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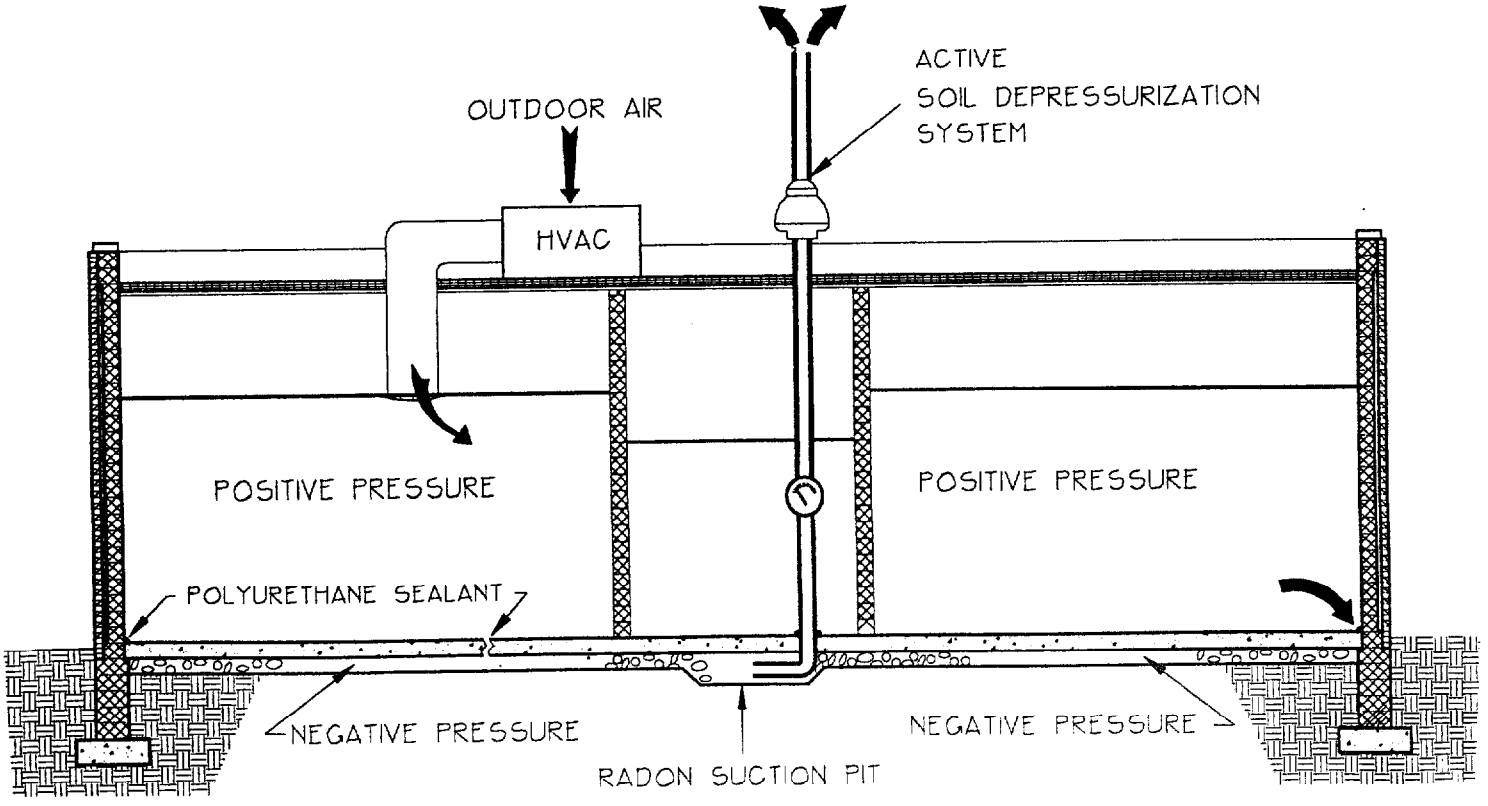
Radon Prevention in the Design and Construction of Schools and Other Large Buildings



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Radon Prevention in the Design and Construction of Schools and Other Large Buildings

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Contents

Notice ii
Figures v
Tables v
Abstract vi
Metric Conversion Factors vii
Acknowledgments viii

1. Introduction and Overview 1
   1.1 Purpose 1
   1.2 Scope and Content 1
   1.3 Radon and its Sources 2
      1.3.1 Why is Radon a Problem? 2
      1.3.2 How Radon Enters a Building 3
      1.3.3 How to Determine if Radon Prevention is Needed 5
   1.4 Radon Prevention Techniques 6
      1.4.1 Soil Depressurization 6
      1.4.2 Building Pressurization 7
      1.4.3 Sealing Radon Entry Routes 8
   1.5 Why Radon Prevention Should be Considered in Building Design 9

2. Technical Construction Information 11
   2.1 Active Soil Depressurization (ASD) 11
      2.1.1 ASD Design and Installation 12
         2.1.1.1 Aggregate 12
         2.1.1.2 Subslab Walls 13
         2.1.1.3 Radon Suction Pits 13
         2.1.1.4 Radon Vent Pipe 16
         2.1.1.5 Suction Fan 19
         2.1.1.6 Sealing Major Radon Entry Routes 20
      2.1.2 Operation and Maintenance 20
         2.1.2.1 Before Occupancy 22
         2.1.2.2 Weekly 22
         2.1.2.3 Annually 22
      2.1.3 Additional Instructions for Basements 22
      2.1.4 Additional Instructions for Crawl Spaces 22
      2.1.5 ASD Cost Estimates 24
      2.1.6 Summary of Guidelines for ASD Systems 24

Contents (continued)

2.2 Building Pressurization and Dilution 24
2.2.1 Design Recommendations for HVAC Systems 24
2.2.2 Standards for Ventilation 26
2.2.3 Guidelines for Installation and Operation 26
2.2.4 Maintenance 26
2.2.5 Summary of Building Pressurization Guidelines 27
2.3 Sealing Radon Entry Routes 27
2.3.1 Recommended Sealants 28
2.3.2 Sealing Concrete Slabs 28
2.3.2.1 Slab Joints 28
2.3.2.2 Slab Penetrations and Openings 28
2.3.2.3 Crack Prevention 29
2.3.2.4 Subslab Membranes 29
2.3.3 Sealing Below-Grade Walls 29
2.3.3.1 Wall Types 29
2.3.3.2 Coatings for Below-Grade Walls 30
2.3.4 Sealing Crawl Spaces 31
2.3.5 Summary of Sealing Recommendations 31
2.4 Guidelines for Measuring Radon Levels 31

Appendix A: Case Study 33
Appendix B: References 35
Appendix C: EPA Regional Offices and Contacts 37

Figures

1-1 Radon decay chart. 2
1-2 Examples of negative pressure sources in a typical building. 3
1-3 Typical radon entry routes in slab-on-grade construction. 4
1-4a Typical radon entry routes in concrete block basement walls. 4
1-4b Typical radon entry routes in poured concrete basement walls. 5
1-5 Typical crawl space foundation entry routes. 5
1-6 Subslab depressurization theory. 7

2-1 Typical subslab depressurization system. 12
2-2a Interior footing/foundation wall. 14
2-2b Thickened slab footing. 14
2-3a Outside walls and post load bearing. 15
2-3b Interior walls between rooms and outside walls load bearing. 16
2-3c Hall and outside walls load bearing. 17
2-3d All interior walls load bearing. 18
2-4a Section 1 (corresponds to Figures 2-3a and b). 18
2-4b Section 1 (corresponds to Figure 2-3c and d). 19
2-5 Radon suction pit. 20
2-6 Sealing pipe penetrations through roof. 21
2-7 Submembrane depressurization in crawl space. 23
2-8 Building positive pressurization with HVAC system. 25
2-9 Example of building depressurization with HVAC system. 26

Tables

2-1 Estimated Costs for Primary ASD Components 24
2-2 Examples of Outdoor Air Requirements for Ventilation in Commercial Facilities 27

A-1 Cost of Mitigation System in Johnson City Hospital 34

Abstract

It is typically easier and much less expensive to design and construct a new building with radon-resistant and/or easy-to-mitigate features, than to add these features after the building is completed and occupied. Therefore, when building in an area with the potential for elevated radon levels, architects and engineers should use a combination of radon prevention construction techniques. To determine if your building site is located in a radon-prone area, consult your EPA Regional Office or state or local radiation office.

We recommend the following three radon prevention techniques for construction of schools and other large buildings in radon-prone areas: (1) install an active soil depressurization (ASD) system, (2) pressurize the building using the heating, ventilating, and air-conditioning (HVAC) system, and (3) seal major radon entry routes. Specific guidelines on how to incorporate these radon prevention features in the design and construction of schools and other large buildings are detailed in this manual.

Chapter 1 of this manual is a general introduction for those who need background information on the indoor radon problem and the techniques currently being studied and applied for radon prevention. The level of detail is aimed at developing the reader's understanding of underlying principles and might best be used by school officials or by architects and engineers who need a basic introduction.

Chapter 2 of this manual provides comprehensive information, instructions, and guidelines about the topics and construction techniques discussed in Chapter 1. The sections in Chapter 2 contain much more technical detail and may be best used by the architects, engineers, and builders responsible for the specific construction details.

Metric Conversion Factors

Although it is EPA policy to use metric units in its documents, non-metric units have been used in this report to be consistent with common practice in the radon mitigation field. Readers may refer to the following conversion factors as needed.

Non-Metric	*Times*	*Yields Metric*
cubic foot (ft^3)	28.3	liters (L)
cubic foot per minute (ft^3/m)	0.47	liter per second (L/s)
foot (ft)	0.305	meter (m)
gallon (gal.)	3.79	liters (L)
horsepower (hp)	746	watts (W)
inch (in.)	2.54	centimeters (cm)
inch of water column (in. WC)	248.9	pascals (Pa)
mil (0.001 in.)	25.4	micrometers (μm)
picocurie per liter (pCi/L)	37	becquerels per cubic meter (Bq/m^3)
pound per square inch (psi)	6894.8	pascals (Pa)
square foot (ft^2)	0.093	square meter (m^2)

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