1st Floor	x	=	cu. ft.	Total Vol./1000	x	.40	\$
2nd	x	=	cu. ft.				\$
3rd	x	=	cu. ft.				\$
4th & 5th attic & etc.	x	=	cu. ft.				\$
Total Volume or Total Cost of Alteration			=				\$
TRANSFER ALL DOLLAR AMOUNTS AND VOLUME TO FRONT PAGE -----							Total \$

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SB-198
Rev. 6/77



DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS
SAFETY & BUILDINGS DIVISION
P.O. BOX 7946
MADISON, WISCONSIN 53707

PERMIT TO START CONSTRUCTION
FEE \$35.00 (per bldg.) IN ADDITION TO EXAMINATION/INSPECTION FEES

Location of Project:

Owner: _____ E. _____

Street: _____ Plan File Number _____

City: _____ Date Plans Rec'd _____

County: _____

Occupancy: _____

We, the undersigned, request to begin footing and foundation work prior to approval of the plans.

Complete plans have been submitted to the Department of Industry, Labor & Human Relations, Division of Industrial Safety and Buildings, and all information requested by Code Ind. 50.12 has been included with the submittal.

We have reviewed the specific code requirements for the building or structure including, but not limited to, Ind. 54.01, Ind. 55.02, Ind. 56.02, Ind. 57.01 (construction, height and allowable area), Ind. 50.12, Ind. 51.03, Ind. 53, Ind. 55.05 and Ind. 54.50, when applicable, and have shown compliance on the drawings.

We agree to make any changes required after the plans have been reviewed and to remove or replace noncode complying parts of the foundation and/or footings.

We agree to proceed with the footings and foundation only and will not continue with the remainder of the building or structure until approval has been received.

Owner's Signature _____ Date _____

Name: _____

Address: _____

Designer's Signature _____ Date _____

Name: _____

Address: _____

Accepted By _____ Date _____

Dept. of Ind., Labor & Human Relations
Div. of Industrial Safety & Buildings

Not Accepted Because _____

Plans will be examined within the next _____ days.

NOTE: Footing and foundation plans submitted prior to final building plans will not be accepted for this permit.

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DILHR-SBD-4927

CERTIFICATE OF COMPLETION

Date _____

TO: Department of Industry, Labor and Human Relations
Safety and Buildings Division
P. O. Box 7946
201 E. Washington Avenue
Madison, WI 53707

Gentlemen:

RE: File Number: _____

Plan Number: _____

Owner: _____

Occupancy: _____

Building Street Address: _____

City: _____ County: _____

This is to certify that construction of the referenced project was under my supervision, in accordance with Ind 50.10, and that to the best of my knowledge and belief it has been completed in substantial compliance with the approved plans and specifications with the following exceptions: (IF NONE, STATE NONE)

This certificate covers: Building
Heating & Ventilation
Structural
Other (Specify) _____

Name: _____

Registration Number: _____

Address: _____

A-50.20 FEES. The following reprint of section Ind 69.09 may be used to determine the amount of fee required for building-related services offered by the department:

Ind 69.09 Buildings, structures, heating and ventilating. (1) PLAN EXAMINATION AND APPROVAL FEES. Fees for the examination and approval of all plans submitted in accordance with the requirements of Wis. Adm. Code chapters Ind 60-64 will be determined in accordance with the following schedules.

(a) *Building, heating and ventilating.* Fees for the examination and approval of all building and heating and ventilating plans will be computed on the basis of the total volume of the building and at the following rates:

Note: For the purpose of determining fees, the volume is determined by the overall outside dimensions of length, width and height.

<u>Total volume</u>	<u>Building plans</u>	<u>Heat & vent plans</u>
0-1,000,000 cubic feet	\$0.60 per 1000 cubic feet. Minimum fee-\$25.00 per plan.	\$0.40 per 1000 cubic feet. Minimum fee-\$25.00 per plan.
Over 1,000,000 cubic feet	\$600 plus \$0.40 per 1000 cubic feet in excess of 1,000,000 cubic feet.	\$400 plus \$0.25 per 1000 cubic feet in excess of 1,000,000 cubic feet.

1. Exceptions.

a. *Warehouses.* The fees for plan examination and approval of warehouses shall be determined in accordance with Ind 69.09 (1) (a) except that the fee may be reduced by 30%. Minimum fee--\$25.00.

b. *Replacement of heating equipment.* The replacement of a boiler or a furnace in an existing heating system with no alterations to the heating system requires no fee. See Ind 69.03 (5) for registration fee for boilers and pressure vessels.

(b) Permit to start.....\$35.00 per permit.

(c) Alteration plans for buildings and structures and heating and ventilating may be determined in accordance with (1) (a), based on total building volume affected by such alteration, or the following:

\$1.50 for every \$1000 or fraction of \$1000 estimated cost. Minimum fee-- \$25.00 per plan.

(Estimated fee need not include cost of razing, piping, electrical, painting or decorating.)

(d) Revisions to previously examined plans.....\$25.00 per plan.

(Applies when plans are revised, for reasons other than those that were requested by the department, before construction of the specific item commences.)

(e) Footing and foundation plans submitted separately\$25.00 per plan.

(f) Structures\$25.00 per plan.

(Applies when submitted separately and not included with general building plans, such as trusses, precast concrete and other structures.)

(g) Fire escapes.....\$25.00 per plan.

(h) Stadia, grandstands and bleachers\$10.00 per 1000 seats
or fraction of 1000 seats.
Minimum fee--\$25.00.

(i) Industrial exhaust systems for dusts, fumes, vapors and gases (government owned only)\$25.00 per plan.

(j) Spray booth plans (government owned only)\$25.00 per plan.

(2) APPROVAL NUMBERS. The fee for approval numbers issued by the department for the approval of materials, equipment and devices\$200.00 per approval.

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(3) **INSPECTION FEES.** Field inspection fees shall be remitted for each building or structure in accordance with the following:

(a) *General building, heating and ventilating inspection fees.* When plans for the building and the heating and ventilating system are submitted together, inspection fees shall be determined in accordance with the following:

<u>New building construction (cubic feet)</u>	<u>Fee</u>
Up to 25,000 cubic feet.....	\$50.00
25,001 - 100,000 cubic feet.....	75.00
100,001 - 500,000 cubic feet.....	100.00
500,001 - 1,000,000 cubic feet.....	125.00
1,000,001 cubic feet and over.....	150.00

(b) *Heating and ventilating inspection fees.* Heating and ventilating inspection fee, when plans are submitted separately from building plans.....\$44.00.

(c) *Inspection fees for alterations to existing buildings.* Inspection fees for alterations to existing buildings shall be determined in accordance with (3) (a) or the following:

<u>Alteration or repair (dollar amount)</u>	<u>Fee</u>
Up to \$25,000.....	\$50.00
\$25,001 - \$100,000.....	75.00
\$100,001 - \$500,000.....	100.00
\$500,001 - \$1,000,000.....	125.00
\$1,000,001 and over.....	150.00

(d) *Miscellaneous inspection fees.* Miscellaneous inspection fees include fire escapes, stadia and grandstands, exhaust systems, spray booths and other structures for which plan submission is required.....\$25.00.

(4) **COLLECTION OF FEES.** All fees shall be remitted at the time the plans are submitted. No plan examinations, approvals or inspections will be made until the fees are received.

(5) **MICROFILM FEES.** Microfilm prints of approved plans for the years 1967-1972 are available at a nominal cost upon approval of the original designer.

(6) **PETITIONS FOR MODIFICATION.** The department will consider and may grant modification to an administrative rule upon receipt of a fee of \$75.00, a completed petition for modification form from the owner, and a position statement from the fire department having responsibility and an interest in the rule, provided an equivalent degree of safety is established in the petition for modification which meets the intent of the rule being petitioned.

A-51.01 (12) **BUILDING.** The intent was to consider permanent awnings as part of a building.

A-51.01 (42) **FAMILY.** The intent of this definition is to clarify the use of the word "family" in reference to subsection Ind 57.001 (2) (a); it is not intended as a variance to requirements stated under Ind 57.001 (2) (b).

A-51.01 (67a) **HABITABLE ROOM.** It is the intent that rooms designated as recreation, study, den, family room, office, etc. and providing the only space for living and/or sleeping are considered habitable rooms.

A-51.01 (116) **SETBACK.** The intent was to not include gutters, downspouts, outdoor lighting fixtures, signs and similar attachments as parts of a building.

A-51.01 (121) **STORIES, NUMBER OF.** For further clarification, refer to A-51.02 (14).

A-51.01 (144) **WALL (DIVISION).**

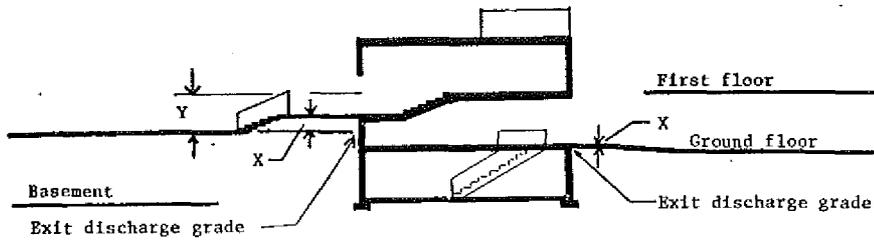
(a) *Building division wall* is intended to denote a wall constructed in a manner sufficient to meet requirements for a party wall [see "Wall (Party)"] and is acceptable as a dividing wall or enclosing wall when determining the volume of a building as referred to in sections Ind 50.07, 50.10 and 50.12.

(b) *Fire division wall* is intended to relate to construction that provides separation between portions of a building to satisfy allowable floor area limitations, separation between 2 classes of construction, or separation of hazardous occupancies. For other separations, see "occupancy separations" and isolation of hazards sections of this code.

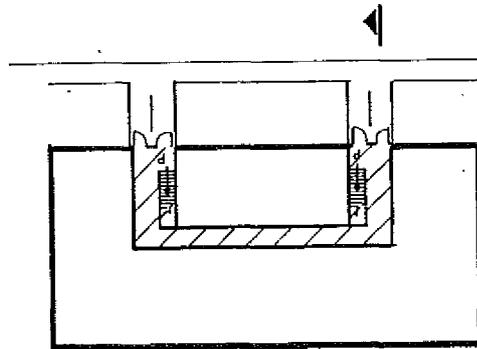
A-51.01 (151) WALL (PARTY). It is intended that a property consisting of joining plotted subdivisions owned by one individual, that can be owned by separate individuals, is included in the definition of party wall.

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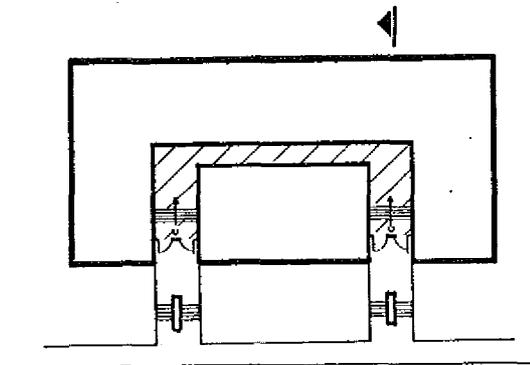
A-51.02 (14) DETERMINATION OF NUMBER OF STORIES. The following illustrations are provided to give visual aid to this rule and the definition of Ind 51.01 (121) Stories, Number of.



Note: X = 3'-0" (maximum)
Y = 6'-0" (maximum)



Ground floor



First floor

A-51.042 (5) The use of the term "high hazard" as referred to in this section is intended to apply to the following list of operations and occupancies:

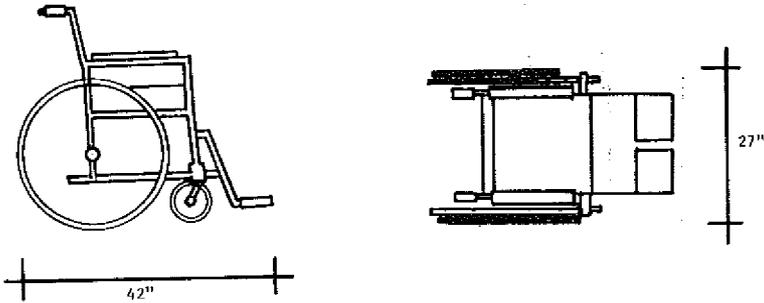
1. Aircraft hangars.
2. Dry cleaning establishments: using or storing gasoline or other volatile flammable liquids.
3. Enameling or japanning operations.
4. Mills: sugar, starch, cereal, feed, flour and grist mills.
5. Paint and varnish: manufacturing, storing, handling, spraying, and other related operations.
6. Pyroxylin products: manufacture and storage.
7. Repair garages.
8. Smoke houses.
9. Storage of: explosive gases under pressure (15 psi and over 2,500 cubic feet) such as acetylene, hydrogen, natural gas, etc.
10. Storage of: materials with a flash point under 200° F. such as celluloid products, kerosene, oils, etc.
11. Woodworking establishments.

A-51.15 (8) EXAMPLE TO DETERMINE TOTAL AGGREGATE EXIT WIDTH.

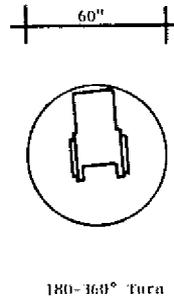
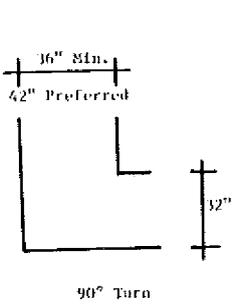
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A-62.04 REQUIREMENTS FOR BARRIER-FREE ENVIRONMENTS. The following illustrations are provided to give the designer visual aids for making facilities accessible.

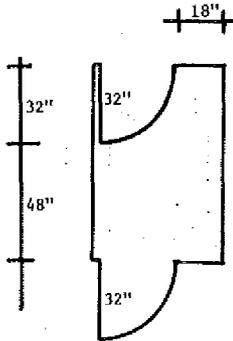
WHEELCHAIR DIMENSIONS



TURNING SPACE

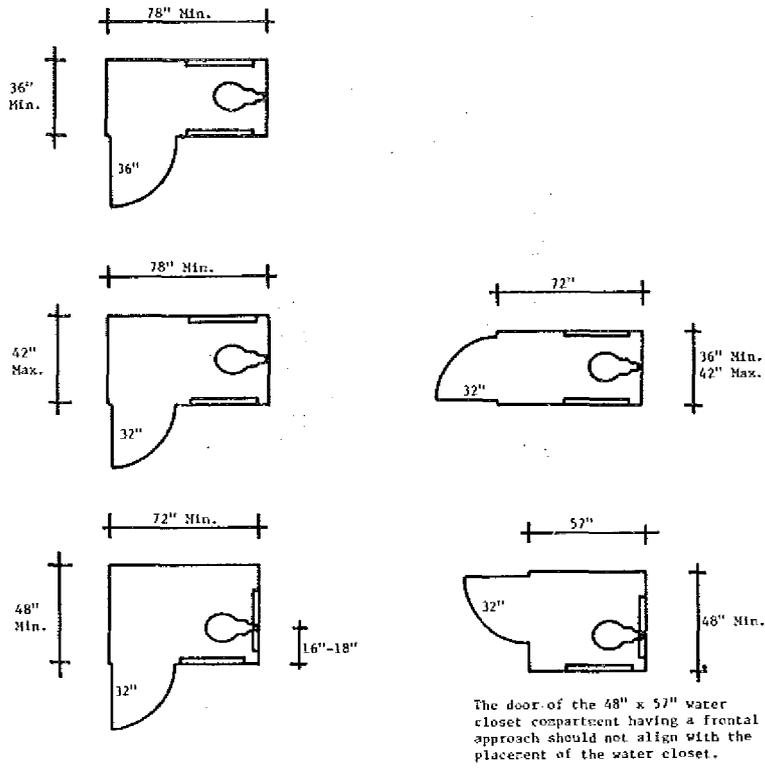


DOORS IN SERIES

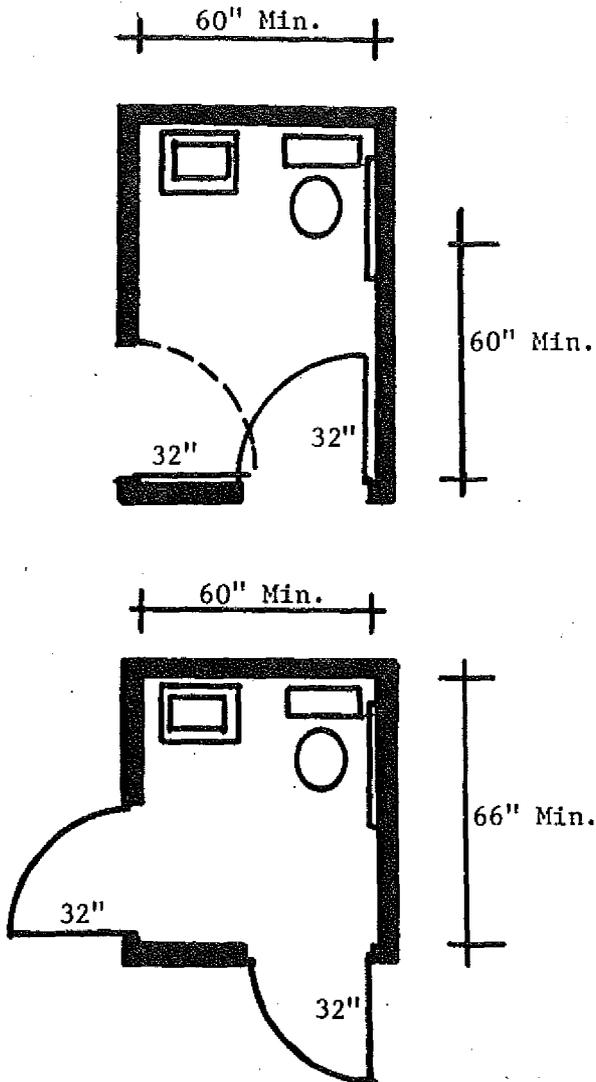


Doors in series should be hinged on the same side and should swing in the same direction. A minimum of 18 inches of clear space should be provided on the door knob side of the door. The length of the vestibule should be a minimum of 48 inches plus the width of the door in the open position (i.e., 32-inch door plus 48 inches length equals 80 inches overall length of vestibule).

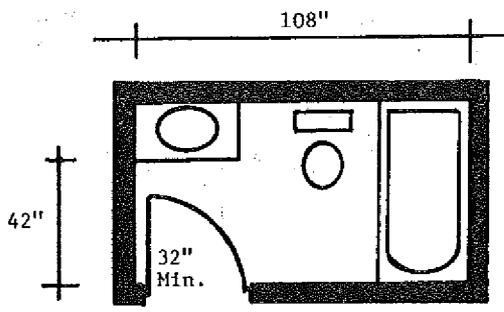
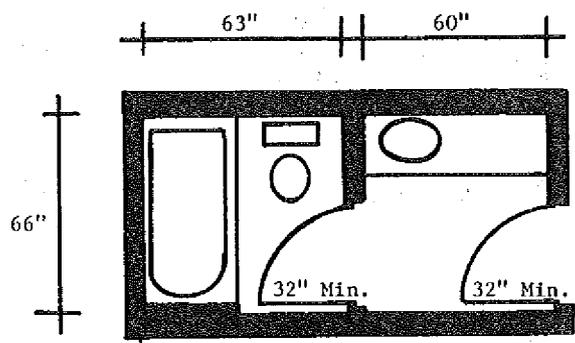
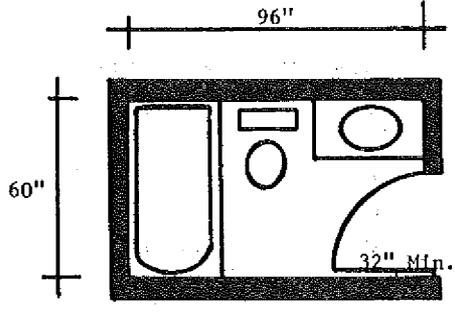
EXAMPLES OF ACCESSIBLE TOILET COMPARTMENTS
AS SPECIFIED IN TABLE 52.04-A



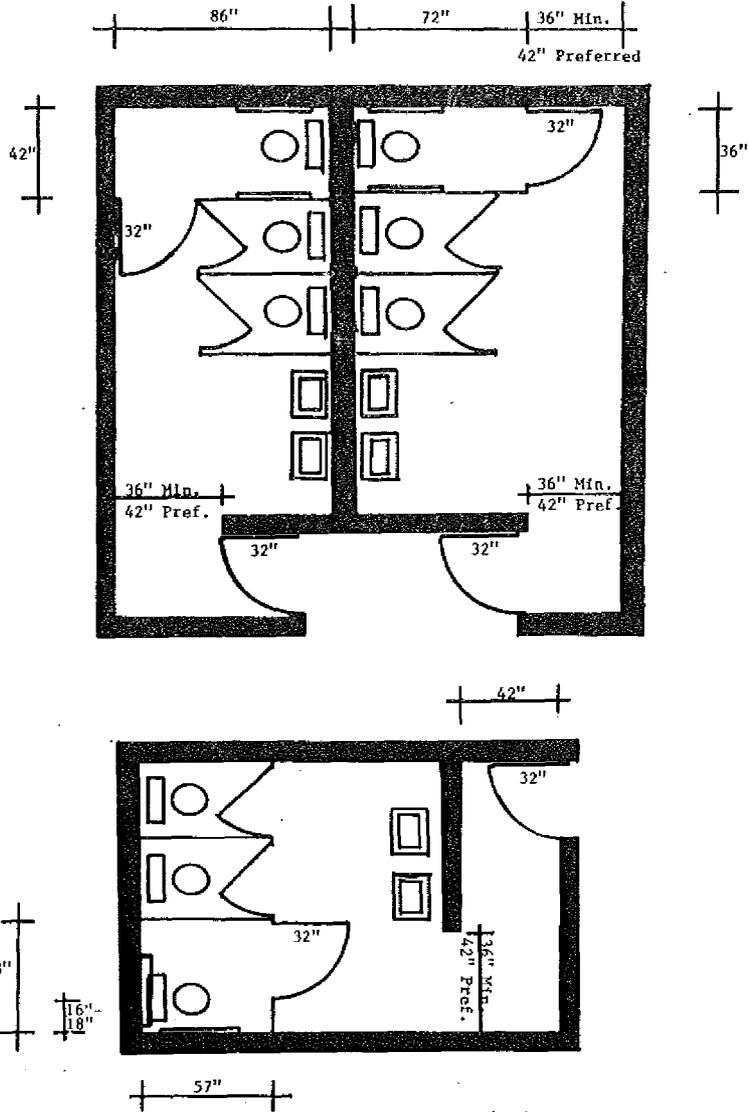
EXAMPLES OF ACCESSIBLE TOILET ROOMS
CONTAINING ONE LAVATORY AND ONE WATER CLOSET



EXAMPLES OF ACCESSIBLE BATHROOM LAYOUTS
FOR RESIDENTIAL LIVING UNITS

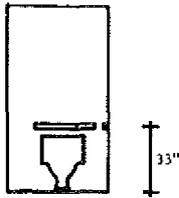


EXAMPLES OF ACCESSIBLE TOILET ROOMS

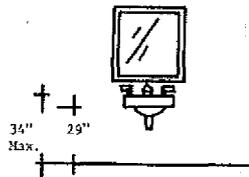
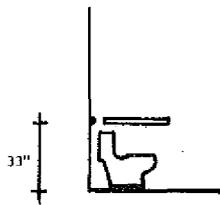


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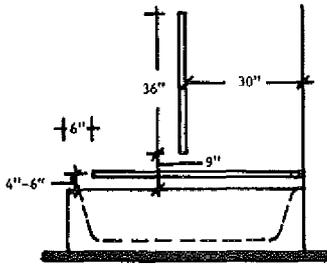
ACCESSIBLE TOILET ROOMS



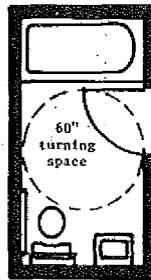
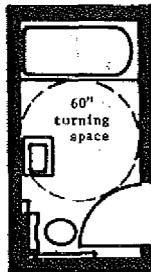
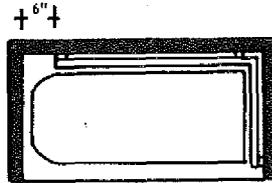
It is recommended that grab bars be from 30 to 42 inches in length and located no more than 12 inches from the back wall.



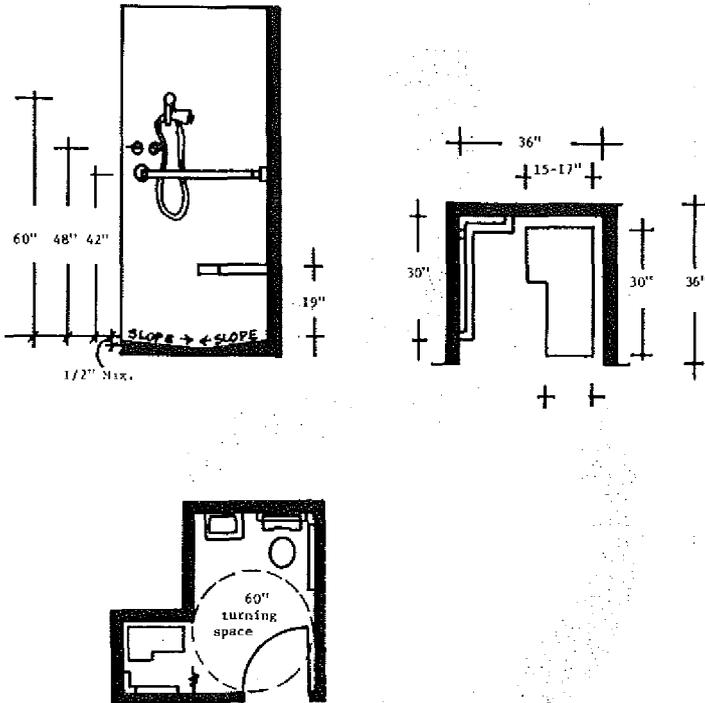
ACCESSIBLE BATHING FACILITIES



Grab bar location is measured from the rim of the tub.



ACCESSIBLE BATHING FACILITIES





INTERNATIONAL SYMBOL FOR BARRIER-FREE ENVIRONMENTS

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A-52.04 (4) (b) *Lifts for the physically disabled.* The stair-mounted lifting devices, providing interior circulation for the physically disabled, are either of a platform type accommodating the wheelchair and its user or a seat type which requires the person to transfer from the wheelchair.

In new construction, the seat-type lifting device will be acceptable only in private group type occupancies such as, but not limited to, senior citizen centers, fraternal organizations, small churches with less than 100 occupants, and private residences. In remodeled situations where adequate space for other lifting devices is not available, a seat-type lifting device will be acceptable.

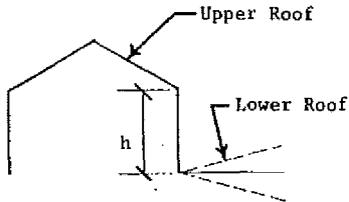
The following guidelines should be used for lifting devices provided for interior circulation:

1. If the lifting device is to be located in a required exit stairway, the lifting device, in its open position, cannot infringe upon the required exit width for the floor the stairway serves. To determine the required exit width, refer to the specific occupancy chapters of this code.
2. The department recommends that the building plans submitted for approval indicate the type of lifting device to be used, the location, and the width of the lifting device in its open position.
3. The guidelines of the elevator section of this department require platform lifts to be designed with proper safety devices such as 42-inch high sides and gates, gate locks and contacts, guarding of space under the lift, etc., to provide safety for the public and persons using the lift with aids such as wheelchairs, crutches, braces or canes.
4. Vertical lifts having a travel distance in excess of 56 inches are considered to be elevators and must comply with the requirements for passenger elevators, Wis. Adm. Code chapter Ind 4, Elevator Code.
5. After the building plans are approved for the location and use, 3 sets of mechanical drawings for the lifting device must be submitted to the elevator section in accordance with chapter Ind 4, Elevator Code.
 - a. Two copies of the elevator application form are required to be submitted along with an examination fee and an inspection fees.
 - b. A copy of the building approval letter should accompany the mechanical drawings.

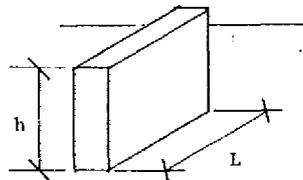
A-53.11 (4) (b) *Increase in roof loads.* The following design provisions may be used to determine the increase in roof loads as required by this section.

SNOW LOAD DISTRIBUTIONS AND COEFFICIENTS

ROOF SHAPES

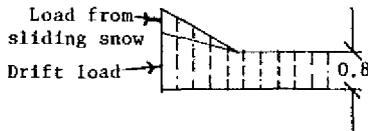


Lower of multi-level roofs with upper roof sloped towards lower roof



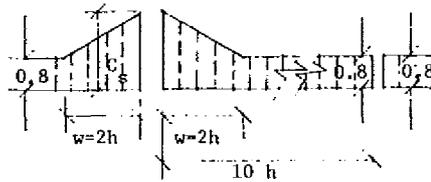
Roof areas adjacent to projections and obstructions on roofs

SNOW LOAD DISTRIBUTIONS AND COEFFICIENTS. LIMITATIONS



Design lower roof for loads applicable to multi-level roofs plus a portion of the sliding snow from the upper roof

Design upper roof for loads applicable to single-level roofs.



$$C_s = 10 \frac{h}{g}$$

When $10 \frac{h}{g} < 0.8$ use $C_s = 0.8$

When $10 \frac{h}{g} > 2.0$ use $C_s = 2.0$

When $L < \frac{g}{6}$ use $C_s = 0.8$

$$w = 2 h$$

When $h < 5$ ft use $w = 10$ ft

When $h > 15$ ft. use $w = 30$ ft

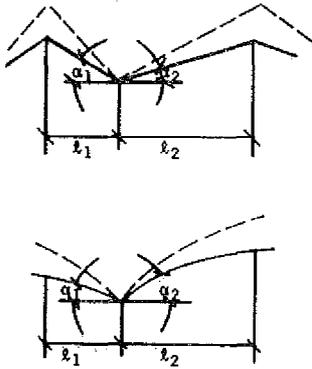
h = height of projection in ft

g = roof live load in psf [53.11 (4)]

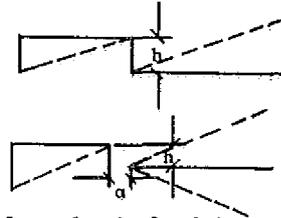
w = width of snow drift in ft

L = length of projection in ft

ROOF SHAPES

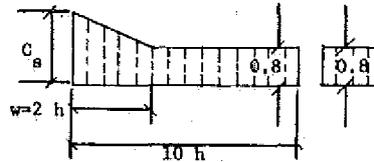
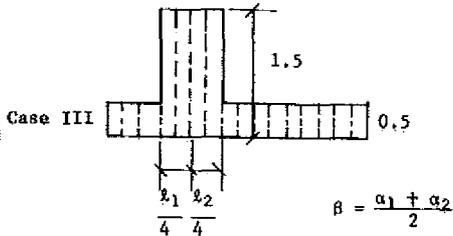
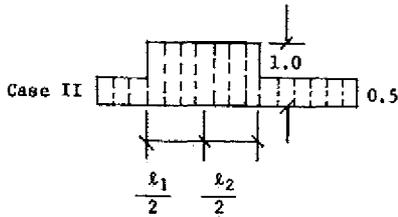
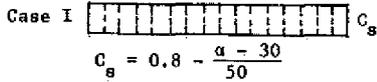


Valley areas of two-span and multiple series sloped or curved roofs



Lower level of multi-level roofs (when upper roof is part of the same building or on an adjacent building not more than 15 ft. away)

SNOW LOAD DISTRIBUTIONS AND COEFFICIENTS LIMITATIONS



$C_s = 15 \frac{h}{g}$
when $15 \frac{h}{g} < 0.8$ use $C_s = 0.8$
when $15 \frac{h}{g} > 3.0$ use $C_s = 3.0$
 $w = 2h$
when $h < 5$ ft use $w = 10$ ft
 $h > 15$ ft use $w = 30$ ft

h = difference of roof heights in ft
 g = roof live load in PSF [Ind 53.11(f)]
 w = width of drift from higher bldg. in ft
 a = distance between buildings < 15 ft

Design upper roof for loads applicable to single-level roofs

For $\beta < 10^\circ$ use Case I only
For $10^\circ < \beta < 20^\circ$ use Case I and II
For $\beta > 20^\circ$ use Case I, II and III

A-53.15 **LOAD COMBINATIONS.** It is the intent of this section that the loads specified in sections Ind 53.10 through Ind 53.13 be considered to act in the following combinations, whichever is critical, for the design of the building frame, foundation or structural member:

1. Dead load plus live load.
2. Dead load plus wind load.
3. Dead load plus live load plus wind load.
4. Dead load plus live load plus crane loads.

Distribution of live loads which would cause the maximum shear, bending moment or stress in structural members should be investigated. Alternate span loading need not be considered in the application of roof loads.

A-57.18 The intent of this section is to apply to floor levels not more than one story below grade (at building).

A-57.18 (6) It is the intent of this subsection that each living unit needs only one means of exit from within the unit and that the entire building be provided with no less than 2 exits.

A-60.19 (4). The standard is available from the National Fire Protection Association, 470 Atlantic Ave. Boston, Massachusetts 02210.

A-60.24 Class A fires are fires in ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Class B fires are fires in flammable liquids, gases and greases.

A-60.35 See A-60.24.

A-60.36 (1) (a). See A-60.19 (4).

A-62.25 (1) *Clearance limitations.* The intent is to require the minimum 7 feet 0 inches clearance only in traffic lanes and in all areas normally used by the public to leave and return to their vehicles.

A-64.20. **EQUIPMENT RATINGS AND SAFETY CONTROLS.** The department recognizes the following reference standards for the testing and installation of heating and ventilating equipment:

- (1) National Fire Protection Association, 470 Atlantic Ave., Boston, Mass. 02210:
 - (a) OIL-BURNING EQUIPMENT, NFPA No. 31;
 - (b) NATIONAL FUEL GAS CODE, NFPA No. 54.
- (2) American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018:
 - (a) GAS-FIRED ROOM HEATERS, Vol. 1, ANSI Z21.11.1;
 - (b) GAS-FIRED LOW PRESSURE STEAM AND HOT WATER BOILERS, ANSI Z21.13;
 - (c) GAS UNIT HEATERS, ANSI Z21.16;
 - (d) DOMESTIC GAS CONVERSION BURNERS, ANSI Z21.17;
 - (e) GAS APPLIANCE PRESSURE REGULATORS, ANSI Z21.18;
 - (f) AUTOMATIC GAS IGNITION SYSTEMS AND COMPONENTS, ANSI Z21.20;
 - (g) AUTOMATIC GAS VALVES, ANSI Z21.21;
 - (h) RELIEF VALVES AND AUTOMATIC GAS SHUTOFF DEVICES FOR HOT WATER SYSTEMS, ANSI Z21.22;
 - (i) GAS APPLIANCE THERMOSTATS, ANSI Z21.23;
 - (j) GAS-FIRED DUCT FURNACES, ANSI Z21.34;
 - (k) GAS FILTERS ON APPLIANCES, ANSI Z21.35;
 - (l) GAS-FIRED GRAVITY AND FAN TYPE DIRECT VENT WALL FURNACES, ANSI Z21.44;
 - (m) GAS-FIRED GRAVITY AND FORCED AIR CENTRAL FURNACES, ANSI Z21.47;
 - (n) GAS-FIRED GRAVITY AND FAN TYPE FLOOR FURNACES, ANSI Z21.48;
 - (o) GAS-FIRED GRAVITY AND FAN TYPE VENTED WALL FURNACES, ANSI Z21.49;
 - (p) VENTED DECORATIVE GAS APPLIANCES, ANSI Z21.50;
 - (q) GAS-FIRED SINGLE FIREBOX BOILERS, ANSI Z21.52;
 - (r) GAS-FIRED HIGH PRESSURE STEAM AND HOT WATER BOILERS (Inputs not over 400,000 Btu/hour), ANSI Z21.59;

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Appendix

- (s) DECORATIVE GAS APPLIANCES FOR INSTALLATION IN VENTED FIREPLACES, ANSI Z21.60;
 - (t) DIRECT GAS-FIRED MAKE-UP AIR HEATERS, ANSI Z83.4;
 - (u) GAS-FIRED HEAVY DUTY FORCED AIR HEATERS, ANSI Z83.5;
 - (v) GAS-FIRED INFRARED HEATERS, ANSI Z83.6.
- (3) Underwriters' Laboratories, Inc., 207 East Ohio St., Chicago, Illinois 60611:
- (a) OIL BURNERS, UL 296;
 - (b) CONTROLS, PRIMARY SAFETY FOR GAS- AND OIL-FIRED APPLIANCES, UL 372;
 - (c) HEATING APPLIANCES, ELECTRIC, UL 499;
 - (d) HEAT PUMPS, UL 559;
 - (e) OIL-FIRED BOILER ASSEMBLIES, UL 726;
 - (f) OIL-FIRED CENTRAL FURNACES, UL 727;
 - (g) HEATERS, AIR, AND DIRECT-FIRED HEATERS, OIL-FIRED, UL 733;
 - (h) COMMERCIAL-INDUSTRIAL GAS HEATING EQUIPMENT (Inputs over 400,000 Btu/hour), UL 795;
 - (i) HEATERS, ELECTRIC, FOR USE IN HAZARDOUS LOCATIONS; Class I, Groups A, B, C and D, and Class II, Groups E, F and G, UL 823;
 - (j) ELECTRIC BOILERS, UL 834;
 - (k) HEATERS, ELECTRIC DRY BATH, UL 876;
 - (l) FAN COIL UNITS AND ROOM FAN HEATER UNITS, UL 883;
 - (m) HEATERS, ELECTRIC AIR, UL 1025;
 - (n) HEATING EQUIPMENT, ELECTRIC BASEBOARD, UL 1042;
 - (o) HEATING EQUIPMENT, ELECTRIC CENTRAL AIR, UL 1096.

Note: The table on the following page is a tabular summary of UL 296 and UL 795.

TABULAR SUMMARY UL STANDARD 296 AND UL STANDARD 795

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FUNCTION/BURNER INPUTS	OIL BURNERS UL 296				COMMERCIAL/INDUSTRIAL GAS UL 795				ATM Draft
					Mechanical Draft Burners				
	3 GPH 400,000 Btu or less	7 GPH 1 million Btu or less	20 GPH 3 million Btu or less	Over 20 GPH 3 million Btu	Over 400,000 to 2,500,000	Over 2,500,000 to 5,000,000	Over 5,000,000 to 12,500,000	Over 12,500,000	
Prepurge timing	--	--	--	--	4	4	4	4	90 sec ³
Air changes	--	--	--	--	4	4	4	4	--
Interlock Controls (Recycle)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Proven combustion air	8	8	8	8	Yes	Yes	Yes	Yes	--
Valve seal overtravel ⁹	--	--	--	--	--	Optional	Yes	Yes	13
Low gas pressure	--	--	--	--	--	Yes ²⁰	Yes ²⁰	Yes ²⁰	13
High gas pressure	--	--	--	--	--	Yes ²⁰	Yes ²⁰	Yes ²⁰	13
Low fire start	11	11	11	11	11	11	11	11	13
High limit (press. or temp.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Low water cutoff	Boilers ²¹	Boilers ²¹	Boilers ²¹	Boilers ²¹	Boilers	Boilers	Boilers	Boilers	13
Pilot - Intermittent	Optional	Optional	Optional	--	Optional	Optional	Optional	Optional	12
Pilot - Interrupted	19	19	19	Yes ⁵	Optional	Optional ²	Optional ²	Optional ²	2, 10
Direct spark ignition	Yes	Yes	Yes	5	--	--	--	--	--
System & sequence approved safety control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Approved safety shutoff valves (SSOV)	IN	BURNER	DESIGN	--	Yes ¹⁴	Yes ¹⁴	Yes ¹⁴	Yes ¹⁴	Yes ^{13, 14}
No vent valve	--	--	--	--	--	--	--	--	13
Pilot valve	16	18	18	Yes	Yes ⁵	Yes	Yes	Yes	Yes
Proved pilot	Optional	Optional	Optional	Yes	Yes	Yes	Yes	Yes	Yes
Trial for pilot	17	17	17	15 sec	15 sec	10 sec	10 sec	10 sec	13
Trial for main flame	90 sec ^{2,17}	30 sec ^{2, 17}	15 sec ^{2, 17}	10/30 sec ⁷	15 sec ²²	10 sec	10 sec	10 sec	13
Flame failure response time	90 sec ¹⁷	4 sec max ^{16,17}	4 sec max ^{15,17}	4 sec max	4 sec max	4 sec max	4 sec max	2 sec max	13
Valve closing time (max.)	23	23	23	23	5 sec max	1 sec max	1 sec max	1 sec max	13
Supervise main flame	17	17	17	Yes	--	Yes ²	Yes ²	Yes ²	2, 10
Action on flame failure	Recycle optional ¹	1	1	Lockout or recycle	Lockout or recycle ⁶	Lockout	Lockout	Lockout	13
Action on limit open	Close SSOV	Close SSOV	Close SSOV	Close SSOV	Close SSOV	Close SSOV	Close SSOV	Close SSOV	13

See following page for footnotes.

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FOOTNOTES TO TABULAR SUMMARY UL
STANDARD 296 AND UL STANDARD 795:

SSOV=Safety shutoff valve.

¹May relight if ignition is re-energized within 0.8 sec. See 15 and 16.

²Where intermittent pilot is desired, it is allowable to switch from pilot detector to main flame detector if main flame detector responds to main flame only.

³Without shutters, no prepurge required.

⁴Options (whichever is chosen, a minimum of 4 air changes must be provided): 30 sec at high fire rate; OR
60 sec at 1/2 high fire rate; OR
90 sec at 1/3 high fire rate.

⁵With 2-stage lightoff, direct ignition is permitted if first stage is 20 gph or less (requirements for 20 gph or less apply). Pilot is required if igniting more than 20 gph.

⁶Lockout on interrupted pilot applications; recycle on intermittent pilot applications.

⁷10 sec for distillate fuel (No. 1 or No. 2); 30 sec for residual fuel (No. 4, 5, 6).

⁸Conventional type pressure burner—none needed. Needed for applications with combustion air supply separate from oil supply.

⁹Valve seal overtravel switch can be wired into either the start circuit or pre-ignition interlock circuit (if provided).

¹⁰Interrupted pilot over 2.5 million Btuh if modulating or high/low firing rate. Otherwise over 5 million Btuh.

¹¹If low fire start is not proved, UL will test for smooth lightoff at high fire.

¹²Intermittent up to 5 million Btuh unless firing rate control is over 2,500,000 Btuh.

¹³Requirements same as mechanical draft burners.

¹⁴See Table 1 at end of footnotes for main gas valves.

¹⁵Up to 15 sec is permitted if intermittent ignition is employed, or if the ignition system is re-energized in not more than 0.8 sec after flame is extinguished.

¹⁶Up to 30 sec is permitted if intermittent ignition is employed, or if the ignition system is re-energized in not more than 0.8 sec after flame is extinguished.

¹⁷If proved pilot igniter is used, timings for over 20 gal flame safeguard control may be applied.

¹⁸Required for electrically ignited, gas-piloted systems.

¹⁹Interrupted pilot may be required if using flame safeguard control with a proved pilot. Otherwise, interrupted pilot is optional.

²⁰Safety shutdown by this limit can be accomplished either by manual reset limits or in the programmer limit circuit.

²¹Required on boilers fired by oil burners—not a requirement of UL 296.

²²If intermittent pilot is used, no main burner flame-establishing period is required.

²³If a separate oil valve is used, it must close within 5 sec max when de-energized.

TABLE 1—AUTOMATIC MAIN GAS SAFETY SHUTOFF VALVES (SSOV) FOR MECHANICAL OR ATMOSPHERIC BURNERS—UL 795 REQUIREMENTS, EFFECTIVE OCTOBER 1, 1974

	400,000 to 2,500,000 BTUH	Over 2,500,000 to 5,000,000 BTUH	Over 5,000,000 to 12,500,000 BTUH	Over 12,500,000 BTUH
Main Valve Requirement	One valve rated for safety shutoff services (SSOV). Closing time 5 sec.	Two SSOV's in series, or one SSOV of the type incorporating a valve seal overtravel interlock. Closing time 1 sec max.	Two SSOV's in series, one of which incorporates a valve seal overtravel interlock. Closing time 1 sec max.	Two SSOV's in series, one of which incorporates a valve seal overtravel interlock. When fuel gas has specific gravity of less than 1.0, include a N.O. $\frac{3}{4}$ inch or larger electrically operated valve in a vent line between the two SSOV's.