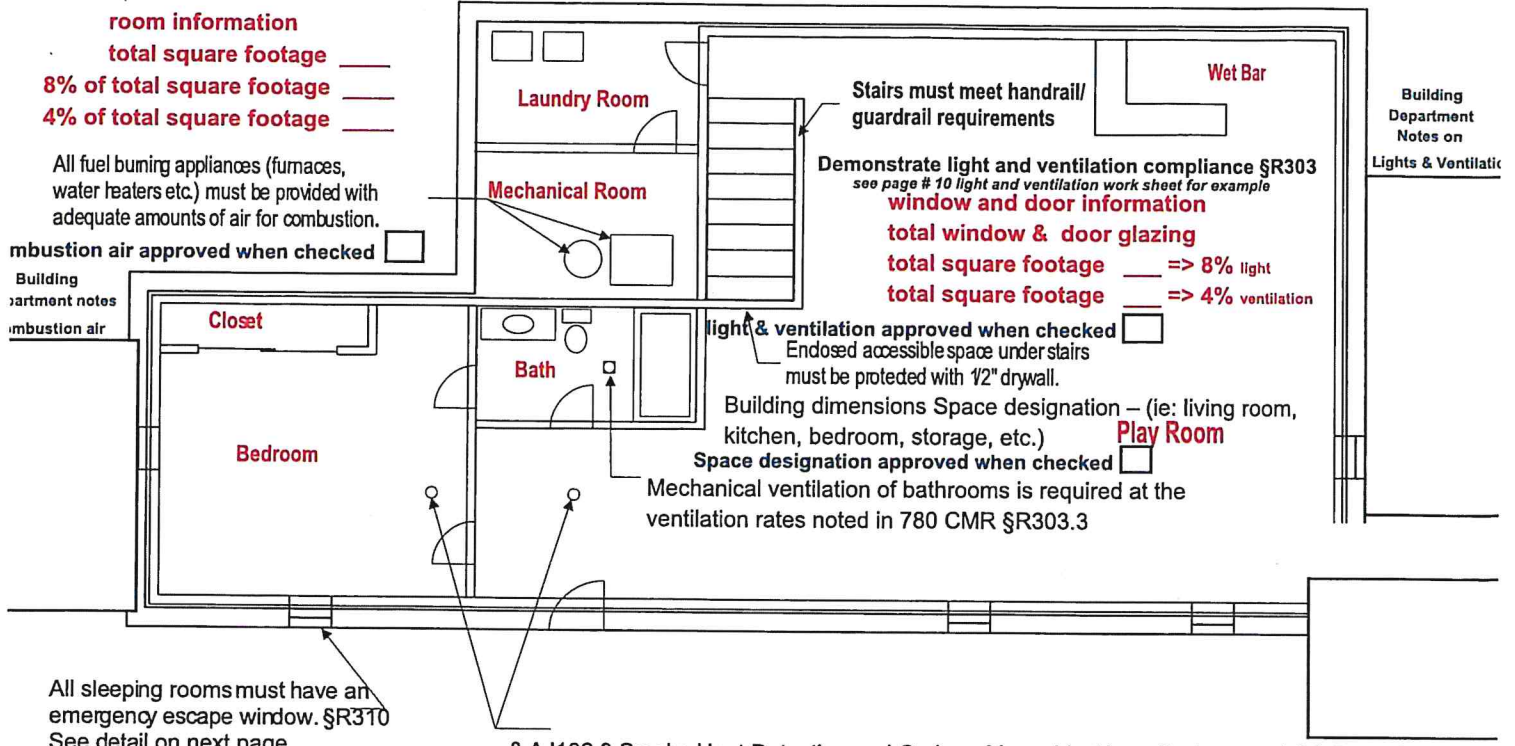


Typical Basement Conversion to Habitable Space



All sleeping rooms must have an emergency escape window. §R310
 See detail on next page

sleeping room egress approved when checked

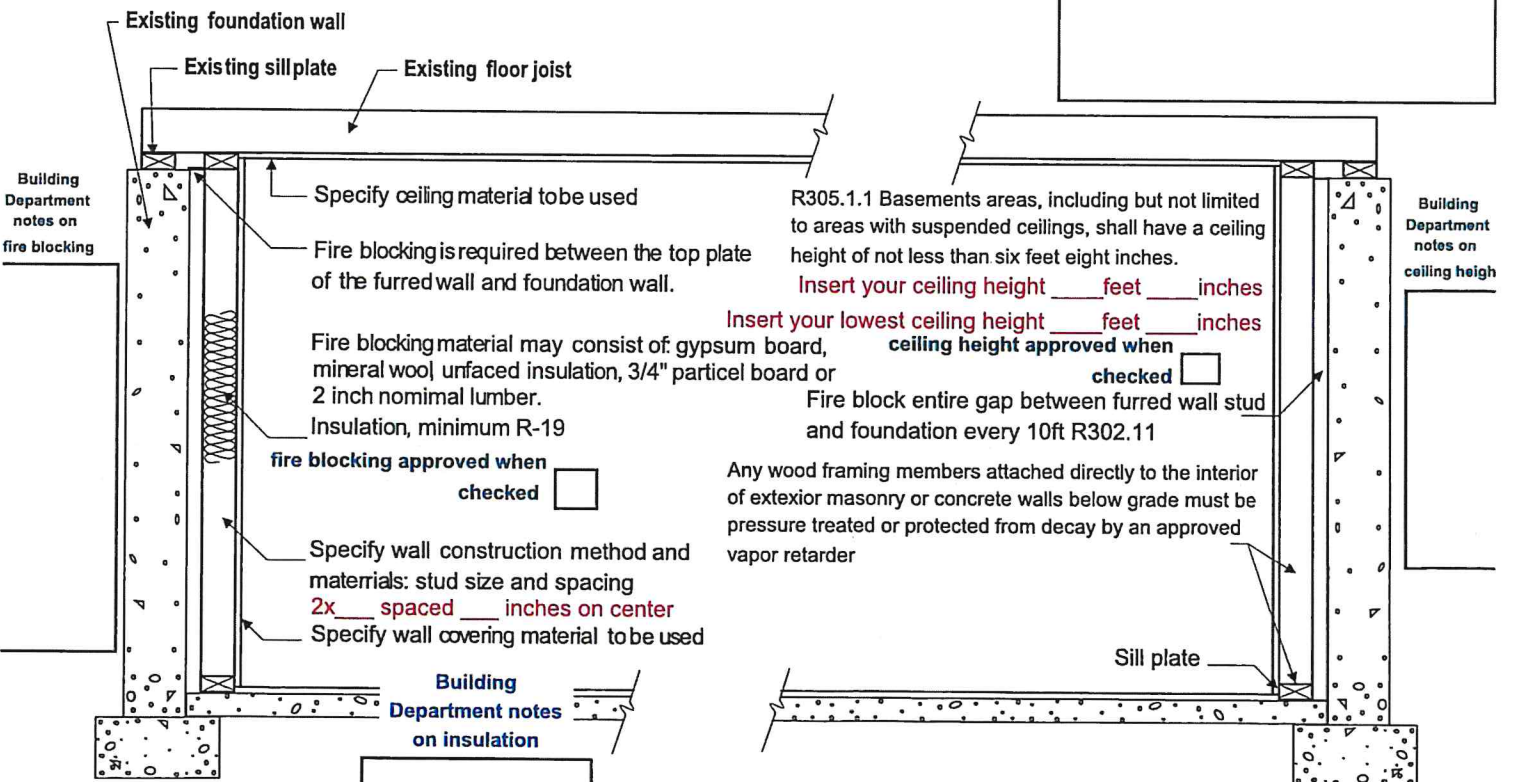
Building Department notes sleeping room egress

§ AJ102.3 Smoke Heat Detection and Carbon Monoxide Alarm Systems and CO Detection and Alarm. When one or more sleeping rooms are added or created in existing dwellings, the entire existing building shall be provided with smoke detectors, heat detector and carbon monoxide detectors designed, located and installed in accordance with the provisions for new construction, 780 CMR

smoke & carbon alarms approved when checked
 see page # 10 fire detection location

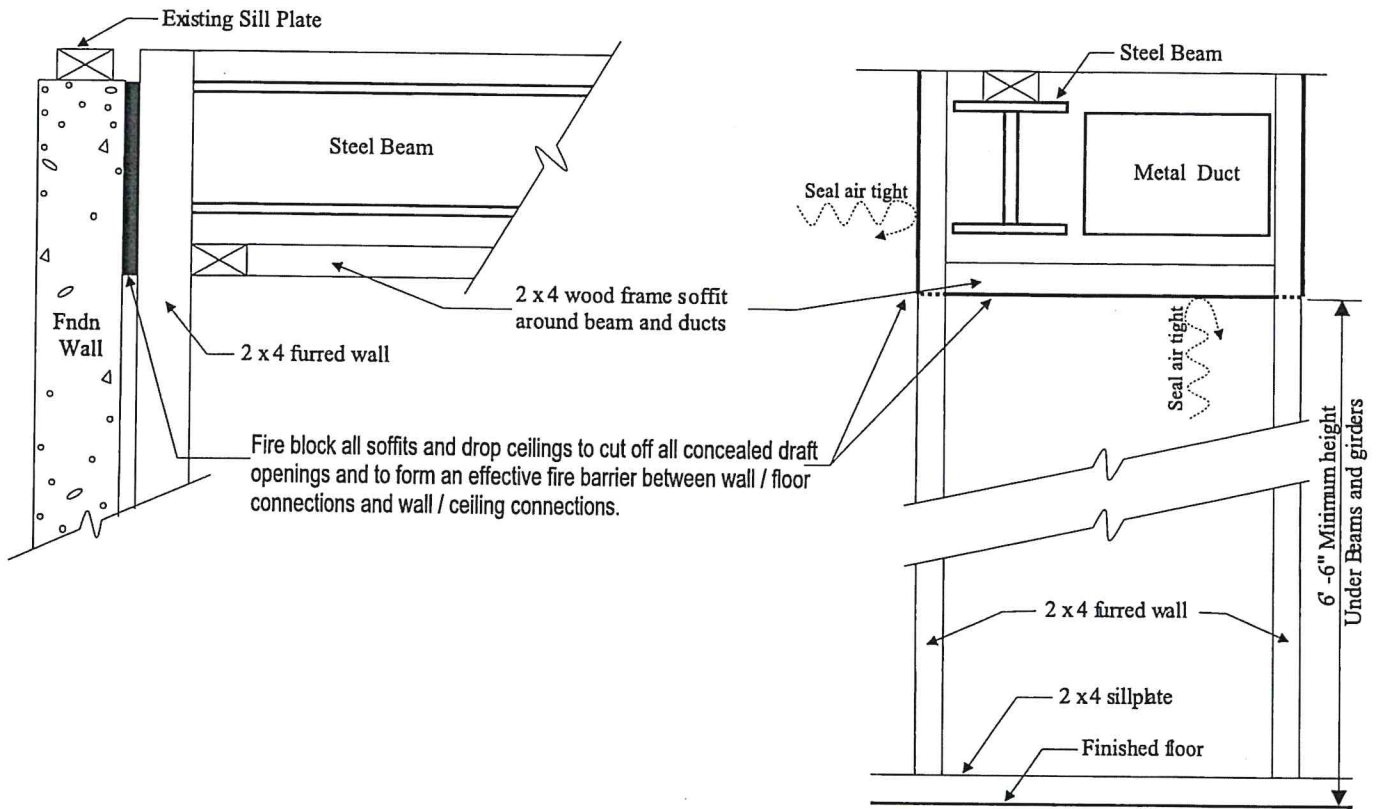
Building Department notes smoke & carbon

FLOOR PLAN FOR BASEMENT FINISH



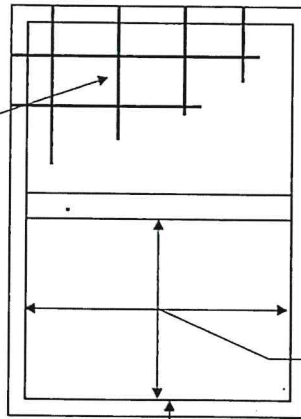
insulation approved when checked

TYPICAL WALL SECTION



SOFFIT FIRESTOPPING DETAIL

Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape opening or window wells provided they meet the minimum net clear opening requirements and such devices are releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that which is required for normal operation of the escape and rescue opening.



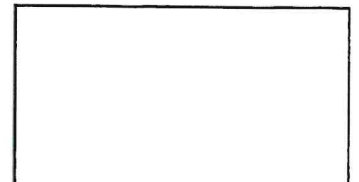
§ R310 Minimum Opening Area.
 All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet.
 Exceptions: 1. Grade floor openings shall have a minimum net clear opening of five square feet (0.465 m2).
 2. Double hung windows used for emergency escape shall be permitted to have a net clear opening of 3.3 square feet (0.31 m2) provided that at least one operable sash meets the minimum height and width required by 780 CMR § R310.1.2 and § R310.1.3 and operational constraints defined by 780 CMR § R310.1.4.

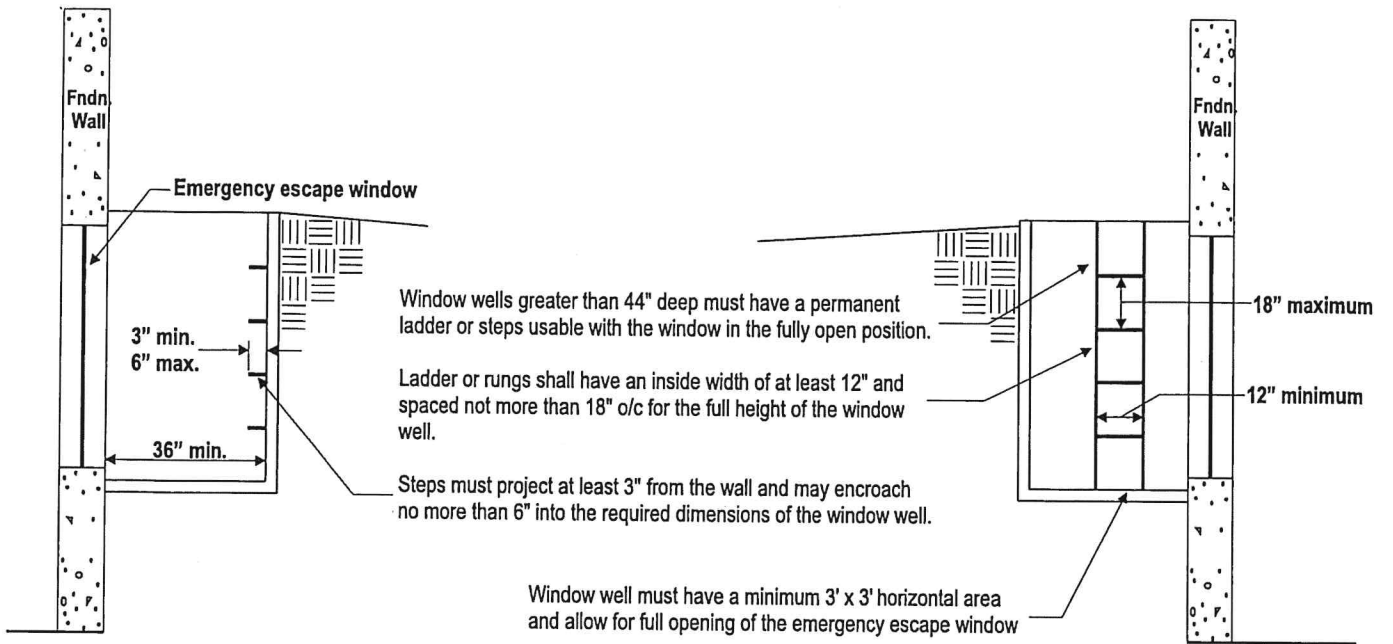
means of egress approved when checked 44" Max. sill height for egress (bedroom) ___" (insert your sill height)

EMERGENCY ESCAPE WINDOW DETAIL
 windows measured from floor to top of sill

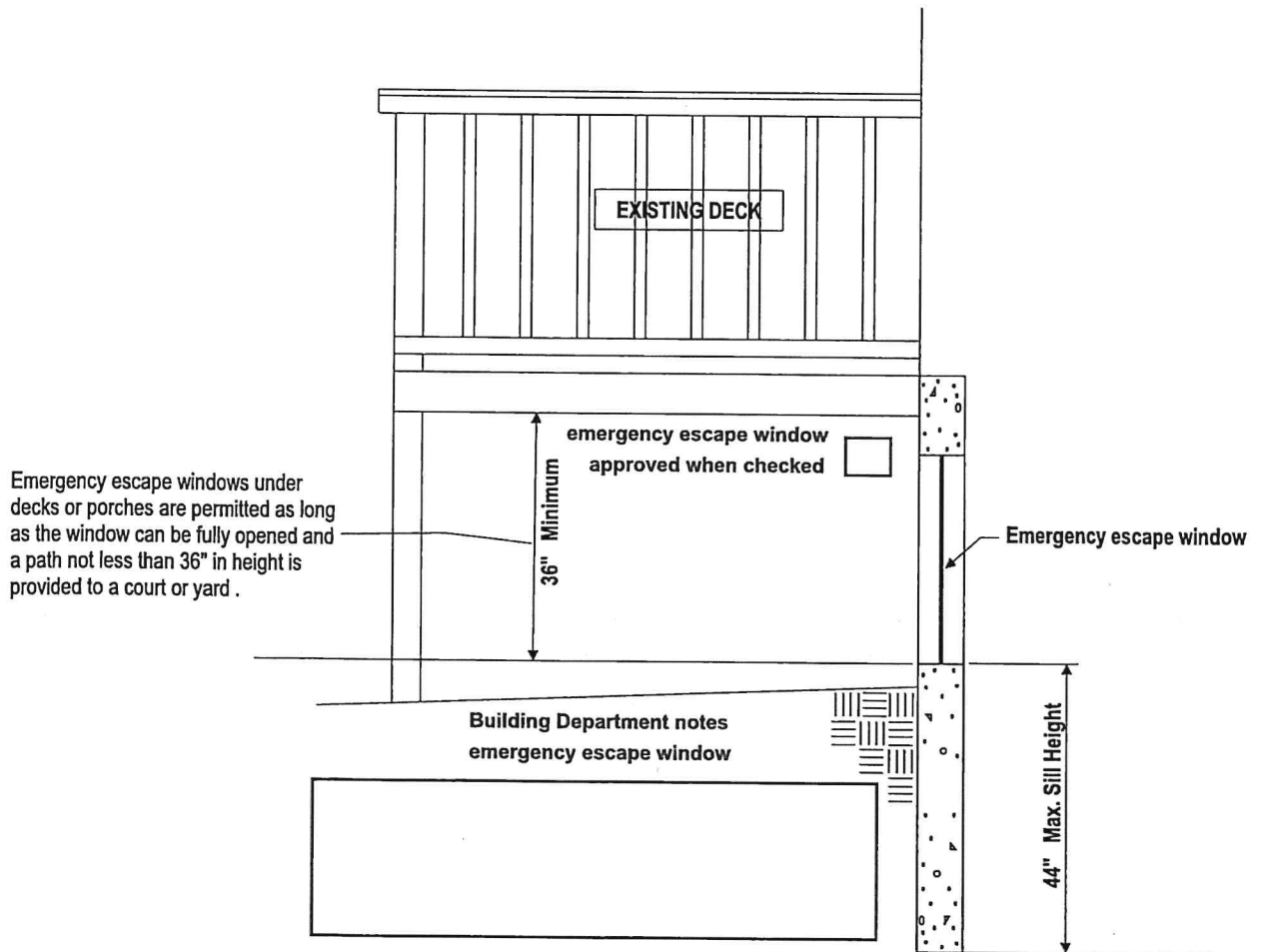
Building Department notes
 means of egress

Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge.





EMERGENCY ESCAPE WINDOW WELL DETAIL



EMERGENCY ESCAPE WINDOW UNDER EXISTING STRUCTURES

R311.7.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that portion of the stairway.

illumination approved when checked

building department notes on illumination

Stairway Illumination. All interior and exterior stairways shall be provided with an artificial light source to illuminate the stairs, including the landings and treads.

Interior stairways with 6 or more steps shall have a wall switch at each floor level to control the stair lighting.

Required stair lighting

Handrail height: 34"min. 38"max. measured from the nose of each step.
Maximum handrail width: 2'-3/4" and must have a graspable surface.

Guardrails at platforms and landing cannot have opening greater than 4"

R311.7.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

Required light switch



All openings in stair guardrail must be less than 4'-3/8".

Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with 1/2" gypsum board

This space shall not allow the passage of a 6" sphere

Openings at back of stairs must be less than 4".

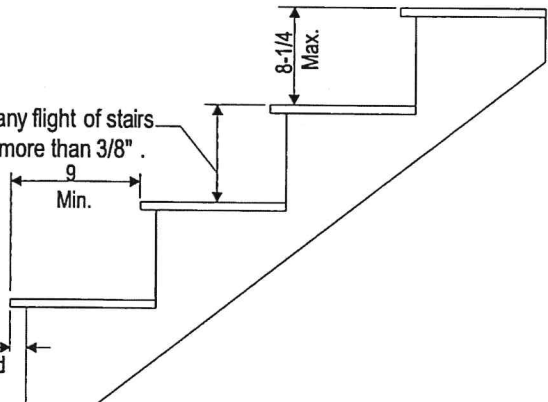
Enclosed accessible space approved when checked

INTERIOR STAIR DETAIL

interior stair detail approved when checked

notes on interior stairs

The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8".



Nosing shall not project more than 1 1/2" beyond the face of the riser below.

TREAD AND RISER DETAIL

Natural Light and Ventilation Worksheet

Space Designation	Floor Area Square Feet	Light (8% Required)	Light (Actual)	Ventilation (4% Required)	Ventilation (Actual)

Natural and Mechanical Ventilation:

Each habitable room must be provided with natural ventilation through open screened window or door areas that total at least 4% of the floor area of the room. As an alternative, the code permits mechanical ventilation. Most major manufacturers of ventilation equipment offer balanced supply and exhaust fan units for this purpose. Simple exhaust fans are not permitted since the resulting negative house air pressure is a safety hazard and infiltration is insufficient. Another code permitted alternative is to provide outside air directly into the return air plenum of a forced air HVAC unit in the required amount of 15 CFM per bedroom plus 15 CFM. Mechanical ventilation equipment manufacturer's specifications must be provided. (AJ501.6)(2009 IRC, R303)

Equation below is how to convert square inches to square footage

1st Equation is for natural light (8%)

$37 \text{ inches} \times 57 \text{ inches} = 2,109 \text{ square inches} / 144 = 14.65 \text{ square footage}$

2nd Equation is for natural ventilation (4%)

$33.87 \text{ inches} \times 24.50 \text{ inches} = 828.8 \text{ square inches} / 144 = 5.76 \text{ square footage}$

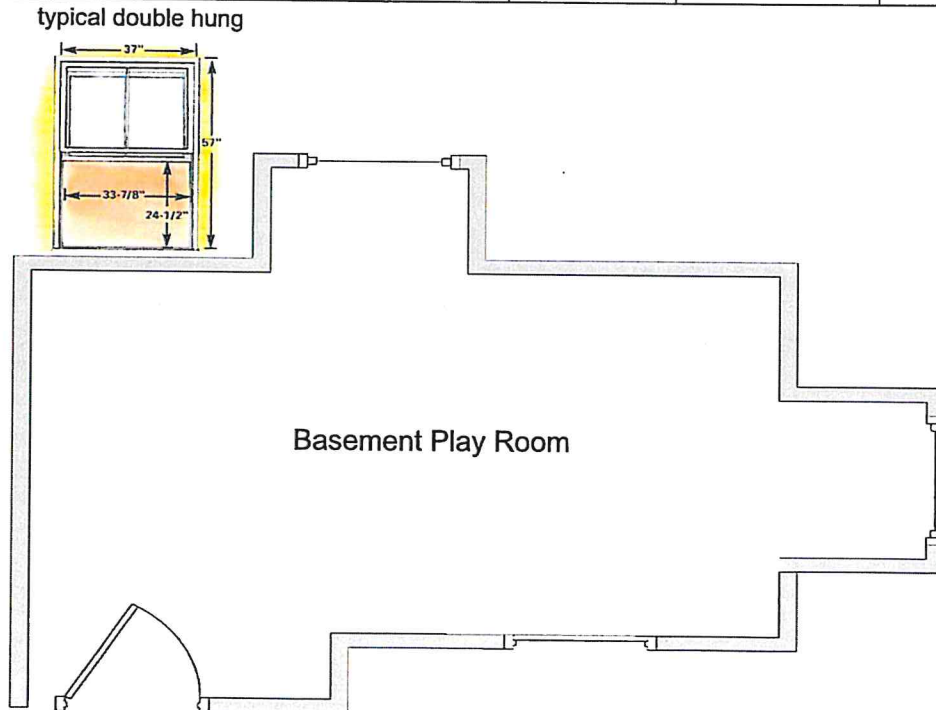
This space has three windows one door with no screen.

Natural light would be each window 14.65 time three window equals 43.95 square feet

Natural ventilation would be each window 5.76 times three windows equals 17.28 square feet

example of natural light and ventilation work sheet

Space Designation	Floor Area Square Feet	Light (8% Required)	Light (Actual)	Ventilation (4% Required)	Ventilation (Actual)
Basement Play Room	336	26.88	43.95	13.44	17.28



2021 International Energy Conservation Code

RESIDENTIAL ENERGY EFFICIENCY

TABLE R402.1.3
INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT^a

CLIMATE ZONE	FENESTRATION U-FACTOR ^{b,1}	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{b,2}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE ³	MASS WALL R-VALUE ⁴	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB ⁵ R-VALUE & DEPTH	CRAWL SPACE ^{c,6} WALL R-VALUE
0	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
1	NR	0.75	0.25	30	13 or 0&10ci	3/4	13	0	0	0
2	0.40	0.65	0.25	49	13 or 0&10ci	4/6	13	0	0	0
3	.30	0.55	0.25	49	20 or 13&5ci ^b or 0&15ci ^b	8/13	19	5ci or 13 ^f	10ci, 2 ft	5ci or 13 ^f
4 except Marine	.30	0.55	0.40	60	30 or 20&5ci ^b or 13&10ci ^b or 0&20ci ^b	8/13	19	10ci or 13	10ci, 4 ft	10ci or 13
5 and Marine 4	0.30 ^g	0.55	0.40	60	30 or 20&5ci ^b or 13&10ci ^b or 0&20ci ^b	13/17	30	15ci or 19 or 13&5ci	10ci, 4 ft	15ci or 19 or 13&5ci
6	0.30 ^g	0.55	NR	60	30 or 20&5ci ^b or 13&10ci ^b or 0&20ci ^b	15/20	30	15ci or 19 or 13&5ci	10ci, 4 ft	15ci or 19 or 13&5ci
7 and 8	0.30 ^g	0.55	NR	60	30 or 20&5ci ^b or 13&10ci ^b or 0&20ci ^b	19/21	38	15ci or 19 or 13&5ci	10ci, 4 ft	15ci or 19 or 13&5ci

For SI: 1 foot = 304.8 mm.
NR = Not Required.

c. 15ci or 19 or 13&5ci means R-15 continuous insulation (ci) on the interior or exterior surface of the wall; or R-19 cavity insulation on the interior side of the wall; or R-13 cavity insulation on the interior of the wall in addition to R-5 continuous insulation on the interior or exterior surface of the wall.

g. The first value is cavity insulation; the second value is continuous insulation. Therefore, as an example “13&5” means R-13 cavity insulation plus R-5 continuous insulation.