

# Element Z | General Design Requirements

Owner Standards and Other  
Requirements

## Z2005 Codes and Applicable Regulatory Agencies

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### PART 1 - INTRODUCTION

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#### 1.01 OVERVIEW

- A. This Section addresses minimum codes, guidelines, regulations and standards that must be appropriately applied in designing facility systems and components.
- B. Design M. D. Anderson construction Projects to comply with all applicable codes, guidelines, and standards referenced herein and those not referenced herein that are pertinent based upon Project Scope.
- C. The date Owner authorizes the A/E to proceed with the Construction Document Phase of the Project shall determine the applicable edition of an adopted code, regulation, standard, amendment and/or addendum.
- D. The A/E shall obtain and become familiar with requirements of Owner's insurance underwriter, currently Factory Mutual Insurance Company (FM Global), and incorporate all applicable provisions into the Contract Documents for compliance.
- E. The A/E shall thoroughly and clearly document all project related communications with code and regulatory agents and expediently forward communication documentation to the Owner's Project Manager.
- F. Where the A/E considers that compliance is not possible, the A/E shall communicate such concerns in writing to the Owner's Project Manager and resolve all non-compliance issues in sufficient time during the design phase of the Project to meet contract schedule obligations.

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### PART 2 - GENERAL REQUIREMENTS

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#### 2.01 CODES AND STANDARDS ANALYSIS

- A. The A/E shall prepare a written codes and standards analysis, "Building Code Analysis", for each Project and submit for review by Owner. Refer to 'Exhibit 1 "Building Code Analysis Template"'.
- B. The Building Code Analysis shall provide a side-by-side comparison of listed codes and standards requirements and an indication of which code requirement is being applied to the Project.
- C. In the absence of a careful and thorough discussion by the A/E of a specific conflict between the codes, the default is to design to the more stringent or robust code. These code discussions are to be Project specific and on a point-by-point basis within the codes.

#### 2.02 AUTHORITY HAVING JURISDICTION

- A. The State Fire Marshal is the code authority having jurisdiction for all issues pertaining to NFPA 101 Life Safety Codes.

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- B. The Environmental Health and Safety (EH&S) department of M. D. Anderson is the local code authority having jurisdiction for all issues pertaining to ADA, TAS, NFPA, and NEC. EH&S will relay any changes in code requirements as mandated by the State Fire Marshal specifically relating to NFPA 101.
- C. If local code interpretation for any aspect of the Project is needed, the A/E shall inform Owner of the need for an interpretation and Owner will establish requirements for resolution.

### 2.03 LIFE SAFETY CODE COMPLIANCE

- A. The Project Architect/Engineer acknowledges that construction projects for the University of Texas M. D. Anderson Cancer Center must, at a minimum, be designed in accordance with the requirements of National Fire Protection Association (NFPA) 101-2009, Life Safety Code, as currently adopted by the State Fire Marshall, Texas Government Code sec. 417.008(e).
- B. Therefore, Project Architect/Engineer affirms that, to the best of his/her professional judgment, knowledge, and belief, the design of this project satisfies the requirements of NFPA 101-2009, Life Safety Code, as well as any other codes or standards made applicable to the project by the professional services agreement.

### 2.04 APPLICABLE CODES, GUIDELINES, AND STANDARDS

- A. Determine applicability of the codes, guidelines, and standards listed herein and identify any and all other pertinent ordinances and assure compliance thereto. As per the A/E's "Building Code Analysis", design and construction shall meet the minimum standards prescribed in all applicable codes and standards, including, but not limited to, the following:
  - 1. 2009 International Building Code
  - 2. 2009 International Mechanical Code
  - 3. 2009 International Plumbing Code
  - 4. 2009 International Fuel Gas Code
  - 5. 2008 National Electrical Code, NFPA 70
  - 6. 2009 Standard for Electrical Safety in the Workplace, NFPA 70E
  - 7. National Fire Protection Association National Fire Codes, with emphasis on NFPA 101 Life Safety Codes, and all mandatory referenced standards
  - 8. Texas Department of Licensing and Regulation, Texas Accessibility Standards of the Architectural Barriers Act, Article 9102, Texas Civil Statutes
  - 9. Americans with Disabilities Act, 28 CFR Part 35 Nondiscrimination on the Basis of Disability in State and Local Government Services
  - 10. Guidelines for Design and Construction of Hospital and Health Care Facilities – AIA

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11. Title 25 Texas Administrative Code, Chapter 133, Hospital Licensing Rules, (Applicable for all issues not addressed within AIA Guidelines)
  12. Title 25 Texas Administrative Code, Chapter 135, Ambulatory Surgical Centers Licensing Rules (Applicable for all issues not addressed within AIA Guidelines)
  13. Texas Department of Licensing and Regulation, Elevator Safety and Licensing Health and Safety Code
  14. ANSI/ASME A17.1 Safety Code for Elevators and Escalators
  15. Texas Natural Resource Conservation Commission Standards
  16. ACI - 318, building code requirements for reinforced concrete
  17. AISC, Specification for the Design, Fabrication and Erection of Structural Steel
  18. SMACNA Sheet Metal Standards
  19. ASHRAE Guidelines and Standards
  20. Associated Air Balancing Council Standards (AABC)
  21. Lightning Protection Institute Standard LP1-175
  22. Underwriters' Laboratories Standards
  23. Illuminating Engineering Society Standards
  24. TIA Telecommunication Industry Association
  25. Texas Health and Safety Code, Chapter 372, Environmental Performance Standards for Plumbing Fixtures
  26. 10CFR20.1302 Compliance with dose limits for individual members of the public – Gaseous and Liquid Effluent Monitoring
  27. City of Houston Codes for connections to municipal domestic water, storm sewer, and sanitary sewer systems
  28. Local Utility Regulations (CenterPoint Energy, etc.)
  29. Minimum Safety Standards for Natural Gas, Code of Federal Regulations (CFR) Part 192, as required by Title 16 of the Texas Administrative Code
  30. Water Conditioning Foundation
- B. Additional Industrial Hygiene Requirements:
1. Texas Administrative Code Title 25 Part 1 Chapter 297 Subchapter A

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2. ANSI/AIHA Z9.5-2003, American National Standard: Laboratory Ventilation
  3. Guidelines for Environmental Infection Control in Health Care Facilities (Center for Disease Control)
- C. Additional Environmental Requirements:
1. EMERGENCY GENERATORS, 40 CFR §89.112(a), Table 1
  2. Fuel Gas Code (40 CFR 280, 281)
  3. SPCC Regulation (40 CFR 112)
  4. Regulations of the Department of Health for Dining Service Area (FDA Standards & 25 TAC 229)
  5. Water Quality & Service (30 CFR 131, 141, 142 and 30 TAC 290)
  6. SWPPP Regulation (40 CFR 122 & TPDES TXR150000)
  7. NIOSH, Guidance for Protecting Building Environments from Airborne Chemical, Biological, or Radiological Attacks
  8. BOILERS, Title 30 of the Texas Administrative Code (30 TAC) § 117.206(c)(1), and all other applicable regulations under 30 TAC § 117.206.
  9. SURFACE COATING BOOTHS (for application of surface coatings such as paint or adhesives), Texas Administrative Code (Title 30) 106.433 (6)(A) – (6)(C) and all other applicable regulations under 30 TAC 106.433 or 30 TAC, Chapter 115.
  10. ETHYLENE OXIDE (EO) STERILIZATION UNITS, Texas Administrative Code (Title 30) 106.417
- D. JCAHO:
1. NIOSH, Guidance for Protecting Building Environments from Airborne Chemical, Biological, or Radiological Attacks
  2. Joint Commission Accreditation Manual for Hospitals, Environment of Care Standards
- E. Additional Laboratory Design Requirements:
1. Centers for Disease Control/National Institutes of Health (CDC/NIH) Biosafety in Microbiological and Biomedical Laboratories (BMBL)
  2. ANSI Z358.1, Safety Shower and Eyewash Stations
  3. ANSI/AIHA Z9.5, Lab Ventilation Requirements
  4. ASHRAE 110 , Chemical Fume Hood Testing

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5. ASHRAE HVAC Applications Handbook, Exhaust Requirements
  6. Scientific Equipment and Furniture Association (SEFA) 1.2, Fume Hood Design
  7. Scientific Equipment and Furniture Association (SEFA) 2.3, Installation of Scientific Laboratory Furniture and Equipment
  8. ACGIH Industrial Ventilation Manual, 21st Edition
  9. Safety in Academic Chemistry Laboratories, American Chemical Society, (suggestion for design and use)
  10. NIH, National Institutes of Health; Design Policy and Guidelines for Laboratories and Vivariums
  11. NIH Guidelines for the Laboratory Use of Chemical Carcinogens, (US DHHS)
  12. CDC-NIH Biosafety in Microbiological and Biomedical Laboratories, (US DHHS)
  13. Standard Number 49, Class (II) (Laminar Flow) Biohazard Cabinetry. National Sanitation Foundation for Biological Safety Cabinets Standards
  14. Prudent Practices for Handling Hazardous Chemicals in Laboratories. National Research Council. National Academy Press.
  15. AAALAC, American Association for Accreditation of Laboratory Animal Care
  16. ASHRAE Laboratory Design Guide
  17. USDA, United States Department of Agriculture, Animal Welfare Act and Amendments
  18. National Research Council (NRC) Guide for the Care and Use of Laboratory Animals
  19. National Research Council (NRC) Occupational Health and Safety in the Care and Use of Research Animals
- F. Regulatory Reference for Radiation Shielding Standards:
1. Shielding for ionizing radiation shall meet requirements as stated in 25 Texas Administrative Code (TAC) 289 and in particular, as applicable, in 25 TAC 289.202, 227, 228, 229, 230, 231, and 232.
  2. Shielding calculations shall be performed by or reviewed and approved by a medical physicist licensed by the Texas Board of Licensure for Professional Medical Physicists with a specialty in Medical Health Physics or the applicable specialty of Diagnostic Radiological Physics, Therapeutic Radiological Physics, or Medical Nuclear Physics.

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### PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

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#### 3.01 GENERAL

- A. The final approved Building Code Analysis shall be placed within the Contract Drawings for future reference.
- B. The A/E shall familiarize themselves with the codes, guidelines, and standards and incorporate all applicable requirements within Contract Drawings and Specifications.
- C. Note that Owner takes various exceptions to the International Plumbing Code and has adopted the more stringent requirements that are included within these Elements and M. D. Anderson Master Construction Specifications. These exceptions shall be indicated within the Contract Documents.
- D. The A/E shall be required to provide an affirmation statement that the Project is designed in compliance with applicable codes and standards. The following statement shall be located on the Drawing index page or adjacent the Project building code summary:
  - 1. "Life Safety Code Compliance: The Project Architect/Engineer acknowledges that construction projects for the University of Texas M.D. Anderson Cancer Center must, at a minimum, be designed in accordance with the requirements of National Fire Protection Association (NFPA) 101-2009, Life Safety Code, as currently adopted by the State Fire Marshall, Texas Government Code sec. 417.008(e). Therefore, Project Architect/Engineer affirms that, to the best of his/her professional judgment, knowledge, and belief, the design of this project satisfies the requirements of NFPA 101-2009, Life Safety Code, as well as any other codes or standards made applicable to the project by the professional services agreement.
- E. Owner requires the A/E to comply with certain provisions of the local fire department that provides fire protection services for the Institution. These provisions may include locations and dimensions for fire fighting access, including fire lanes; locations and specifications for standpipes, fire hose cabinets, fire control room, and fire hose connections; elevator requirements; and other similar matters.
- F. Specific consideration must be given to ANSI/ASHRAE/IESNA Standard 90.1. The Engineer of Record will be required to sign and seal certification that stipulates that the design complies with the requirements of this standard. This written certification with backup documentation must be submitted to Owner at the time of completion of the Construction Documents. Refer to Design Guideline Element Z2010 Design Submittal Requirements, for specific requirements.
- G. The A/E must provide a flood elevation certificate and a flood proofing certificate (if applicable) as a deliverable to Owner at the time of Project Substantial Completion.

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### PART 4 - CODE COMPLIANCE CONFIRMATION REVIEW

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#### 4.01 GENERAL

- A. Owner will directly contract with an independent, third-party code consultant to perform, document, and submit a Project design "Code Compliance Confirmation Review" at Schematic Design and Design Development phases to ensure compliance with all applicable codes as they apply to a specific Project.
- B. This Code Compliance Confirmation Review does not relieve the A/E from complying with all relevant codes and standards for the Project.

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### PART 5 - DOCUMENT REVISION HISTORY

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Issue	Date	Revision Description	Reviser
	01-01-07	Initial Adoption of Element	
Rev. 1	02-27-07	Part 1 – changed the word 'apply' to 'applied'. Part 3 – deleted reference to the Uniform Plumbing Code.	DOS
Rev. 2	12-01-09	Paragraphs 2.03 A & B and 3.01 D.1 - Changed NFPA Life Safety Code edition reference from 2006 to 2009. Deleted exception to Chapter 43 of the 2006 edition of NFPA 101. Paragraphs 2.04 A. 1-4 – Changed International Code edition reference from 2006 to 2009. Paragraph 2.04 A. 5 - Changed National Electric Code edition reference from 2005 to 2008.	DOS
Rev. 3	12-22-09	Paragraph 2.04 A. 6. – Added reference to the 2009 Edition of the Standard for Electrical Safety in the Workplace, NFPA 70E	JD
Rev. 4			
Rev. 5			

**END OF ELEMENT Z2005**

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### Exhibit 1

#### Building Code Analysis [Template]

Project Name:  
Institution: The University of Texas M. D. Anderson Cancer Center  
Project Number:

Code/Standards Analysis  
Date:  
Project Phase:

Applicable Codes:  
1. NFPA 101 Life Safety – 2009 Edition  
2. International Building Code – 2009 Edition  
3. Texas Accessibility Standard  
4. etc.

Note: The code requirements selected as the basis for design are bolded.

	<b>Code Issue</b>	<b>NFPA 101</b>	<b>IBC</b>
1	Occupancy Classification 1. Offices and college classrooms with less than 50 occupants	Business 6.1.2.2	Group B 304
2	Construction Classification 1. Main Building	Not addressed	Type IIA 403.3.1
3	Stairwell Pressurization	Not required	1005.3.2.5
4	Distance between exits	250 feet if sprinklered	250 feet if sprinklered
5	Etc.		