ARCHITECTURAL CODE
OF THE
PHILIPPINES

November 1999 VERSION
Republic of the Philippines  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
Manila, Philippines  

THE ARCHITECTURAL CODE OF THE PHILIPPINES  
AS A REFERRAL CODE OF THE  
NATIONAL BUILDING CODE OF THE PHILIPPINES

Pursuant to the General Powers given to the Secretary of Public Works and Highways vested in him by Section 203 of Presidential Decree 1096, otherwise known as the National Building Code of the Philippines, the Architectural Code of the Philippines as prepared by the United Architects of the Philippines (UAP) and passed upon by the Professional Regulatory Commission (PRC), is hereby adopted as a Referral Code of PD 1096.

Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GENERAL PROVISIONS</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>ADMINISTRATION AND ENFORCEMENT</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>PERMITS AND INSPECTION</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>CLASSIFICATION AND GENERAL REQUIREMENTS OF ALL BUILDINGS BY USE OR OCCUPANCY</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>TYPES OF CONSTRUCTION</td>
<td>44</td>
</tr>
<tr>
<td>6</td>
<td>GENERAL DESIGN AND CONSTRUCTION REQUIREMENTS</td>
<td>58</td>
</tr>
<tr>
<td>7</td>
<td>REQUIREMENTS OF FIRE ZONES</td>
<td>111</td>
</tr>
<tr>
<td>8</td>
<td>FIRE RESISTIVE REQUIREMENTS IN CONSTRUCTION</td>
<td>113</td>
</tr>
<tr>
<td>9</td>
<td>LIGHT AND VENTILATION</td>
<td>119</td>
</tr>
<tr>
<td>10</td>
<td>SANITATION</td>
<td>125</td>
</tr>
<tr>
<td>11</td>
<td>BUILDING PROJECTION INTO PRIVATE PROPERTY</td>
<td>127</td>
</tr>
<tr>
<td>12</td>
<td>PROTECTION OF PEDESTRIANS AND PROPERTY DURING CONSTRUCTION AND DEMOLITION</td>
<td>129</td>
</tr>
<tr>
<td>13</td>
<td>ELECTRICAL AND MECHANICAL REGULATIONS</td>
<td>131</td>
</tr>
<tr>
<td>14</td>
<td>PHOTOGRAPHIC AND X-RAY FILMS</td>
<td>132</td>
</tr>
<tr>
<td>15</td>
<td>PREFABRICATED CONSTRUCTION</td>
<td>133</td>
</tr>
<tr>
<td>16</td>
<td>PLASTICS, SPECIAL MATERIALS AND ASSEMBLIES</td>
<td>134</td>
</tr>
<tr>
<td>17</td>
<td>SHEET, METAL, PAINT, SPRAY BOOTH</td>
<td>135</td>
</tr>
<tr>
<td>18</td>
<td>GLASS AND GLAZING</td>
<td>136</td>
</tr>
<tr>
<td>19</td>
<td>INFORMATION TECHNOLOGY</td>
<td>141</td>
</tr>
<tr>
<td>20</td>
<td>SIGNS AND SIGNAGES</td>
<td>143</td>
</tr>
<tr>
<td>21</td>
<td>TRANSITORY AND FINAL PROVISIONS</td>
<td>145</td>
</tr>
</tbody>
</table>

ANNEXES AND REFERENCES  
Annex A: Words, Terms and Phrases (Definitions)  
Annex B: Building Permit - Architectural Permit  
Annex C: Checklist for Building Permit Requirements
Approved in the City of Manila, Philippines
This 20th day of December in the year of our Lord
Nineteen Hundred and Ninety Nine

GREGORIO R. VIGILAR
Secretary, Department of Public Works and Highways
BOARD RESOLUTION NO. 18
Series of Fiscal Year 1999-2000

ADOPTION OF THE PROPOSED ARCHITECTURAL CODE, NOVEMBER 1999 VERSION, AS PREPARED BY THE UAP ARCHITECTURAL CODE COMMITTEE

WHEREAS, the during the UAP Area A Planning Conference held in July 1996 Arch. Emmanuel P. Cuntapay, then National President, cited the lack of a comprehensive code for the architectural profession in the country vis-à-vis the existing referral codes of the other professions and saw the need for the formulation of such a code. Hence, the Architectural Code Committee was born;

WHEREAS, after a painstaking and diligent work by the members of the Architectural Code Committee, they were able to compile and bring together pertinent documents, rules and procedures governing the profession of architecture in the country such as the National Building Code (P.D. 1096) and the Unified Building Code (UBC) - Series of 1997, Architectural Heritage. (by Rosario Encarnacion - Tan and Augusto Villatoro) and Information Technology (by Ramon L. Abra and Federico A. Gregorio), among others;

WHEREAS, on April 14, 1999 the National Executive Board passed Board Resolution No. 18, Series of 1998-1999, which endorsed the compendium to the Department of Public Works and Highways for its accreditation and approval;

WHEREAS, the Department of Public Works and Highways made its observation on the indorsed compendium and transmitted the same to the UAP for further review. After final review, the proposed Architectural Code of the Philippines was indorsed for the second time on November 10, 1999 and pending approval by the Department of Public Works and Highways;

WHEREFORE, by virtue of the foregoing premises, the UAP National Board hereby passed the following resolutions:

RESOLVED, as it is hereby resolved, that the UAP National Executive Board reaffirms its adoption of the proposed Architectural Code of the Philippines, November 1999 Version and endorsement for approval thereof to the Department of Public Works and Highways.
RESOLVED FURTHER that let this Resolution be certified to by the Secretary General for the proper guidance of the Department of Public Works and Highways.

PASSED this 22nd day of January 2000 in Quezon City.

THE UAP NATIONAL BOARD OF DIRECTORS

YOLANDA D. REYES, FUAP
National President

PROSPERIDAD C. LUIS, FUAP
Nat'l. Exec. Vice President

ENRIQUE O. OLONAN, CUAP
Vice President for Area A

ROBERT S. SAC, UAP
Vice President for Area B

ROGER F. MARAYA, UAP
Vice President for Area C

CRESENIO V. BENITEZ, FUAP
Vice-President for Area D

EDRICO MARCO C. FLORENTINO, UAP
Secretary General

Page 2 of four pages containing Board Resolution #18 FY 1999-2000
ANGEL E. DURA, UAP
National Treasurer

FELIPE C. GALANIDA JR., UAP
National Auditor

EMMANUEL F. CUNTAPAY, FUAP
Chancellor, College of Fellows

CESAR L. AGPOON, UAP
District Director, A-1

FATIMA S. OZARTE, UAP
District Director, A-2

ABELARDO V. MIRAFLORES, UAP
District Director, A-3

ARMIN B. SARATHOU JR., FUAP
District Director, A-4

ZENaida V. DACANAY, UAP
District Director, A-5

QUINTO T. BATENA, UAP
District Director, B-1

GABRIEL, MA. A. B. CASCANTE, UAP
District Director, B-2

LORA B. RIVERA, UAP
District Director, B-3

ARCH. CARLOS B. DYCANGCO, UAP
District Director, B-4

RAMON E. DEALCA, UAP
District Director, B-5

JULIO W. ALANO JR., UAP
District Director, C-1

RAMON L. TERUEL, CUAP
District Director, C-2

LEOPOLDO V. SANDOVAL, UAP
District Director D-1

ARCH. IRINEO ROMAN M. RAMIRO, UAP
District Director, D-2

MARCELINO E. DUMBA, UAP
District Director, D-3
ADOPTION AND PROMULGATION OF THE ARCHITECTURAL CODE OF THE PHILIPPINES.

WHEREAS, in his speech during the Area A Planning Conference of the United Architects of the Philippines (UAP) in July 1996, then UAP National President, Arch. Emmanuel Cuntapay pointed out the "lack of a comprehensive code for the architectural profession in the country (akin to the existing referral codes of the other professions)" and stressed the "need for the formulation of such code".

WHEREAS, the proposed Architectural Code of the Philippines "was compiled over a period of one year of painstaking and diligent work by the members of the Architectural Code Committee".

WHEREAS, in his letter of December 20, 1999 to Arch. Yolanda David-Reyes, National President of the UAP, the Undersecretary of Public Works and Highways, Hon. Teodoro T. Encarnacion, informed that "Based on the review by the National Planning Code Review Committee on Architectural and Urban Planning x x x we find the same ready for adoption and publication."

WHEREAS, the Board of Architecture, after a review of the proposed Architectural Code of the Philippines, finds the representations of the Architectural Code Committee that "[T]he Code in its present form is meant to bring together many of the pertinent documents, rules and procedures governing the profession of architecture in the country", that "[I]t takes liberally from the provisions of the National Building Code (P.D 1096) and the Unified Building Code (UBC) Series of 1997" and that "[M]any sections included in this edition - notably the sections of Architectural Heritage (by Rosario Encarnacion-Tan and Augusto Villalon) and Information Technology (by Ramon L. Abiera and Federico A. Gregorio) - are mostly new" to be well-taken and undoubtedly will provide direction to the architects in the practice of their profession.

WHEREFORE, the Board resolved as it hereby resolves to adopt and promulgate the Architectural Code of the Philippines embodied in the document bearing the same title, marked as Annex "A" and made an integral part of this Resolution as part of the rules and regulations governing the practice of architecture and recommends to the Secretary of Public Works and Highways the approval and incorporation of this Code as a referral Code in the National Building Code as provided thereunder. (Sec. 201, Chapter 2, P.D. No. 1069)
This Resolution shall take effect after fifteen (15) days following its publication in the Official Gazette or in a newspaper of general circulation in the Philippines, whichever is earlier.

Done in the City of Manila, this 16th day of August 2000.

EUGENE G. SAIN
Chairman

MIGUEL R. CALUZA
Member

DONATO P. DION
Member

ATTESTED:

CARLOS G. ALMELO
Secretary, Professional Regulatory Boards

APPROVED:

HERMGENES P. POBRE
Commission Chairman

ALFONSO G. ABAD
Associate Commissioner

AVELINA DE LA REA-TAN
Associate Commissioner
Preface

In July of 1996, during the Area A Planning Conference of the United Architects of the Philippines (UAP), the then National President, Emmanuel P. Cuntapay, cited the "lack of a comprehensive code for the architectural profession in the country (akin to the existing referral codes of the other professionals)", and stated the "need for the formulation of such a code". In the same speech, he assigned the task to then National Vice President for Area A, Macario de Leon, who in turn formally assigned the task to Armin B. Sarthou, Jr., a faculty member of the U.P. College of Architecture and the then District Director for UAP District A-4 (grouping the Diliman, Elliptical and New Manila Chapters of the UAP). The District Director accepted the job, and set to work on the task of putting together the formidable talent and resources of the 8,000-strong organization into a cohesive working group which would later be known as the Architectural Code Committee.

The Architectural Code was compiled over a period of more than one year of painstaking and diligent work by the members of the Architectural Code Committee. The Committee counted among its members many stalwarts of the architectural profession, a number of whom - Aquilus Paredes, Juan Maravillas, Antonio Yulo-Balde, Froilan L. Hong, and Geronimo V. Manahan, in particular - had been continuously pursuing this goal for the greater parts of their long and successful practices. District A-4 served as the Secretariat of the working committee, while UAP National provided the logistics.

The Code in its present form is meant to bring together many of the pertinent documents, rules and procedures governing the profession of architecture in the country. It takes liberally from the provisions of the National Building Code (P.D 1096) and the Unified Building Code (UBC) Series of 1997. Many sections included in this edition - notably the sections of Architectural Heritage (by Rosario Encarnacion-Tan and Augusto Villalon) and Information Technology (by Ramon L. Abiera and Federico A. Gregorio) - are mostly new.

Despite the pains taken in its production, however, the members of the Committee realize that while much work has been done, the task remains a difficult one at best, given the enormity of the coverage of the practice of architecture and the ever-growing pool of generated knowledge relating to the practice. As such, the Committee has realized the need for a constant updating of the Architectural Code, and has placed among its transitory provisions the stipulation (stated in Chapter 21, Section 4) that "the provisions of this Code shall be reviewed every three (3) years." During the final meeting of the Architectural Code Committee held last November 19, 1997 at the Damarra Hotel in Quezon City, National President Emmanuel P. Cuntapay also formally launched the Architectural Code Society, which has as its most important objective the task of seeing to the integrity of the Architectural Code. The Society will also act as the Committee tasked with processing any proposed amendments, which by fiat should be integrated into this Code, as was previously mentioned, at least once every three years.

The Architectural Code is necessarily a dynamic Code. As the practice of architecture grows, so must the code governing the practice thereof. It is only with this enlightened perspective that the Architectural Code will continue to be relevant to the practitioners of the profession, and continue to provide guidance and direction in the work of the primo professional.

Armin B. Sarthou, Jr.
November 20, 1997
Introduction

Pursuant to PD 1096-NBC Section 203 General Powers and Functions of the Secretary of the DPWH under this Code, Article 3 Quote: “Evaluate, review, approved and/or take final action on changes and/or amendments to existing Referral codes as well as on the incorporation of other referral codes which are not yet expressly made part of this code.

This ARCHITECTURAL CODE is compiled by the UNITED ARCHITECTS of the PHILIPPINES (UAP) the bonafide accredited organization of architects under the purview of PD 223 – the Professional Regulation Commission Law and RA 545, the Architect’s Law, to serve as a referral code for the implementation and enforcement of PD 1096 – the National Building Code (NBC).

This ARCHITECTURAL CODE is designed to be compatible and complementary to the provisions of the NBC as its implementing rules and regulations. Similarly with all other referral codes prescribed under NBC, it is subject to periodic changes without legislative fiat to be in accordance with universal advancements in science and technology. It prescribes rules and regulatory measures to ascertain good building design and construction with inherent considerations and provisions for the safety and protection of limb, health, life, property and general public welfare, within a sound/wholesome environmental set-up.

The detailed provisions in this ARCHITECTURAL CODE are designed to be of minimum standards and compatible with related, internationally accepted publication, standards.

Any one may propose amendments to this Code by writing to the UAP Architectural Code Committee, UAP National Secretariat, Folk Arts Theater, CCP Complex, Roxas Boulevard, Pasay City, M.M. This Committee will consolidate all proposed amendments for transmittal to the National Building Code Review Committee of the DPWH.

Changes in this Code are processed every three (3) years and official changes shall be published in form of supplements for ready adoption by Local Government Units and generally as applicable to national performance standards.

Aquiles C. Paredes
Chairman, Final Review Committee
Prayer:

Father, Lord of all creation
look kindly upon your children
on this appointed day
who are tasked to review the
Architectural Code for the benefit
of human habitation
bestow upon each and everyone of us,
wisdom to be able to see and to
discern what will be in harmony
with your creation, knowing that
any man-made rules if not consistent
with your will shall have disastrous
consequences.
Give us your divine guidance so
that collectively, in mind, in spirit
and in your wisdom we may
become your instruments in formulating
correctly this code for it is only
in you can we truly rest in this efforts.
CHAPTER 1

GENERAL PROVISIONS

SECTION 1. Title

1.1 General. Chapter 1, Sections 102 up to Section 106 inclusive of the National Building Code (NBC) is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 This Document shall be known as the “Architectural Code of the Philippines” and shall hereinafter be referred to as the “Code”.

SECTION 2. Declaration of Policy

2.1 This ARCHITECTURAL CODE is designed to be consistent, complementary and compatible as a referral code to NBC and all allied engineering referral codes under purview of NBC. In a sense, ‘organic’, being founded on broad performance principles and standards. It is therefore presumed to be reviewed periodically for changes in accord with universal advancement in science and technology, to allow the use of new materials, innovative technologies systems and methods of assembly. Without infringing into the architect’s creativity, intuitive innovations and keen aesthetic sensibilities in the total design of buildings and other structures.

SECTION 3. Use of this ARCHITECTURAL CODE

3.1 General:

3.1.1 The following considerations should guide the architect in the total design of building and other structures in accordance with the Declaration of Policy of this Code.

3.1.1.1 Occupancy Grouping: Determine the occupancy group under which the building is classified, see chapter on Occupancy Classification.

3.1.1.2 Types of Construction: Ascertain the type of construction by the building materials and the fire resistivity assembly as provided in chapter on Types of Construction.

3.1.1.3 Determine location on property and buildable area as to the type of lot (corner, interior, inside, thru and open lot) which requires the mandatory percentage of open space for natural light and ventilation and legal easements as provided for in the Philippine Civil Code, most particularly Art. 670-673 inclusive under Easement On Light and View.

3.1.1.4 Floor Area: Determine the maximum floor area based on use or occupancy and type of construction with or without automatic fire sprinklers and allowable floor area for multi-storey building.

3.1.1.5 Height and Number of Stories: Compute building height from grade based on nature of occupancy and type of construction and permissible increase in floor area by installation of fire sprinklers.

3.1.1.6 Floor to floor area and total building area occupant load. Compute occupant load to determine adequacy of stairs and exit ways and exit requirements.
- Verify compliance with the building detailed design requirements as to type of occupancy.
- Verify compliance to detailed type of construction and fire resistivity requirements as to fire zones.
- Verify compliance with exit smoke vents or open patio requirements.
- Verify compliance with detailed architectural requirement and material used in construction.
- Verify allowable buildable area as to lot periphery boundary characteristics, easements setbacks and other requirements.

3.1.1.7 Parking requirements:

3.1.1.8 Other architectural considerations: Cultural and Historical aspects, light and ventilation, accessibility, information technology, others

SECTION 4. General Building Requirements

4.1 Buildings and other structures as well as all accessory facilities, shall be aesthetically, functionally and structurally designed to completely and efficiently serve its purpose while protecting life, health, property and general public welfare and concomitant resource of civic pride and aspirations.

4.2 Buildings and other structures intended to be used for the manufacture and/or production of any kind of article or product shall comply with adequate environmental safeguards as provided by all government agencies concerned.

4.3 Buildings and structures together with all parts thereof as well as their adjunct facilities, utilities and equipment therein shall be maintained in good repair, safe, sanitary, and good working condition as originally approved for occupancy.

SECTION 5. General Site Requirements

5.1 The land or site upon which the building or structure or any adjunct or ancillary facility thereto shall be the concern of the architect. He shall verify, survey, and ascertain safe design determinants such as geodetical and geophysical characteristics, the potential chronological or periodic floodings, soil conditions of the site, and other potentials hazard such as volcanic eruption, pollution, land slides, tsunami. Other environmental factors shall also be considered such as: solar angles, prevailing, typhoon winds and orientation to significant views.

5.2 Siting of the building shall be governed by NBC-IRR as to allowable buildable area on lots, actual characteristics of physical boundaries.

SECTION 6. Definitions. See Appendix.
CHAPTER 2

ADMINISTRATION and ENFORCEMENT

SECTION 1.  Title

1.1 General. Chapter 2, Sections 201 up to Section 216 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Objectively, as a referral Code under the purview of NBC, some of the original provisions and measures therein are amplified hereunder to be complimentary and compatible with the section 102, Declaration of Policy of said law and more consistent in the practice of the Architectural profession as embodied in RA 545 the Architects law Amplifications thereof hereunder shall have equal force and effect as a referral code embodied in the Law.

SECTION 2.  Purpose and Scope of this Architectural Code.

2.1 This Code shall apply to the design and construction, repair, alteration, renovation and use of any building and other structures for human habitation and all other activities of human endeavor, including the architectural aspects of infrastructure projects such as roads, bridges and the like.

2.2 The provision in the Appendix shall not apply unless specifically referred to.

2.3 Where different sections in this Code are in conflict as to provisions, systems, methods, procedures, materials, and site assemblies as embodied in NBC, the most restrictive shall govern. When conflict between general requirements and specific requirements occurs, the specific requirements shall be applicable.

2.4 Since this Code is designed to be compatible with NFC and other applicable National Laws of the Philippines or the latest edition of the universally accepted provisions in the Uniform Building Code, the regulatory measures or provisions that are most restrictive shall apply as may be ascertained in writing by the Secretary of Public Works and Highways.

2.5 Furthermore, in the absence of any regulatory provisions in this Code as in innovative or creative design, the case shall be referred to for approval by the Secretary of Public Works and Highways.

SECTION 3.  Application to Existing Buildings and Other Structures

3.1 General: Existing Building and other structures subject to additions, alterations, repairs or renovations shall comply with all requirements of this code as to regulatory measures on type of occupancies and/or type of construction, fire safety, required number of exits and safety measures in construction assemblies, and such shall be properly done in a manner as to preserve its structural integrity, stability, soundness, aside from the architectural character and legacy of buildings of historic significance.

3.2 Historic buildings subject to alteration, repairs, renovations, additions, upgrading necessary for the preservation, restoration, rehabilitation or continued use or need not conform to all requirements of this code. However, such shall be subject to regulation of the government agencies concerned like the National Historical Institute (NHI) or National Museum, the DPWH [thru the recommendation for approval of the UAP Architectural Code Committee]

3.3 Existing buildings and other structures shall be maintained in safe and sanitary condition. All devices, appliances, equipment and safety provisions and ambiance therefor shall be in appropriate and proper working/operating conditions.
3.4 Tests: when sufficient evidences of non-compliance with any provisions of this code is found during construction, final inspection or upon periodic inspection, may order a thorough investigation or tests and rectification thereof at the expense of the owner and subject to applicable penal proviso.

SECTION 4. The Role of the Registered Architect

Under the purview of R.A. 545 Law, the architect is the one responsible for the design of buildings and other structures, for man’s multifarious needs, activities and aspirations. These include structural, electrical, plumbing, sanitary mechanical, communications, interiors, acoustics, landscaping, and related systems and services.

4.1 In order to exercise such professional prerogatives, the Architect invariably requires the cooperative and collaborative efforts of the various allied professional engineering expertise, for the detailed engineering design.

4.2 During construction the architect who signed and sealed the Plans and Contract Documents exercises normal cursory supervisions and deserves the right to impose precise compliance to the originally approved construction plans and documents.

4.3 Allied engineers with proper expertise registered under their professional laws, normally forms part of an architect’s collaborative engineers group responsible for the design of their particular expertise.

4.4 Such allied engineering professionals include but not limited to the following depending upon the architect’s projects requirements.

4.4.1 Civil Engineer
4.4.2 Structural Engineer
4.4.3 Professional Mechanical Engineer
4.4.4 Professional Electrical Engineer
4.4.5 Sanitary Engineer
4.4.6 Master Plumber
4.4.7 Geodetic Engineers
4.4.8 Electronics and Communication Engineer
4.4.9 Geologist
4.4.10 Safety Engineers

SECTION 5. Enforcement by National Government Agencies (NGA’s), Local Government Units (LGU’s), Administrators of Special Economic Zones (SEZ), Administrators of Special Administrative Zones (SAZ) and others

5.1 In cases where no duly-registered architects are available in the NGA, LGU, SEZ and SAZ offices to properly interpret and enforce this Code, any active member of the local UAP chapter may be deputized by the LGU authority to perform said function through a Memorandum of Agreement between the UAP and the DILG.

5.2 For purposes intended in the above article “5.5” hereunder are the existing different UAP bona fide chapters all over our archipelagic country.

5.2.1 Baguio
5.2.2 Pangasinan-Dagupan
5.2.3 Ilocos-Ciudad Fernandina
5.2.4 Ilocos Norte-Laaoag
5.2.5 La Union
5.2.6 Cagayan Valley
5.2.7 Sierra Madre
5.2.8 Olongapo City
5.2.9 Angeles City
5.2.10 Balanga-Batang
5.2.11 Tarlac
5.2.12 Cabanatuan-Nueva Ecija
5.2.13 Bulacan
5.2.14 Barasoain
5.2.15 Quezon City
5.2.16 QC-Capitol
5.2.17 QC-Central
5.2.18 QC-Silangan
5.2.19 Tandang Sora
5.2.20 Diliman
5.2.21 Elliptical
5.2.22 New Manila
5.2.23 Higana
5.2.24 Marikina Valley
5.2.25 Taytay
5.2.26 Pasig
5.2.27 Rizal East
5.2.28 Greenhills
5.2.29 San Juan-Mandaluyong
5.2.30 Atelier
5.2.31 Sampaloc
5.2.32 Archibition
5.2.33 Metro
5.2.34 Centrum
5.2.35 Sta. Mesa
5.2.36 Maharika
5.2.37 Maynilad
5.2.38 MAGS
5.2.39 Corinthian
5.2.40 Intramuros
5.2.41 Alcaldia
5.2.42 Makati
5.2.43 CBD
5.2.44 Greenbelt
5.2.45 Parañaque-Palanyag
5.2.46 Ayala-Alabang
5.2.47 Fort Bonifacio
5.2.48 Quezon Province
5.2.49 San Pablo
5.2.50 Laguna
5.2.51 Batangas
5.2.52 Cavite
5.2.53 Palawan
5.2.54 Camarines
5.2.55 Iriga Rinconada
5.2.56 Legaspi
5.2.57 Cebu
5.2.58 Rajah Humabon
5.2.59 Lapu-Lapu
5.2.60 Sugbu
5.2.61 Bohol
5.2.62 Dumaguete
5.2.63 Leyte-Samar
5.2.64 Bacolod
5.2.65 Iloilo
5.2.66 Iloilo-Marikudo
5.2.67 Capiz
5.2.68 Davao
5.2.69 Mount Apo
5.2.70 Cotabato
5.2.71 Soesargen
5.2.72 Zambounga
5.2.73 Pagadian
5.2.74 Caraga
5.2.75 Cagayan de Oro
5.2.76 Iligan City
5.2.77 Ozamis City
5.2.78 Dipolog

5.3 The UAP shall update the above list from time to time.
CHAPTER 3

PERMITS AND INSPECTION

SECTION 1. Title

1.1 General. Chapter 3, Sections 301 to Section 309 inclusive of the National Building Code (NBC) is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 No person, firm or corporation, including any agency instrumentality of the government shall erect, construct, alter, repair, demolish, renovate, move, or convert any building or structure or cause the same to be done without first obtaining a Building Permit therefor from the Office of the Building Official of the LGU having jurisdiction over the locality. Government agencies and/or Civic projects exempted from payments of said permits, as provided for in PD 1096-NBC shall mandatorily acquire the same from the OBO of the LGU for purposes of record to ascertain responsibility for the building's design and construction under the Law.

SECTION 2. Application for Building Permit

2.1 In order to obtain a Building Permit the applicant shall submit an accomplished Architectural Permit duly signed and sealed only by the designing Architect.

2.2 All Plans, Specifications, and all other Contract Documents to be submitted as required in the processing of the Building Permit shall be signed and sealed by the Architect who prepared them.

SECTION 3. Processing of Building Permit

3.1 The processing of the application for a Building Permit by the Architect-in-Charge of the Office of the Building Official (OBO) shall be purely ministerial, to precisely see to it that Architectural Permit is accomplished to the letter.

3.2 Incomplete information or data in the above Architectural shall be returned to the Architect, until satisfactory completions of the said documents. Official issuance of the Building Permit shall be done by the Building Official upon the recommendation of Architect in Charge.

SECTION 4. Validity of Building Permit

4.1 Pursuant to PD1096 the NBC and its IRR, a Building Permit issued under the provisions of the NBC shall expire and become null and void if the building or work therein is not commenced within a period of one year from the date of issuance of such permit, or if the building or work so authorized is suspended or abandoned at any time after it has been commenced, for a period of 120 days.

4.2 The issuance of an Building Permit shall not be construed as an approval or authorization to the permittee to disregard or violate any of the provisions of this Code or NBC.

4.3 Any deviation, defect or change in the original construction plans, for which the Building Permit is issued shall be authorized in writing or corrected only by the Architect who prepared, signed and sealed them. He shall countersign all corrections and changes made there on, indicating the dates therein and all such information shall be recorded in the official Building Construction Log Book as required under PD 1096-NBC.

SECTION 5. Non-Issuance, Suspension or Revocation of the Building Permit

5.1 Pursuant to PD1096-NBC and its IRR, the Building Official may order or cause the non-issuance, suspension or revocation of Building Permit for any or all of the following reasons:

5.1.1 Errors found in the Plans, Specifications, and other Construction Documents;
5.1.2 Incorrect or inaccurate data or information found in the application (supplied in the Architectural Permit).

5.1.3 Non-compliance with the Terms and Conditions of the Permit.

5.1.4 Notice of non-issuance, suspension or revocation of the Building Permit shall always be made by the Building Official in writing, stating the reasons or grounds therefor.

SECTION 6. On-Site Inspection and Supervision

6.1 The Office of the Building Official (OBO) shall monitor the progress of the construction operations or work for the faithful compliance with all the conditions, rules and regulations governing the issuance of the Building Permit and act on any violation therein by stopping, suspending, and/or ordering the necessary rectification or correction of any faults.

6.2 The Architect for his protection under Civil Code CC Article 1723 shall periodically inspect the construction operations to see to it that the works are executed in faithful compliance with all the construction documents for which the Building Permit was issued as stipulated in this Code and/or PD 1096-NBC, and its IRR. He shall attest to all final inspection permits as accepted and accomplished, signed and sealed the Certificate of Completion, for submission to the Office of the Building Official through his Architect-in-Charge of the division, section, or unit, who shall recommend the issuance or non-issuance of the Certificate of Occupancy.

6.3 The above article “6.2” does not necessarily preclude the commissioning by the Owner of an Architect-in-charge for the full time superintendence or administration of construction nor prevent the design Architect to be commissioned as the Project Construction Administrator or Construction Manager.

SECTION 7. Building Area Calculation

7.1 General: For the assessment of Building Permit based on floor areas by the Office of the Building Official the following space factors shall be applied.

7.1.1 AREA SPACE FACTOR

<table>
<thead>
<tr>
<th>Area/Space</th>
<th>Space Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Floor (Fully enclosed space)</td>
<td>1.00</td>
</tr>
<tr>
<td>Auditorium</td>
<td>1.50</td>
</tr>
<tr>
<td>Balcony</td>
<td>0.40</td>
</tr>
<tr>
<td>Canopy Entrance</td>
<td>0.45</td>
</tr>
<tr>
<td>Lobby &amp; Lofty Space</td>
<td>1.50</td>
</tr>
<tr>
<td>Basement</td>
<td>1.00</td>
</tr>
<tr>
<td>On-Stilt</td>
<td>0.55</td>
</tr>
<tr>
<td>Covered Area (partially walled space)</td>
<td>0.60</td>
</tr>
<tr>
<td>Stairs</td>
<td>1.25</td>
</tr>
<tr>
<td>Toilets</td>
<td>2.00</td>
</tr>
<tr>
<td>Kitchen</td>
<td>1.50</td>
</tr>
<tr>
<td>Media-Aguas</td>
<td>0.25</td>
</tr>
<tr>
<td>AHU Rooms</td>
<td>0.70</td>
</tr>
<tr>
<td>Deck Terrace (with waterproofing)</td>
<td>0.35</td>
</tr>
<tr>
<td>Open Terrace (no roof)</td>
<td>0.30</td>
</tr>
<tr>
<td>Interstitial space less than 1.50m more than 1.50m</td>
<td>0.35 0.70</td>
</tr>
<tr>
<td>Garage</td>
<td>0.60</td>
</tr>
<tr>
<td>Carport</td>
<td>0.50</td>
</tr>
</tbody>
</table>
CHAPTER 4

CLASSIFICATION AND GENERAL REQUIREMENTS OF ALL BUILDINGS BY USE OR OCCUPANCY

DIVISION 1  Title

General. Chapter 6, Sections 601 up to Section 604 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

The classifications enumerated here under are purposely changed from the nomenclature of PD 1096-NBC and UBC, for convenience and easy reference to the capital letter it stands for.

SECTION 1.  Occupancy Classified

1.1  Group A  Assembly  Group H, Chapter 7 of PD 1096
1.2  Group B  Business  Group E, Chapter 7 of PD 1096
1.3  Group E  Educational  Group C, Chapter 7 of PD 1096
1.4  Group F  Factory and Industrial  Group G, Chapter 7 of PD 1096
1.5  Group H  Hazardous  Group D, Chapter 7 of PD 1096
1.6  Group I  Institutional  Group E, Chapter 7 of PD 1096
1.7  Group M  Mercantile  Group A/B, Chapter 7 of PD 1096
1.8  Group R  Residential  Group G, Chapter 7 of PD 1096
1.9  Group S  Storage  Group J, Chapter 7 of PD 1096
1.10 Group U  Utility

1.11 Any occupancy not mentioned specifically or about which there is any question shall be classified and included in the group where its dominant use most nearly resembles.

1.12 Exceptions:

1.12.1 In Groups A, B, E, F, M and S Occupancies, boilers, central heating plants or hot-water supply boilers where the largest piece of fuel equipment does not exceed 400,000 Btu per hour (117.2 KW) input.

1.12.2 In Group R, Division 1 Occupancies, a separation need not be provided for such rooms with equipment serving only one dwelling unit.

1.13 In Group E Occupancies, when the opening for a heater or equipment room is protected by a pair of fire doors, the inactive leaf shall be normally secured in the closed position and shall be openable only by the use of a tool. An astragal shall be provided and the active leaf shall be self-closing.

1.14 In Group H Occupancies, rooms containing a boiler, central heating plant or hot-water supply boiler shall be separated from the rest of the building by not less than a two-hour occupancy separation. In Division 1 and 2, there shall be no openings in such occupancy separation except for necessary ducts and piping.

1.15 For opening in exterior walls of equipment rooms in Group A, E or I Occupancies. See Chapter 4, Section 3.8.

1.16 Water Closet Room Separation
A room in which a water closet is located shall be separated from food preparation or storage rooms is a tight-fitting door.
SECTION 2. Requirements for Group A Occupancies

2.1 General: Group A Occupancies include the use of a building or structure, or a portion thereof, for the gathering together of 50 or more persons for purposes such as civic, social or religious functions, recreation, education or instruction, food and drink consumption, or awaiting transportation. A room or space used for assembly purposes by less than 50 persons and accessory to another occupancy shall be included as a part of that major occupancy.

2.1.1 Assembly occupancies shall include the following:

2.1.1.1 A1. A building or portion of a building having an assembly room with an occupant load of 1,000 or more and a legitimate stage.

2.1.1.2 A2. A building or portion of a building having an assembly room with an occupant load of less than 1,000 and a legitimate stage.

2.1.1.3 A2.1. A building or portion of a building having an assembly room with an occupant load of 300 or more without a legitimate stage, including such buildings used for educational purposes and not classed as Group B or E Occupancies.

2.1.1.4 A3. A building or portion of a building having an assembly room with an occupant load of less than 300 without a legitimate stage, including such buildings used for educational purposes and not classed as Group B or E Occupancies.

2.1.1.5 A4. Stadiums, reviewing stands and amusement park structures not included within other Group A Occupancies. Specific and general requirements for grandstands, bleachers, and reviewing stands.

2.2 For occupancy separations, refer to appropriate provisions on occupancy separations as provided for in this Code NBC or in the UBC which ever is most restrictive shall govern.

2.3 Amusement buildings shall conform with the applicable requirements of this Code.

2.3.1 Exceptions:

2.3.1.1 Amusement buildings or portions thereof that are without walls or a roof and constructed to prevent the accumulation of smoke in assembly areas.

2.4 Construction, Height and Allowable Area.

2.4.1 General. Unless otherwise specified in this Section, buildings or portions of buildings classed in group A Occupancy, because of the use or character of the occupancy, shall be limited to the types of construction set forth in this code, and shall not exceed in area or height the limits specified in Chapter 5, check referrals.

2.4.2 Special Provisions.

2.4.2.1 The roof-framing system for the roof-ceiling assembly in one-story portions of buildings of Type II One-hour, Type III One-hour or Type V One-hour construction may be of unprotected construction when such roof-framing system is open to the assembly area and does not contain concealed spaces.

2.4.2.2 Stages and platforms shall be constructed in accordance with the provisions of this code.

2.4.2.3 The slope of the main floor of an assembly room shall not exceed the 12 % slope.
2.4.2.4 Group A assembly rooms having an aggregate occupant load of 1,000 or more shall not be located in a basement, except basements in buildings of Type I or Type II-(F.R.) Fire Rated construction throughout.

2.4.2.5 Gymnasiums and similar occupancies may have floor surfaces constructed of wood or unprotected steel or iron.

In gymnasiums having an area not greater than 297m (3,000 square feet), 25mm (1-inch) nominal thickness tight tongue-and-grooved boards or 19mm (3/4-inch) plywood wall covering may be used on the inner side in lieu of fire-resistive plaster.

2.4.2.6 For attic space partitions and draft stops, provisions shall be provided with adequate fire restrictive separation in accordance with this code.

2.5 A3 Provisions on Fire Resistivity

Division 2.1 Occupancies with an occupant load of 1,000 or more shall be of Type I, Type II, F.R., Type II One-Hour, Type III One-Hour or Type IV construction, except that the roof framing system for one-story portions of buildings of Type II One-hour or Type III One-hour Construction may be unprotected construction when such roof-framing system is open to the assembly area and does not contain concealed spaces.

2.6 A4 Provisions.

2.6.1 A4 Occupancies located in a basement or above the first floor shall not be of less than one-hour fire-resistive construction.

2.6.2 A4 Occupancies with an occupant load of 50 or more which are located over usable space shall be separated from such space shall be separated from such space by not less than one-hour fire-resistive construction.

2.6.3 A4 Occupancies with a Group S Division 3 parking garage in the basement or first floor, see UBC or NBC.

2.7 A5 Provisions.

2.7.1 Grandstands, bleachers, or reviewing stands of Type III One-hour, Type II or Type V One-hour construction shall not exceed 12,192 mm (40 feet) to the highest level of seat boards: 6096 mm (20 feet) in cases where construction is with combustible members in the structural frame and located indoors.

2.7.2 A5 Structures other than Type III and Type V grandstands, bleachers, reviewing stands and folding and telescoping seating of open skeleton-frame type without roof cover or enclosed usable space are not limited in area or height.

2.7.3 Erection and structural maintenance shall conform to these special requirements as well as with other applicable provisions of this Code.

2.7.4 When the space under a Division 4 Occupancy is used for any purpose, including means of egress, it shall be separated from all parts of such Division 4 Occupancy, including means of egress by walls, floor and ceiling of not less than one-hour fire-resistant construction.

2.7.5 Exceptions:

2.7.5.1 A means of egress under temporary grandstands need not be separated.

2.7.5.2 The underside of continuous steel deck grandstands when erected outdoors need not be fire protected when occupied for public toilets.

22
2.7.5.3 The building official may cause such structures to be re-inspected at least once every six months.

2.7.5.4 Grandstands, bleachers or folding and telescoping seating may have seat boards, too boards, bearing or base pads and foot boards of combustible materials regardless of construction type.

2.7.5.5 Seating and exiting requirements for reviewing stands, grandstands, bleachers and folding and telescoping seating shall be promulgated by the UAP.

2.8 Location on Property.

2.8.1 Buildings Housing Group A Occupancies shall front directly on or discharge to a public street not less than 6096 mm (20 feet) in width. The exit discharge to the public street shall be a minimum 6,6096 mm (20-foot-wide) right-of-way, unobstructed and maintained only as exit discharge to the public street. The main entrance to the building shall be located on a public street or on the exit discharge.

2.8.2 For fire-resistive protection of exterior walls and openings, as determined by location on property, see Chapter 5, Section 9 and Chapter 5, A1.

2.9 Access and Exit Facilities.

2.9.1 Exits shall be provided as per PD 1096-NBC depending upon occupancy, occupant load requirements and types of construction.

2.9.2 Access to and egress from buildings required to be accessible shall be provided as per PD 1096-NBC or provision of this code which ever is most restrictive shall govern.

2.10 Light, Ventilation.

2.10.1 Light and ventilation shall be in accordance with the Chapter 10 on Light and Ventilation.

2.11 Shafts and Exit Enclosures

2.11.1 Shafts and Exit Enclosure shall be enclosed in conformance with Section 3.4.1 Special Provisions of this Chapter.

2.12 Sprinkler and Standpipe Systems. When required by other provisions of this Code, automatic sprinkler systems and standpipes shall be designed and installed in conformity with the provision of the PD 1185 Fire Code of the Philippines (FCP).

2.13 Special Hazards. Stages shall be equipped with automatic smoke ventilators in conformity FCP as required in the provisions as promulgated by the UAP.

2.14 Chimneys and heating apparatus shall be in conformity with the Fire Code of the Philippines (FCP) and the latest edition, NBC referral Mechanical Code of the Philippines (MCP).

2.15 Class I, II or III-A liquids shall not be placed or stored in any Group A Occupancy.

2.16 When heating equipment rooms are required to be separated in accordance with Chapter 4, Section 2.5, exterior openings in a boiler room or room containing central heating equipment if located below openings in another story of if less than 10 feet (3048 mm) from other doors or windows of the same building shall be protected by a fire, automatic or self-closing assembly having a three-fourths-hour-protection. For heating equipment occupancy separation, see Chapter 4, Section 2.5.

2.17 Fire Alarm Systems.
2.17.1 An approved fire alarm system shall be installed in conformity with the FCP.

SECTION 3. Requirements for Group B Occupancies

General: Group B Occupancies shall include buildings, structures or portions thereof for office, professional or service-type transactions, which are not classified as Group H Occupancies. Such occupancies include occupancies for the storage of records and accounts and eating and drinking establishments with occupant load of less than 50.

3.1 Business occupancies shall include, but not be limited to the following:

3.1.1 Animal hospitals, kennel, dog pounds.

3.1.2 Automobile and other motor vehicle showroom.

3.1.3 Banks

3.1.4 Barber Shops

3.1.5 Beauty Shops

3.1.6 Car Wash Shops

3.1.7 Civic Administration

3.1.8 Outpatient clinic and medical offices (where five or less patients in a tenant space are incapable of unassisted self-preservation)

3.1.9 Dry cleaning pick-up and delivery stations and self-service

3.1.10 Educational occupancies above the 12th grade

3.1.11 Electronic data processing

3.1.12 Fire Stations

3.1.13 Florists and Nurseries

3.1.14 Laboratories-testing and research

3.1.15 Laundry pick-up and delivery stations and self-service

3.1.16 Police stations

3.1.17 Post Offices

3.1.18 Print Shops

3.1.19 Professional services such as architect, attorney, dentist, physician, engineer

3.1.20 Radio and television stations

3.1.21 Telephone exchanges

3.1.22 For occupancy separations, see Type of Construction applicable

3.2 Construction, Height and Allowable Areas

General: Building or parts of buildings classed as Group B Occupancies because of the use or character of the occupancy shall be limited to the types of construction set forth in this code.
Such occupancies shall not exceed, in area or height, the limits specified in this code and shall comply with the provisions of this Section.

3.2.1 Special Provisions:

3.2.1.1 Laboratories and vocational shops. Laboratories and vocational shops in buildings used for educational purposes, and similar areas containing hazardous materials, shall be separated from each other and other portions of the building by not less than a one-hour of fire-resistive occupancy separation. When the quantities of hazardous materials such uses do not exceed those listed in this code, the requirements of NBC, FCP or this Code shall apply. When the quantities of hazardous materials in such uses exceed those listed in this code, the use shall be classified as the appropriate Group H Occupancy.

3.2.1.2 Occupants in laboratories having an area in excess of 18.6 m (200 square feet) shall have access to at least two exits or exit access doors from the room and all portions of the room shall be within 22.860 mm (75 feet) of an exit or exit-access door.

3.2.1.3 Amusement Building. Amusement buildings with an occupant load of less than 50 shall comply with provisions as set forth in this Code.

3.3 Location on Property. For fire-resistive protection of exterior walls and openings as determined by location on property, as provided in this code.

3.4 Access and Means of Egress facilities. Means of egress facilities. Means of egress shall be provided as specified in this Code.

3.5 Light, Ventilation and Sanitation. Light, ventilation and sanitation shall be in accordance with the PD 1096-NBC or PD 1185 provisions.

3.5.1 Ventilation of flammable vapors. Flammable vapors shall be vented in accordance with the provisions set forth in PD 1185 FCP.

3.5.2 Sanitation. The number of plumbing fixtures shall not be less than specified in provisions the Nation Plumbing Code of the Philippines.

3.6 Shaft and Exit Enclosures. Exits and exit ways shall be enclosed as specified in this Code.

In building housing Group B Occupancies equipped with automatic sprinkler systems throughout, enclosures need not be provided for escalators where the top of the escalator opening at each story is provided with a draft curtain and automatic fire sprinklers are installed around the perimeter of the opening within 610 mm (2 feet) of the draft curtain. The draft curtain shall enclose the perimeter of the unenclosed opening and extend from the ceiling downward to at least 305 mm (12 inches) from the floor around all sides. The spacing between sprinklers shall not exceed 1829 mm (6 feet).

3.7 Sprinkler and Standpipe Systems. When required by other provisions of this Code, automatic sprinkler systems and standpipes shall be designed and installed as specified in the provisions in PD 1185-FCP.

3.8 Special Hazards. Chimneys and heating apparatus shall conform to the requirements of provisions as per the Mechanical Referral Code of the latest edition.

3.8.1 Storage and use of flammable and combustible liquids shall be in accordance with the PD 1185 - Fire Code of the Philippines.

3.8.2 Devices generating a glow, spark or flame capable of igniting flammable vapors shall be installed such that sources of ignition are at least 457 mm (18 inches) above the
floor of any room in which Class 1 flammable liquids or flammable gases are used or stored.

3.8.3 Stationary lead-acid battery systems used for facility standby, emergency power or uninterrupted power supplies shall be installed and maintained in accordance with PD 1185 the Fire Code of the Philippines.

SECTION 4. Requirements for Group E Occupancies

4.1 Group E Occupancies Defined. Group E Occupancies shall be:

4.1.1 E1. Any building used for educational purposes through the 12th grade by 50 or more persons for more than 12 hours per week or four hours in any day.

4.1.2 E2. Any building used for educational purposes through the 12th grade by 50 or more persons for more than 12 hours per week or four hours in any day.

4.1.3 E3. Any building or portion thereof used for day-care purposes for more than six persons.

4.2 Construction, Height and Allowable Area and for Occupancy Separation as to fire resistivity rating shall be as provided in this code.

4.2.1 General. Buildings or parts of buildings classed in Group E because of the use of character of the occupancy shall be limited to the types of construction shall not exceed in area or height, the limits specified in this code.

4.3 ATMOSPHERIC SEPARATION REQUIREMENTS

4.3.1 Definitions. For the purposes of this chapter, the following definitions are applicable:

4.3.1.1 Common atmosphere exists between rooms, spaces or areas within a building that are not separated by an approved smoke-and-draft-stop barrier.

4.3.1.2 Separate Atmosphere exists between rooms, spaces or areas that are separated by an approved smoke barrier.

4.3.1.3 Smoke Barrier consists of walls, partitions, floors and openings therein as will prevent the transmission of smoke or gases through the construction.

4.4 GENERAL PROVISIONS. The provisions of this section apply when a separate exit system is required in accordance with the provisions of this Code.

4.4.1 Walls, partitions and floors forming all or part of an atmospheric separation shall be as required by in this code as to fire resistivity. Glass lights of approved smoke detectors.

4.4.2 All automatic-closing fire assemblies installed in the atmospheric separation areas shall be activated by approved smoke detectors.

4.4.3 The specific requirements of this section are not intended to prevent the design or use of other systems, equipment or techniques that will effectively prevent the products of combustion from breaching the atmospheric separation.

4.5 SPECIAL PROVISIONS. Rooms in Division 1 and 2 Occupancies used for kindergarten, first or second-grade pupils and Division 3 Occupancies shall not be located above or below the first story.

4.6 Exceptions:

26
4.6.1 Basements or stories having floor levels located within 1219 mm (4 feet), measured vertically, from adjacent ground level at the level of exit discharge, provided the basement or story has exterior exit doors at the level.

4.6.2 In building equipped with an automatic sprinkler system throughout rooms used for kindergarten, first- and second-grade children or day-care purposes may be located on the second story, provided there are at least two exterior exit doors for the exclusive use of such occupants.

4.6.3 Division 3 Occupancies may be located above the first story in buildings of Type 1 construction and in Types II-F.R. II One-hour construction, subject to the limitation set forth in this code.

4.6.4 Division 3 Occupancies with children under the age of seven or containing more than 12 children per story shall not be located above the fourth floor.

4.6.5 The entire story in which the day-care facility is located shall be equipped with an approved manual fire alarm and automatic smoke detection system (see Fire Code). Actuation of an initiating device shall sound an audible alarm throughout the entire story. When a building fire alarm system is required by other provisions of this Code or the PD 1185, Fire Code, the alarm system shall be connected to the building alarm system.

4.6.6 An approved alarm signal shall be installed and sound at an approved location in the day-care occupancy to indicate a fire alarm or sprinkler flow condition in other portions of the building; and

4.6.6.1 The day-care facility, if more than 92.9 sq.m (1,000 square feet) in area is divided into at least two compartments of approximately the same size by a smoke barrier with door openings protected by smoke- and draft-control assemblies having a fire-protection rating of not less than 30 minutes. Smoke barriers shall have a fire-resistive rating of not less than one hour. In addition to the requirements of Chapter Section 2, occupancy separation between E3 Occupancies and other occupancies shall be constructed as smoke barriers. Door openings in the smoke barrier shall be tight-fitting, with gaskets installed as required by provisions set forth in this Code, and shall be automatic closing by actuation of the automatic sprinklers, fire alarm or smoke detection system. Openings for ducts and other heating, ventilating and air-conditioning openings shall be equipped with a minimum Class 1, 2500F (1210C) smoke damper as defined and tested in accordance with approved internationally recognized standards. The damper shall close upon detection of smoke by an approved smoke detector located within the duct, or upon the activation of the fire alarm system; and

4.7 Each compartment formed by the smoke barrier shall be provided with not less than two exits or exit-access doors, one of which is permitted to pass through the adjoining compartment, and

4.7.1 At least one exit-access door from the E3 Occupancy shall be into a separate means of egress as defined in provisions set forth in this Code.

4.7.2 The building is equipped with an automatic sprinkler system throughout.

Stages and platforms shall be constructed in accordance with provisions of this code. For attic partitions and draft stops shall be of at least 1-hour fire resistivity or as per provisions in this Code.

4.8 SPECIAL HAZARDS.

4.8.1 Laboratories, vocational shops and similar areas containing hazardous materials shall be separated from each other and from other portions of the building by not less than
a one-hour fire-resistive occupancy separation. When the quantities of hazardous materials in such uses do not exceed those listed in this code, the requirements of NBC, FCP or this Code the most restrictive provision thereof shall apply. When the quantities of hazardous materials in such uses exceed those listed in this code, the use shall be classified as the appropriate Group H Occupancy.

4.8.2 Equipment in rooms or groups of rooms sharing a common atmosphere where flammable liquids, combustible dust or hazardous materials are used, stored, developed or handled shall conform to the requirements of the Fire Code.

4.9 LOCATIONS ON PROPERTY. All buildings housing Group E Occupancies shall front directly on a public street or an exit discharge not less than 6069 mm (20 feet) in width. The exit discharge to the public street shall be a minimum 6069 mm (20-foot-wide) right-of-way, unobstructed and maintained only as access to the public street. At least one required exit shall be located on the public street or on the exit discharge.

4.9.1 For fire-resistive protection or exterior walls and opening, as determined by location on property.

4.10 Access and Means of Egress Facilities. Means of egress shall be as provided in this Code.

4.11 Light, Ventilation and Sanitation. All portions of Group E Occupancies customarily occupied by human beings shall be provided with light and ventilation, either natural or artificial, as specified in the chapter of Light and Ventilation.

4.12 The number of urinals and drinking fountains shall be as specified in the National Plumbing Code of the Philippines as approved referral Code.

4.13 Shaft and Exit Enclosures. Exits shall be enclosed as specified in provisions of this Code. Elevator shafts, vent shafts and other vertical openings shall be enclosed, and the enclosure shall be of noncombustible constructions and provided with adequate automatic self operating or manual dampers-draft stop as may be necessary or required.

4.14 Sprinkler and Standpipe Systems. When required by other provisions of this Code, automatic sprinkler systems and standpipes shall be designed and installed as specified in the provisions of the Fire Code of the Philippines PD 1185.

4.15 Special Hazards. Chimneys and heating apparatus shall conform to the requirements in the provisions as provided for the latest referral Mechanical Engineering Code of the Philippines.

4.16 All exterior openings in a boiler room or rooms containing central heating equipment, if located below openings in another story or if less than 10 feet (3048 mm) from the doors or windows of the same building, shall be protected by a fire assembly having a three-fourths-hour fire-protection rating. Such fire assemblies shall be fixed automatic closing or self-closing.

4.17 Class I, II or III-A liquids shall not be placed, stored or used in Group E Occupancies, except in approved quantities as necessary in laboratories and classrooms and for operation and maintenance.

4.18 Fire Alarm Systems. An Approved fire alarm system shall be provided for Group E Occupancies with an occupant load of 50 or more persons. In Group E Occupancies provided with an automatic sprinkler or detection system, the operation of such system shall automatically activate the school fire alarm system, which shall include an alarm mounted on the exterior of the building. For installation requirements, see the Fire Code.

SECTION 5. Requirements For Group F Occupancies

5.1 Group F Occupancies Defined. Group F occupancies shall include the use of a building or structure or a portion thereof, for assemblies, disassembling, fabricating, finishing,
manufacturing, packaging, repair or processing operations that are not classified as Group H Occupancies. Factory and industrial occupancies shall indicate the following:

5.1.1 F1. Moderate-hazard factory and industrial occupancies shall include factory and industrial uses that are not classified as Group F, Division 2 Occupancies, but are not limited to facilities producing the following:

5.1.1.1 Aircraft
5.1.1.2 House, Offices, Shops, Appliances
5.1.1.3 Athletic equipment
5.1.1.4 Automobiles and other motor vehicles
5.1.1.5 Bakeries
5.1.1.6 Alcoholic beverages
5.1.1.7 Bicycles, motor bikes
5.1.1.8 Boats, all types of water crafts
5.1.1.9 Brooms and brushes
5.1.1.10 Business machines
5.1.1.11 Canvas or similar fabric
5.1.1.12 Cameras and photo equipment
5.1.1.13 Carpets and rugs including cleaning implements
5.1.1.14 Clothing
5.1.1.15 Construction and agricultural machinery
5.1.1.16 Dry cleaning and dyeing
5.1.1.17 Electronics assembly
5.1.1.18 Engines, including rebuilding
5.1.1.19 Photographic film
5.1.1.20 Food processing
5.1.1.21 Furniture
5.1.1.22 Hemp products
5.1.1.23 Jute, hemp, abaca, products
5.1.1.24 Laundries
5.1.1.25 Leather products
5.1.1.26 Machinery

29
5.1.1.27 Metal products – alloyed, non-alloyed
5.1.1.28 Motion pictures and television filming and videotaping
5.1.1.39 Musical instrument
5.1.1.30 Optical goods
5.1.1.31 Paper mills or products
5.1.1.32 Plastic, paints, varnish, lacquer, enamel products
5.1.1.33 Printing or publishing
5.1.1.34 Recreational vehicles
5.1.1.35 Refuse incineration
5.1.1.36 Shoes, sandals, all sorts of footwear
5.1.1.37 Soaps and detergents
5.1.1.38 Tobacco
5.1.1.39 Trailers, buses
5.1.1.40 Wood, fabrication of windows and door sashes and frames
5.1.1.41 Millwork
5.1.1.42 Woodworking, carpentry and joinery

5.1.2 F2. Low-hazard factory and industrial occupancies shall include facilities producing noncombustible or non-explosive materials which during finishing, packing or processing do not involve a significant fire hazard, including, but not limited to the following:

5.1.2.1 Nonalcoholic beverages
5.1.2.2 Brick and masonry
5.1.2.3 Ceramic products
5.1.2.4 Foundries
5.1.2.5 Glass products
5.1.2.6 Gypsum and cement products
5.1.2.7 Steel products-fabrication and assembly.

5.1.2.8 For occupancy separations, type of Construction, Height and Allowable maximum Areas. See appropriate provisions in this code or UBC standards

5.2 GENERAL. BUILDINGS OR PARTS OF BUILDINGS CLASSED AS GROUP F OCCUPANCIES.

5.2.2.1 The use or character of the occupancies shall be limited to the types of construction set forth in this code and shall not exceed the limits in area or height.
5.2.2.2 Special provisions, Group F, F2 roof-framing. In F2 Occupancies, the roof-framing system may be unprotected construction.

5.3 Location on Property. For fire-resistive protection of exterior walls and openings as determined by location on property, see Chapter 3, Section 9.

5.4 Access and Means of Egress Facilities. Means of egress shall be provided as specified in the provisions in this code.

Access to and egress from, buildings required to be accessible shall be provided and specified in this code.

5.5 Light, Ventilation and Sanitation. In Group F Occupancies, light, ventilation shall be specified in the chapter on Light and Ventilation.

5.6 Shaft and Exit Enclosure. Exits shall be enclosed as specified in this code.

5.7 Elevator shafts, vent shafts and other openings through floors shall be enclosed and the enclosure shall be as protected as prescribed in the NBC, FCP or this Code.

5.8 Exceptions:

5.9 In Group F, F2 Occupancies, exits shall be enclosed as specified in the provisions of this code.

5.10 In buildings housing Group F Occupancies equipped with automatic sprinkler systems throughout, enclosures need not be provided where the top of the escalators opening at each story is provided with a draft curtain and automatic fire sprinklers are installed around the perimeter of the opening within 610 mm (2 feet) of the draft curtain. The draft curtain shall enclose the perimeter of the unenclosed opening and extend from ceiling downward at least 305 mm (12 inches) on all sides. The spacing between sprinklers shall not exceed 1892 mm (6 feet).

5.11 Sprinklers and Standpipe Systems. When required by other provisions of this Code, automatic sprinkler systems and standpipes shall be designed and installed as specified under PD 1185 Fire Code of the Philippines or PD 1096-NBC which ever is more restrictive.

5.12 Special Hazards. For special hazards of Group F Occupancies, see applicable provisions in Types of Construction.

5.13 Storage and use of flammable and combustible liquids shall be in accordance with the Fire Code.

5.14 Buildings erected or converted to house high-piles combustible stock or aerosols shall comply with the Fire Code.

5.15 Equipment, machinery or appliances that generate finely divided combustible waste or the use finely divided combustible material shall be equipped with an approved method of collection and removal and shall be approved for operation only when issued with environmental pollution clearance certificate from all concerned government agencies.

SECTION 6. Requirements for Group H Occupancies

6.1 Group H Occupancies Defined.

6.1.1 General. Group H Occupancies shall include buildings or structures, or portions thereof, that involve the manufacturing, processing, generation or storage of materials that constitute a high fire, explosion or health hazard. For definitions, identification and control of hazardous materials and pesticides, and the display of nonflammable solid and nonflammable and noncombustible liquid hazardous materials in Group B, F, M, or S Occupancies, see PD 1185, the Fire Code.
hazardous materials used as refrigerants systems and the areas served by them, see also the latest referral Mechanical Code. For the application and use of control areas, see also 2-E Group H Occupancies.

6.1.1.1 H1. Occupancies with a quantity of materials in the building in excess of those listed refers to PD 1185 FCP for appropriate provisions, which present a high explosion hazard, including, but not limited to:

6.1.1.1.1 Explosives, blasting agents, Class 1.3 G (Class B, Special) fireworks and black powder. Refer to PD 1185 FCP for stringent provisions.

6.2 Exceptions:
6.2.1 Storage and use of pyrotechnic special effect materials in motion picture television, theatrical and group entertainment production when under permit as required in the Fire Code. The time period for storage shall not exceed 90 days.

6.2.2 Indoor storage and display of smokeless powder, black sporting powder, and primers or percussion caps exceeding the exempt amounts for Group M retail sales need not be classified as a Group H, H1 Occupancy where stored and displayed in accordance with the PD 1185 Fire Code.

6.2.2.1 Manufacturing of Class 1.4 G (Class C, Common) fireworks.

6.2.2.2 Unclassified detonable organic peroxide.

6.2.2.3 Class 4 oxidizers

6.2.2.4 Class 4 or Class 3 detonable unstable (reactive) materials.

6.2.2.5 H2. Occupancies where combustible dust is manufactured, used or generated in such a manner that concentrations and conditions create a fire or explosion potential; occupancies with a quantity of material in the building in excess of those allowable, which present a moderate explosion hazard or a hazard from accelerated burning, including, but not limited to:

6.2.2.5.1 Class 1 organic peroxides

6.2.2.5.2 Class 3 non-detonable unstable (reactive) materials

6.2.2.5.3 Liquid-tight sloped or recessed floors.

6.2.2.5.4 Liquid-tight floors provided with liquid-tight raised or recessed sills or dikes, or

6.2.2.5.5 Sumps and collection systems.

6.2.2.5.6 Except for surfacing, the floors, sills, dikes, sumps and collection systems shall be constructed of non-combustible materials, and the liquid-tight seal shall be compatible with the material stored. When liquid-tight sills or dikes are provided, they are not required at perimeter openings, which are provided with an open grate trench across the opening that connects to an approved collection system.

6.2.2.5.7 Secondary containment for hazardous materials liquids and solids. When required under PD 1185, Fire Code, buildings, rooms or areas used for the storage of hazardous materials liquids or solids shall be provided with secondary containment in
accordance with this section when the capacity of an individual vessels or the aggregate capacity of multiple vessels exceeds the following:

6.2.2.5.7.1 Liquids: Capacity of an individual vessel exceeds 208.2 L (55 gallons) or the aggregate capacity of multiple vessels exceeds 3785 L (1,000 gallons).

6.2.2.5.7.2 Solid: Capacity of an individual vessels exceeds 248.8 kg (550 pound) or the aggregate capacity of multiple vessel exceeds 4524.8 kg (10,000 pounds).

6.2.2.5.7.3 The building room or area shall contain or drain the hazardous materials and fire-protection water through the use of one of the following methods:

6.2.2.5.7.4 Liquid-tight sloped or recessed floors.

6.2.2.5.7.5 Liquid-tight floor provided with liquid-tight raised or recessed sills or dikes.

6.2.2.5.7.6 Sumps and collection systems, or

6.2.2.5.7.7 Drainage system leading to an approved location.

6.2.2.5.7.8 Incompatible materials shall be separated from each other in the secondary containment system.

6.2.2.5.7.9 Secondary containment for indoor storage areas shall be designed to contain a spill of the largest vessel, plus the design flow of volume of fire-protection water calculated to discharge from the fire-extinguishing system over the minimum required system design area or area of the room or area in which the storage is located whichever is smaller, for a period of 20 minutes.

6.2.2.5.7.10 A monitoring method shall be to detect hazardous materials in the secondary containment system. The monitoring method is allowed to be visual inspections of the primary or secondary containment or other approved means. Where the secondary containment is subject to the intrusion, water shall be provided. When monitoring devices are provided, they shall be connected to distinct visual or audible alarms.

6.3 DRAINAGE SYSTEMS shall be in accordance with the Plumbing Code and the following:

6.3.1 The slope of floors to drains shall be less than 1 percent.

6.3.2 Drains shall be sized to carry the volume of the fire protection water as determined by the design density discharged from the automatic fire-extinguishing system over the minimum required system design area or area of the room or area in which the storage is located, whichever is smaller.

6.3.3 Materials of construction for drainage systems shall be compatible with the materials stored.

6.3.4 Incompatible materials shall be separated from other in the drainage system, and
6.3.5 Drains shall terminate in an approved locations away from buildings, valves, means of egress, fire-access roadways, adjoining property and storm drains.

6.3.6 Spill control and secondary containment for use of hazardous materials liquids.

6.3.7 Open containers and systems

6.3.8 Spill control for hazardous materials liquids. When required by pd 1185 the Fire Code, buildings, rooms or areas where hazardous materials liquids are dispensed into vessels exceeding a 4 L (1.1 gallon) capacity or used in open systems exceeding a 20 L (5.3 gallon) capacity shall be provided with spill control.

6.3.9 Secondary containment for hazardous materials liquids. When required under PD 1185 the Fire Code, buildings, rooms or areas where hazardous materials liquids are dispensed or used in open systems shall be provided with secondary containment in accordance with the capacity of an individual vessel or system or the capacity of multiple vessels or systems exceeds the following:

6.3.9.1 Individual vessel or systems: Greater than 4 L (1.1 gallon).

6.3.9.2 Multiple vessels or systems. Greater than 20 L (5.3 gallons).

6.3.9.3 Closed containers and systems.

6.3.10 Spill control for hazardous materials liquids. When required under PD 1185 the Fire Code, buildings, rooms or areas where hazardous materials liquids are used in individual vessels exceeding a 208.2 L (55 gallon) capacity shall be provided with spill control in accordance with Chapter 2, Section 7.2.3.2.

6.3.11 Secondary containment for hazardous materials liquids. When required by the Fire Code, building, rooms or areas where hazardous materials liquids are used in vessels or systems shall be provided with secondary containment in accordance with Chapter 2, Section 7.2.3.3 when the capacity of an individual vessel or systems exceeds the following:

6.3.11.1 Individual vessel or systems: Greater than 208.2 L (55 gallons).

6.3.11.2 Multiple vessels or systems: Greater than 3785 L (1,000 gallons).

6.4 SMOKES AND HEAT VENTS. Smoke and heat venting shall be provided in areas containing hazardous materials as set forth in PD 1185 the Fire Code in addition to the provisions of this Code whichever is more restrictive.

6.5 STANDBY POWER. Standby power shall be provided in Group H, H1 and H2 Occupancies and in Group H, H3 Occupancies in which Class I or II organic peroxides are stored. The standby power system shall be designed and installed in accordance with the latest edition of referral National Electrical Code to automatically supply power to all required electrical equipment when the normal electrical supply system is interrupted.

6.5.1 Emergency power. An emergency power system shall be provided in Group H, H6 and H7 Occupancies. The emergency power system shall be designed and installed in accordance with the latest edition referral National Electrical Code to automatically supply power to all required electrical equipment when the normal electrical supply is interrupted.

6.5.1.1 The exhaust system may be designed to operate at not less than one half the normal fan speed on the emergency power system when it is demonstrated that the level of exhaust will maintain a safe pollution free atmosphere.
6.6 SPECIAL PROVISIONS FOR GROUP H, DIVISION 1 OCCUPANCIES. Group H, H1 Occupancies shall be in buildings used for no other purposes, without basements, crawl spaces or other under-floor spaces. Roofs shall be of lightweight construction with suitable thermal insulation to prevent sensitive materials from reaching its decomposition temperature or induce spontaneous combustion.

6.6.1 Group H, H1 Occupancies containing materials, which are in themselves both physical and health hazards in quantities exceeding the exempt amounts in Table 2-E, shall comply with requirements for both Group H, H1 and Group H, H7 Occupancies.

6.6.2 Special provisions for Group H, H2 and H3 Occupancies. Group H, H2 and H3 Occupancies containing quantities of hazardous materials in excess of those set forth in this code of PD 1185-FCP shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under-floor spaces.

6.6.2.1 Group H, H2 and H3 Occupancies containing water-reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water re-actives, unless isolated by approved liquid-tight construction.

6.6.3 Exception: Fire protection piping may be installed over re-actives without isolation.

6.6.3.1 Special provisions for Group H, H4, Occupancies. Group H, H4 Occupancies having a floor area not exceeding 232 m² (2,500 square feet) may have exterior walls of not less than two-hour fire-resistive construction when less than 1524 mm (5 feet) from a property line and not less than 6096 mm (20 feet) from a property line.

6.6.3.2 Special provision for Group H, H6 Occupancies. See Chapter 2, Section 7.10.

6.6 LOCATION ON PROPERTY. Group H Occupancies shall be located on property in accordance with locations as to fire zones, and other provisions of this chapter. In Group H, H2 or H3 Occupancies, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.

6.7 Exceptions:

6.7.1 Liquid use, dispensing and mixing rooms having a floor area not more than 46.5 m² (500 square feet) need not be located on the outer perimeter of the building when they are in accordance with Chapter 2, Section 7.1.3.

6.7.1.2 Liquid storage rooms having a floor area of not more than 1,000 square feet (93 m²) need not be located on the outer perimeter when they are in accordance with Chapter 2, Section 7.1.4.

6.7.1.3 Spray paint booths that comply with the provisions of PD 1185-Fire Code need not be located on the outer perimeter.

6.8 ACCESS AND MEANS OF EGRESS FACILITIES. Means of egress shall be provided as specified in the provisions of this code.

6.8.1 Access to and egress from buildings required to be accessible shall be provided as specified in the provisions of this code as to occupancy occupant load and type of construction.
6.9 LIGHT, VENTILATION AND SANITATION.

6.9.1 General. Light and ventilation shall be in accordance with provisions of this code under the chapter on Light and Ventilation.

6.9.2 Ventilation in hazardous locations. Requirements for ventilation in hazardous locations shall be provided as specified in the referral Mechanical Engineering Code on artificial ventilation and air conditioning. Refer to PD 1185 FCP for automatic smoke vents.

6.9.3 Ventilation in Group H, H4 Occupancies. Requirements for ventilation in Group H, Division 4 Occupancies shall be provided as specified in the provisions for natural ventilation or referral code on Mechanical Engineering for artificial ventilation and required air changes for the occupancy of the area.

6.10 SANITATION. The number of plumbing fixtures shall not be less than specified in the provisions in the National Plumbing Code of the Philippines.

6.11 SHAFT AND EXIT ENCLOSURES. Exits shall be enclosed as specified in the provisions as specified in the Code or PD 1185 FCP which ever is most restrictive shall govern.

6.11.1 Elevator shafts, vent shafts and other openings through floors shall be enclosed, and the enclosure shall be equipped with automatic-closing devices or dampers and/or automatic smoke vent as the case may require as per above.

6.11.2 For Group H, H6 Occupancy, refer to Type of Construction.

6.12 SPRINKLER AND STANDPIPE SYSTEMS. When required by other provisions of this Code or PD 1185-FCP, automatic fire-extinguishing systems and standpipes shall be designed and installed as specified in PD 1185 FCP.

6.13 SPECIAL HAZARDS. Chimneys and heating apparatus shall conform to the requirements of PD 1185 Fire Code of the Philippines and/or the latest edition of Referral Code on Mechanical Engineering.

6.13.1 In H4 and H5 Occupancies, devices that generate a glow, spark or flame capable of igniting flammable vapors shall be installed with sources of ignition at least 457 mm (18 inches) above the floor. See the Mechanical Code for additional restrictions.

6.13.2 Equipment or machinery that generates or emits combustible or explosive dust or fibers shall be provided with an adequate dust-collecting and exhaust system installed in conformance with the latest edition of the Referral Mechanical Code. Equipment or systems that are used to collect, process or convey combustible dust or fibers shall be provided with an approved implosion venting or containment system.

6.13.3 Combustible fiber storage with a fiber capacity not exceeding 14.2 m² (500 cubic feet) shall be separated from the remainder of the building be a two-hour fire-resistant occupancy separation.

6.14 FIRE ALARM SYSTEMS. An approved manual fire alarm system shall be provided in Group H Occupancies used for the manufacturing of organic coatings. Approved automatic smoke detection shall be provided for rooms used for the storage, dispensing, use and handling of hazardous materials as required under PD 1185 FCP.

6.14.1 For Group H, H6 Occupancies, see Chapter 2, Section 7.11.

6.14.2 For installation requirements, see PD 1185-FCP.

6.14.3 For a aerosol storage warehouse, see PD 1185-FCP.
6.15 EXPLOSION CONTROL. Explosion control, equivalent protective devices or suppression systems, or barricades shall be provided to control or vent the gases resulting from deflagrations of dusts, gases or mists in rooms, building or other enclosures as required under PD 1185-FCP so as to minimize structural or mechanical damage.

6.15.1 If detonation rather than deflagration is considered likely, protective devices or systems such as fully contained barricades shall be provided, except that explosion venting to minimize damage from less than 2.0 grams of trinitrotoluene (TNT) (equivalence) is permitted.

6.15.2 Walls, floors and roofs separating a use form an explosion exposure shall be designed to resist a minimum internal pressure of 4.79 kPa (100 psf) in additions to other design loads required.

6.15.3 Explosion venting shall be provided in exterior wall or roof only. The venting shall be designed to prevent serious structural damage and production of lethal projectiles. The aggregate clear vent relief area shall be regulated by the pressure resistance of the non-relieving portions of the building and be designed by expert in such design.

6.15.3.1 The design shall recognize the nature of material and its behavior in an explosion. Vents shall consist of any one or any combination of the to relieve at a maximum internal pressure of 958 kPa (20 psf).

6.15.3.2 Walls of lightweight material.

6.15.3.3 Lightly fastened hatch covers.

6.15.3.4 Lightly fastened, outward-opening swinging doors in exterior walls.

6.15.3.5 Lightly fastened walls or roof.

Venting devices shall discharge vertically or directly to an unoccupied yard not less than 15.240 mm (50 feet) in width on the same lot. Releasing devices shall be so located that the discharge end shall not be less than 3048 mm (10 feet) vertically and 6096mm (20 feet) horizontally from window openings and exits in the same adjoining buildings or structures. The exhaust shall always be in the direction of least exposure and never into the interior of the building unless a suitable designed shaft is provided that discharges to the exterior.

6.16 GROUP H, H6 OCCUPANCIES.

6.16.1 General. In addition to the requirements set forth in PD 1185-FCP or in this Code, the most restrictive shall govern. Group H, H6 Occupancies shall comply with the provisions of this Section and the FCP.

6.16.2 Fabrication area:

6.16.2.1 Separation and Location. Fabrication areas, whose sizes are limited by the quantity of hazardous materials (HPM) permitted under the FCP, shall be separated from each other, from corridors, and from other parts of the building by not less than one-hour fire-resistive occupancy separations. Occupied levels of fabrication areas shall not be located below or above the first story.

6.16.3 Exceptions:

6.16.3.1 Door within such occupancy separation, including doors to corridors, shall be only self-closing for assemblies having a fire protection rating of not less than three-fourths hour.
6.16.3.2 Windows between fabrication areas and corridors shall be in accordance with provisions in PD 1185 FCP, or this code, whichever is the most restrictive shall govern.

6.16.3.3 Floor. Except for surfacing, floors within fabrication areas shall be of non-combustible construction. Openings through floors of fabrication areas may be unprotected when the interconnected levels are used solely for mechanical equipment directly related to such fabrication area. When forming a part on an occupancy separation, floors shall be liquid tight.

6.16.4 SHAFT AND EXIT ENCLOSURES. Exits shall be enclosed as specified in the revisions in this code or PD 1185-FCP, which ever is most restrictive shall govern.

6.16.4.1 Elevator shafts, vent shafts and other openings through floors shall be enclosed and the enclosure shall be as specified in provisions in this code.

6.16.4.2 A fabrication area may have mechanical, duct and piping penetrations that extend through not more than two floors within that fabrication area.

6.16.4.3 The annular space around penetration cables, cable tray, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend shall be considered a single conditioned environment.

6.17 VENTILATION. REQUIREMENTS for ventilation shall be provided as specified in the provisions of this Code or PD 1096-NBC whichever is more restrictive shall govern.

6.18 TRANSPORTING HAZARDOUS PRODUCTION MATERIALS (HPM). Hazardous production materials shall be transported to fabrication areas through enclosed piping or tubing systems that comply with applicable provisions in PD 1185 FCP. The handling or transporting of hazardous production materials within service corridors shall comply with the PD 1185 Fire Code of the Philippines.

6.19 ELECTRICAL. Electrical equipment and devices within the fabrication area shall comply with the latest NBC referral Electrical Code. The requirements for hazardous locations need not be applied when the average air change is at least four times as set forth in latest edition of referral Mechanical Engineering Code on artificial ventilation and when the number of air change at any location is not less than three times that required.

6.19.1 Electrical equipment and devices within 1524 mm (5 feet) of work stations in which flammable or pyrophoric gases or flammable liquids are used shall be in accordance with the latest referral Electric Code for Class 1, H2 hazardous locations. Work stations shall not be energized without adequate exhaust ventilation.

6.20 Exceptions:

6.20.1 Class 1, H2 hazardous electrical is not required when the air removal from the work station or dilution will provide non-flammable atmosphere on a continuous basis.

6.21 Corridors. Corridors shall comply with Section 1004.3.4 and shall be separated from fabrication areas as specified in types of construction fire resistivity ratings corridors shall not be used for transporting hazardous production materials except as provided in PD 1185 FCP.
6.22 Exceptions:

6.22.1 In existing Group H, H6 Occupancies when there are alterations or modifications to existing fabrication areas, the building official may permit the transportation of hazardous production materials (HPM) in corridors subject to the requirements of the PD 1185 Fire Code and as follows:

6.22.1.1 The length of the cement wall of the corridor and the fabrication area, and

6.22.1.2 For the distance along the corridor to the point of entry of HPM into the corridor serving the fabrication area.

6.22.1.3 There shall be an emergency telephone system and/or a manual local alarm pull station or approved signal device within corridors at not more than 45.720 mm (150-foot) intervals or fraction thereof and at each stair doorway. The signal shall be relayed to the emergency control station and a local signaling device shall be provided.

6.22.1.4 Sprinkler protection shall be design in accordance with UBC Standard 9-1 for Ordinary Hazard Group 3, except that when one row of sprinklers is used in the corridor protection, the maximum number of sprinklers that need be calculated as per UBC Standard 9-1 is a part of this Code.

6.22.1.5 Self-closing doors having a fire protection rating of not less than one hour shall separate pass-through from existing corridors. Pass-through shall be constructed as required for the corridors. Pass-through shall be protected by an approved automatically fire sprinkler system.

6.22.1.6 Service corridors. Service corridors shall be separated from corridors as required.

6.22.1.7 The maximum travel distance from any point in a service corridor to an exit or door into a fabrication area shall not exceed 22.860 mm (75 feet). Dead ends shall not exceed 1219 mm (4 feet) in length. There shall not be less than two means of egress, and not more than one-half of the required means of egress shall be into fabrication area. Doors from service corridors shall swing in the direction of egress and shall be self-closing.

6.22.1.8 The minimum clear width of a service corridor shall be 1524 mm (5 feet), or 838 mm (33 inches) wider than the widest cart or truck used in the corridor, whichever is greater.

STORAGE OF HAZARDOUS PRODUCTION MATERIALS.

6.23.1 Construction. The storage of hazardous production materials in quantities greater than those listed allowable shall be in liquid storage rooms. HPM rooms or gas rooms, as required by PD 1185-FCP, HPM rooms and gas rooms shall be separated from all other areas by not less than a two-hour fire-resistive occupancy separation when the area is 27.9 m² (300 square feet) or more, not less than one-hour fire-resistive occupancy separation when the area is less than 27.9 m² (300 square feet).

6.23.2 Except for surfacing, floors of storage and HPM rooms shall be non-combustible liquid-tight construction. Raised grating over floors shall be non-combustible materials provide for minimum sill requirements for liquid storage rooms as prescribed in FCP.

6.23.3 Location within Building. When HPM rooms are provided, they shall have at least one exterior wall and such wall shall not be less than 9144 mm (30 feet) from
property lines, including property lines adjacent to public ways. Explosives control shall be provided when required.

6.23.4 Means of Egress. When two means of egress are required for HPM rooms, one shall be directly to the outside of the building.

6.23.5 Ventilation. Mechanical exhaust ventilation shall be provided in liquid storage rooms. HPM rooms and gas rooms at the rate of not less than 0.044 L/s/m² (1 cubic foot per minute per square foot) of floor area or six air changes per hour, whichever is greater, for all categories of material.

6.23.5.1 Exhaust ventilation for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding areas and direct the exhaust ventilation to an exhaust system.

6.24 FIRE AND EMERGENCY ALARM. An approved manual fire alarm system shall be provided throughout buildings containing Group H, H6 Occupancies.

6.24.1 An approved emergency alarm system shall be provided for HPM rooms, liquid storage rooms and gas rooms. Emergency alarm-initiating devices shall be installed outside of each interior door of such rooms. Activation of an emergency alarm-initiating device shall sound a local alarm and transmit a signal to the emergency control station.

6.25 FOR INSTALLATION REQUIREMENTS, refer to PD 1185-FCP.

6.25.1 Electrical wiring and equipment in HPM rooms, gas rooms and liquid storage rooms shall comply with the latest edition of referral Electrical Code of the Philippines.

6.25.2 Piping and Tubing.

6.25.2.1 General. Hazardous production materials piping and tubing shall comply with this section and shall be installed in accordance with internationally acceptable standards. Piping and tubing systems shall be metallic unless the material being transported is incompatible with such system. Systems supplying gaseous HPM having a health hazard ranking of 3 or 4 shall be welded throughout, except for connections, valves and fittings, HPM to the systems which shall be within a ventilated enclosure, hazardous production materials supply piping or tubing in service corridors shall be exposed to view.

6.25.3 Installations in Corridors and Above Other Occupancies. Hazardous production materials shall not be located within corridors or above areas not classified as Group H, H6 Occupancies except as permitted by this Section.

6.25.4 Hazardous production material piping and tubing may be installed within the space defined by the walls of corridors and the floor or roof above or in concealed spaces above other occupancies under the following conditions:

6.25.4.1 Automatic sprinklers shall be installed within the space unless the space is less than 152mm (6 inches) in least dimension.

6.25.4.2 Ventilation at not less than six air changes per hour shall be provided. The space shall not be used to convey air form any other area.

6.25.4.3 When the piping or tubing is used to transport HPM liquids, a receptor shall be installed below such piping or tubing. The receptor shall be designed to collect any discharge or leakage and drain it to an approved location. The one-hour enclosure shall not be used as part of the receptor.
6.25.4.4 All HPM supply piping and tubing and HPM non-metallic waste lines shall be separated from the corridor and from any occupancy other than Group H, H6 by construction as required for walls or partitions that have a fire-protection rating of not less than one hour. When gypsum wall board is used, joints on the piping side of the enclosure need not be taped, provided the joints occur over framing members. Access openings into the enclosure shall be protected by approved fire assemblies.

6.25.4.5 Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on piping and tubing other than waste lines at the following locations.

6.25.4.5.1 At branch connections into the fabrication area.

6.25.4.5.2 At entries into corridor.

6.25.4.5.3 Excess flow valves shall be installed as required under PD 1185-FCP.

6.25.4.5.4 Identification. Piping, tubing and HPM waste lines shall be identified in accordance with internationally recognized color code standards to indicate the material being transported.

6.26 HELIPORTS. Heliports may be erected on buildings or other locations if they are constructed in accordance with internationally accepted standards or approval.

SECTION 7. Requirements for Group I Occupancies.

7.1 Group I Occupancies Defined. Group I Occupancies shall be institutional.

7.1.1 11.1. Nurseries for the full-time care of children under the age of six (each accommodating more than five children).

7.1.2 Hospitals, sanitariums, nursing homes with non-ambulatory patients and similar buildings (each accommodating more than five patients).

7.1.3 11.2. Health-care centers for ambulatory patients receiving outpatient medical care that may render the patient incapable of unassisted self-preservation (each tenant space accommodating more than five such patients).

7.1.4 12. Nursing homes for ambulatory patients, homes for children six years of age or over (each accommodating more than five patients or children).

7.1.5 13. Mental hospitals, mental sanitariums, jails, prisons, reformatories and buildings where personal liberties of inmates are similarly restrained.

For Occupancy Separations comply with provision in this code or PD 1185-FCP whichever is most restrictive.

7.2 Exceptions:

7.2.1 Group I Occupancies shall not include buildings used for private residential purposes for a family group.

7.2.2 Construction, Height and Allowable Area shall be in accordance with this code.

7.2.3 General. Buildings or parts of buildings classed in Group I as per the use or character of the occupancy shall be limited to the types of construction set forth in this code and shall not exceed, in area or height, the limits specified in NBC, FCP or this Code which is most restrictive shall apply.
7.3 Exceptions:

7.3.1 Hospitals and nursing homes classified as Group I, 1.1 Occupancies, and health-care centers for ambulatory patients classified as Group I, 1.2 Occupancies that are equipped with an automatic sprinkler system throughout shall not exceed one story in height when in Type III One-hour, Type IV or Type V One-hour construction.

7.3.2 Hospitals and nursing homes classified as Group I, 1.1 Occupancies, and health-care centers for ambulatory patients classified as Group I, 1.2 Occupancies that are equipped with automatic sprinkler systems throughout may be five stories when of Type II-F.R. construction and three-stories when of Type II One-hour construction. The allowable area increase the number of storeys in the building is one less than set forth above.

7.3.3 Hospitals and nursing homes classified as Group I, 1.1 Occupancies and health-care centers for ambulatory patients classified as Group I, 1.2 Occupancies that are equipped with automatic sprinkler systems throughout may be housed within one-story buildings of Type II-N construction. The area of such building shall not exceed 1254 m² (13,500 square feet) plus the allowable area increase for separation by public space or yards as set forth in Chapter 3, Section 11.1.

7.4 Specific-use Provisions.

7.4.1 Group I, 1.1 Smoke Barriers. Floor levels of Group I, 1.1 Occupancies used by in-patients for sleeping or treatment, or having an occupant load of 50 or more, shall be divided into at least two compartments by smoke barriers of not less than one-hour fire resistance meeting the requirements of the provisions of this code or PD 1185-FCP. The area within a smoke-control zone shall not exceed 2090 m² (22,500 square feet) and its width of length shall not exceed 45,720 mm (150 feet). The area of a smoke zone shall not be less than that required to accommodate the occupants of the zone plus the occupants form any adjoining zone. Not less than 2.8 m² (20 square feet) not clear floor area for bed and litter patients and 0.6 m² (6 square feet) net clear floor area for other occupants shall be used to compute the required areas.

7.4.2 Doors in smoke barriers shall be tight-fitting smoke- and draft-control assemblies having a fire-protection rating of not less than 30 minutes and shall comply with the provisions as PD 1185-FCP. When doors are installed across corridors, a pair of opposite-swinging doors without a center mullion or horizontal sliding door that comply with PD 1185-FCP standards shall be installed. Smoke barriers doors shall:

7.4.3 Conveyance Systems. Elevators, escalators, cable cars, horizontal conveyors, and other similar devices (vertical, diagonal, horizontal, and suspended types).

7.4.4 Process Automation. Industrial application particularly for manufacturing/production operations and other similar devices.

7.4.5 Automated Maintenance Systems. Gondola systems, portable personal lifts, trailer-mounted boom lifts, self-propelled aerial work platforms, and other similar devices.

7.4.6 Lighting Control Systems. Dimming and programmable lighting control systems and other similar devices.

7.4.7 Office Automation Systems. Facsimile machines, multi-media projection systems, modular furniture, multiple language systems, and other similar devices.

7.4.8 Paging Systems. Public address with piped-in/background music and other similar devices.

7.4.9 Automation-Assisted Accessibility Systems. Stairway lifts, spa-lifts (external and internal type), ceiling and portable-mounted lifts, personal lifts, permanent and semi-permanent ramps, and other similar devices.
7.4.10 Home Automation System. Fire, security, monitoring and control systems, sensors/detectors, stand-alone type access control systems, and other similar devices.
7.4.11 Homes, Banks, Offices and Commercial, Industrial establishment direct security systems connection to police GHQ or military or rescue and operations agencies.

SECTION 8.

For detailed electronics and communication, design, procurement and installations reference to official referral 'Electronics and Communications Engineering Code' as approved by the Secretary of DPWH under the purview of PD 1096-NBC.

SECTION 9.

PD 1096-NBC Section 1902 Program Documents, as is adopted in this Chapter as Section 3.

SECTION 10.

PD 1096-NBC Section 1903 Submission of Computer Generated Computation as is adopted in this Chapter as Section 4.
CHAPTER 5

TYPES OF CONSTRUCTION

SECTION 1. Title

1.1 General. Chapter 4, Sections 401 to Section 403 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 2. Classification of All Buildings by Type of Construction

2.1 General. The requirements of this Chapter are for the various types of construction and represent varying degrees of public safety as to resistance to fire. Every building are here under classified into various types of construction. Any building that does not entirely conform to a type of construction as set forth in this code shall be classified into a type having a lesser degree of fire resistance.

2.1.1 A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type that meets the minimum requirements based on occupancy even though certain features of such building actually conform to a higher type of construction.

2.1.2 Specific material is given for each type of construction. For fire-resistive protection. Such requirements shall be the minimum requirements, and any materials, types of construction or fire-resistive protection that will afford equal or greater public safety or resistance to fire, as specified in this Code, may be used.

2.2 Mixed Types of Construction. When a building contains more than one distinct type of construction, the area of the entire building shall not exceed the maximum area permitted for the given types of construction.

2.3 Exception:

Each portion of a building separated by one or more area separation walls as specified in this Code may be considered a separate building for the purpose of classification of types of construction. The fire-resistive time period for such type of construction separation shall not be less than the most restrictive requirement given therefor.

2.4 Standards of Quality. The standards listed below labeled as "UBC Standard", and are made part of this Code. The other standard listed below are recognized standards unless this Code specifies more restrictive standards.

2.4.1 Building Paper.

2.4.2 UBC Standard 14-1, Kraft Waterproof Building Paper.


2.4.4 Potential heat of building materials.

2.4.4.1 UBC Standard 26-1. Test Method to Determine Potential Heat of Building Materials.

2.4.5 Foam plastic tests.

2.4.5.1 UBC Standard 26-2, Test Method for the Evaluation of Thermal Barriers.
2.4.5.2 Factory Mutual Standard Fire Test Standard for Insulated Deck Construction.

2.4.6 Underwriters Laboratories Inc., 1256, Fire Test Standard for Insulated Roof Deck Construction.

2.4.6.1 UBC Standard 26-3, Room Fire Test Standard for Interior of Foam Plastic Systems.


2.4.6.3 UNC Standard 26-8, Room Fire Test Standard for Garage Doors Using Foam Plastic Insulation.

2.4.6.4 UBC Standard 26-9, Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-load Bearing Wall Assemblies Containing Combustible Components Using the Intermediate-Scale, Multistory Test Apparatus.

2.5 Roofing.


2.5.1.1 UBC Standard 15-2, Test Method for Determining the Fire Retardancy of Roofing Assemblies.

2.5.1.2 Surface-burning characteristics and fire resistance of building materials and assemblies.

2.5.1.3 UBC Standard 7-1, Fire Test of Building Construction and Materials.

2.5.1.4 UBC Standard 8-1, Test Method for Surface-burning Characteristics of Building Materials.

2.6 Self-ignition properties of plastics.

2.6.1 UBC Standard 26-6, Ignition Properties of Plastics.

2.7 Fire Dampers.

2.7.1 UL 555, Fire Dampers.

2.8 Structural Frame. The structural frame shall be considered to be the columns and the girders, beams, trusses, and spandrels having direct connections to the columns and tracing members designed to carry gravity loads. The members of floor or roof panels that have no connection to the columns shall be considered secondary members and not a part of the structural frame.

2.9 Exceptions.

2.9.1 General. The provisions of this section are Exceptions as to the construction requirements.

2.9.2 Fixed Partitions.

2.9.3 Stores and Offices. Interior nonload-bearing partitions dividing portions of stores, offices or similar places occupied by one tenant only and that do not establish a
corridor that is required to be of fire-resistant construction under the provisions as resistive construction under the provisions of this Code:

2.9.3.1 Non-combustible materials.

2.9.3.2 Fire-retardant-treated wood.

2.9.3.3 One-hour fire-resistant construction.

2.9.3.4 Wood panels or similar light construction up to three-fourths the height of the room in which placed; when more than three-fourths the height of the room, such partitions shall not have less than the upper one-fourth of the partition constructed of glass.

2.10 Hotels and Apartments. Interior non load-bearing partitions within individual dwelling units in apartment houses and guest rooms or suites in hotels when such dwelling units, guest rooms or suites are separated from each other and from corridors by not less than one-hour fire-resistant construction may be constructed of:

2.10.1 Non-combustible materials or fire-retardant-treated wood in buildings of any type of construction, or

2.10.2 Combustible framing with non-combustible materials applied to the framing in buildings of Type III or V construction.

2.10.3 Openings to such corridors shall be equipped with doors conforming to provisions of this code in regard to the occupant load served.

2.10.4 Plastic or glass partitions shall conform to provisions of this code.

2.10.5 Folding, Portable or Movable Partitions. Approved folding, portable or movable partitions shall have a fire-resistant rating, based on occupancy and occupant load.

2.10.5.1 They do not block required exit-access doors (without providing alternative conforming exits or exit-access doors) and they do not establish a corridor.

2.10.5.2 Their location is restricted by means of permanent tracks, guides or other approved methods.

2.10.5.3 Flammability shall be limited to materials having a flame-spread classification as set forth in provisions as promulgated by the UAP for rooms or areas.

2.11 Walls Fronting on Streets or Yards. Regardless of fire-resistant requirements for exterior walls, certain elements of the walls fronting on streets or yards having a width of 12,192mm (40 feet) may be constructed as follows:

2.11.1 Bulkheads below show windows, show-window frames, aprons and showcases may be of combustible materials, provided the height of such construction does not exceed 4572mm (15 feet) above grade.

2.11.2 Wood veneer of boards not less than 25 mm (1-inch) nominal thickness or exterior-type panels not less than 9.5 mm (\(\frac{3}{8}\)-inch) nominal thickness may be applied to walls, provided the veneer does not exceed 4572 mm (15 feet) above grade, and further provided such veneer shall be placed either directly against non-combustible surfaces or furred out from such surfaces not to exceed 41 mm (15/16 inches) with all concealed spaces fire-blocked as provided in provisions of this code. Where boards, panels and furring as described above comply with provisions of this Code.
2.11.3 Trim. Trim, picture molds, chair rails, baseboards, handrails and show-window backing may be of wood. Unprotected wood doors and windows may be used except where openings are required to be fire protected.

2.11.4 Foam plastic trim covering not more than 10 percent of the wall or ceiling area may be used, provided such trim (1) has a density of no less than 320 lbf/ft³ (20 pounds per cubic foot), (2) has a maximum width of 102 mm (4 inches), and (3) has a flame-spread rating no greater than 75.

2.11.5 Materials used for interior finish of walls and ceilings, including wainscoting, shall be of specified fire resistivity given in this Code.

2.12 Loading Platforms. Exterior loading platforms may be of noncombustible construction or heavy-timber construction with wood floors not less than 51 mm (2-inch) nominal thickness. Such wood construction shall not be carried through the exterior walls.

2.13 Insulating Boards. Combustible insulating boards may be used under finished flooring.

2.14 Walls within Health-care Suites. In health-care suites that comply with this Code, interior non load-bearing partitions of noncombustible construction need not be of fire-resistive construction. In buildings of combustible construction, interior nonload-bearing partitions within suites may be combustible framing covered with noncombustible materials having approved thermal barrier with an index of IS in accordance UBC Standard 26-2.

SECTION 3. Classification of All Buildings by Types of Construction

3.1 General. The requirements of this Chapter are minimum for the varying degrees of public safety and resistance to fire. Every building proposed for construction shall be identified according to the following:

3.1.1 All high-rise buildings shall mandatorily be provided with adequate smoke/heat early detection devices, fire alarm (voice communication) system and effective automatic fire suppression systems for all types of fires as required in PD 1096-NBC-IRR and/or PD 1185-FCP aside from practically zero (0) fire spread construction assemblies of internationally accepted standards; provide from adequate smoke vent, all floors exhausting through roof provided with automatic self-operating assembly of 3-4 hour fire resistive aside form smoke proof fire stairs conforming to provision on PD 1096-NBC or PD 1185-FCP as approved international standards of practice.

3.1.2 Other subtypes or division not within Types I to V shall be as approved by the Secretary as recommended by UAP through the Board of architecture. Any building which does not conform entirely to and type of construction herein set forth shall be classified into a type having an equal or lesser degree of fire-resistive of the building.

Type I. Buildings.

Definition. The structural elements in Type I fire-resistive buildings shall be of steel, iron, reinforced concrete or masonry.

Walls and permanent partitions shall be of noncombustible fire-resistive construction except that permanent nonbearing partitions shall be of two-hour fire-resistive construction Elements which are not part of a shaft enclosure, may have fire-retardant-treated wood within the assembly.

Materials of construction and fire-resistive requirements shall be as specified in hereunder

Structural Framework. Structural framework shall be of structural steel or iron, reinforced concrete or reinforced masonry as specified in this Code.
Exterior Walls and Openings.

Exterior Walls. Exterior walls and all structural members shall comply with the requirements specified and the fire-resistive provisions set forth in this Code.

Openings in Walls. All openings in exterior walls shall conform to the requirements of this Code.

Stairway Construction. Stairways shall be constructed of reinforced concrete, iron or steel with tread and risers of concrete, iron or steel. Brick marble, tile or other hard noncombustible materials may be used for the finish of such treads and risers.

Roofs. Except in retail sales and storage areas classified as Groups M and S, Division 1 Occupancies and in Group H Occupancies, roofs and their members, other than the structural frame, may be of unprotected noncombustible materials when every part of the roof framing, including the structural frame, is 7620 mm (25 feet) or more above the floor, balcony or gallery immediately below.

Heavy-timber members in accordance with Chapter 3, Section 5.6 may be used for such unprotected members in one-story buildings.

When every part of the structural framework of the roof of a group A or E Occupancy or an atrium is not less than 7620 mm (25 feet) above any floor, balcony or gallery, fire protection of all members of the roof construction, including those of the structural frame, may be used for such unprotected members in one-story buildings.

Roofs of unprotected noncombustible or heavy-timber construction conforming to Chapter 3, Section 5.6.4 may be less than 25 feet (7620 mm) above any floor, balcony or gallery of a Group A, Division 2.1 occupancy having an occupant load of 10,000 or more when all of the following conditions are met.

The building is not more than one story in height, except for multilevel areas located under the roof and used for locker rooms, exiting, concession stands, mechanical rooms and other accessory to the assembly room.

The area in which the roof clearance is less than 7620 mm (25 feet) does not exceed 35 percent of the area encompassed by the exterior walls.

An approved supervised automatic sprinkler systems shall be installed throughout.

Where every part of the structural steel framework of the roof of a Group A or E Occupancy is more than 5486 mm (18 feet) and less than 7620 mm (25 feet) above any floor, balcony or gallery, the roof construction shall be protected by a ceiling of not less than one-hour fire-resistive construction.

Roofing coverings shall be as specified in provisions of this Code.

Architectural / Structural Elements of the Building

1.15.1 Structural Framing Completely similar to Type III and Type IV construction but completely of noncombustible construction assemblies.

1.15.2 Flooring Voids resulting from wood flooring on sleepers laid on concrete floor and voids of partitions laid over 1 shall be filled with non-combustible material or fire stop.

1.15.3 Exterior Cladding All similar to Type IV Buildings except that all assemblies are with fire-resistance rating from 3-hours to 4-hours depending upon the type of occupancies, or whether medium or high rise construction.

1.15.4 Interior Walls/Partitions Completely noncombustible or 2-hour fire resistive acoustical material on metal runners/hangers.
1.15.6 Stairs
Completely noncombustible. Provide smoke proof emergency fire stairs as per approved internationally accepted standards and operating details.

1.15.7 Mouldings and Trims
Ultra high rise construction 20-storeys or more shall be limited to Type V Building Construction with fire resistive assemblies not less than 3-hours.

1.15.8 Windows and Doors
Similar to Type IV or better.

1.15.9 Transoms
Similar to Type IV or better

1.15.10 Roofing
Similar to Type IV or better

Type II. Buildings

2.1 Definition. Type II Buildings shall be of steel, iron, concrete or masonry construction. Walls, ceilings, and permanent partitions shall be of incombustible fire-resistive construction, except that permanent non-bearing partitions may use fire-retardant treated wood within the (noncombustible) framing assembly.

2.1.1 The structural elements of Type II One-hour buildings shall be of noncombustible materials.

2.1.2 Floor construction of Type II One-hour buildings shall be of noncombustible material, provided, however, that a wood surface or finish may be applied over such noncombustible material as per Type I flooring requirements.

2.1.3 Walls and permanent partitions of Type II-F.R. buildings shall be of noncombustible fire-resistive construction, except that permanent non-bearing partitions of one-hour or two-hour fire-resistive construction, which are not part of a shaft enclosure, may have fire-retardant-treated wood within the assembly.

2.2 Type II one-hour buildings shall be of noncombustible construction and one-hour fire resistive throughout, except that permanent non-bearing partitions may be use fire-retardant-treated wood within the assembly, provided fire-resistive requirements are maintained.

2.2.1 Walls and permanent partitions of Type II-N buildings shall be of noncombustible materials.

2.2.2 Materials of construction and fire-resistive requirements shall be as specified in this code conforming with all applicable requirements due to occupancy.

2.3 Structural Framework. Structural framework shall be as specified in Chapter 4 for iron and steel, concrete and masonry.

2.4 Exterior Walls and Openings.

2.5 Exterior Walls. Exterior walls and all structural members shall comply with the requirements specified in chapter 3, Section 9 and Table 3-A and the fire-resistive provisions set forth in Table 3-I-A.

2.5.1 Openings in Walls. All openings in exterior walls shall conform to the requirements of Chapter 3, Section 9.2 and Table 3-A.

2.6 Stairway Construction. Stairways of Type II-F.R. buildings shall be constructed of reinforced concrete, iron or steel with tread and risers of concrete, iron or steel. Brick, marble, tile or other hard noncombustible materials may be used for the finish of 1 such treads or risers. Stairways of Type II, One-hour and Type II-N buildings shall be of noncombustible construction.
2.6.1 Exception:

2.6.1.1 On stairs not required to be enclosed provisions shall be as per detailed under PD 1185 FCP, the finish material of treads and risers may be of any material permitted by the code.

2.6.1.2 Stairways shall comply with the requirements of provisions of this Code.

2.7 Roofs. Roofs shall be of noncombustible construction, except that in Type II-F.R. and Type II One-hour buildings, roofs may be as specified in Chapter 3, Section 2.5.

2.7.1 Roof coverings shall be as specified in provisions of this Code.

2.8 NOTE: Type II Buildings with wooden floor system, even with fire protective/resistive construction, shall be limited to not more than three (3)-storeys with limited floor areas with or without sprinkler system as prescribed in this Code or PD 1096-NBC or PD 1185 FCP whichever is most restrictive.

2.9 Architectural/ Structural Elements of the Building

2.9.1 Structural Framing Assembly

Columns, girders, beam, joists, roof framings, roof girts, framings shall be composite structural steel; Cast-in-place reinforced concrete (post-tension or pre-tensioned); structural steel with cementitious fire-resistant covering; pre-cast pre-stressed construction, combined with CIP reinforced concrete construction.

2.9.2 Flooring

Pre-cast all of pre-stressed concrete joist combined with CIP concrete construction; structural steel joints of solid or open web construction with fire-protective cementitious stucco (vermiculite or perlite) work, combined with precast – prestressed concrete slab with CIP concrete topping; completely cast-in-place reinforced concrete construction (may be post-tensioned); and non-composite or composite metal deck with cast-in-place concrete.

2.9.3 Exterior Cladding

Concrete masonry unit (CHB), cast-in, place concrete; pre-cast pre-stressed prefabricate slab wall (large prefabricated units). Fiber glass reinforced concrete; calcium silicate or fiber cement board; sheet metal preformed with non-combustible filler. Prefab with or without composite filler with rigid noncombustible insulation slab, cement stucco on expanded metal lath with structural steel and metal furring. All the above with or without veneering or decorative wainscotting such as marble, granite, vitrolite, terra cotta, ceramic slabs and other finishes.

2.9.4 Interior Walls and Partitions

Calcium silicate/fiber cement board of substantial thickness 25 (1") min; concrete masonry unit; terra cotta; wood particle portland cement board panels with cement plaster finish; pre-cast or tilt-up reinforced concrete slabs; CIP reinforce concrete; cement stucco work on metal furring and expanded metal lath; double faced 3.18 (1/8") to 4.76 (1/16") thick fiber cement board with styrofoam or rigid urethane core or filler or any similar noncombustible construction and pre-cast glass
fiber reinforced concrete, structural glass blocks.

2.9.5 Ceiling

Acoustical-thermal insulation - fire-rated ceiling board on metal "T" suspension framing system; cement stucco work on metal furred expanded metal lath with keen cement finish. Include all as listed under Type III Building plus pre-moulded/perforated acoustical as metal suspended ceiling.

2.9.6 Stairs

All similar to Type III Buildings but not including any wooden construction even if provided with fire protection covering.

2.9.7 Mouldings and Trims

All similar to Type III Buildings and include extruded aluminum, preformed metal section. Precast Plastic of Paris or cement decorative mouldings; preformed or extruded metal trims, fascias, etc.

2.9.8 Windows and Doors

Steel aluminum extruded frames or PVC extruded sections reinforced with aluminum or steel tubular sections with glass glazing plain or wire or tempered.

2.9.9 Transoms

All similar to Type III but completely of noncombustible construction.

2.9.10 Roofing

All similar to Type III Buildings plus precast or cast-in-place R.C. with membrane water proofing and with vitrified non-glazed tiles or cement tiles; plain cement plaster with integral hardener surface finish.

NOTE: Type II Buildings with wooden floor system, even with fire protective/resistive construction, shall be limited to not more than three (3)-storeys with limited floor areas with or without sprinkler system as prescribed for in this Code.

Type III. Buildings.

3.1 Definition. Type III Buildings shall be of masonry and wood construction. Structural elements may be any material permitted in this Code provided that the building shall be one-hour fire-resistive throughout. Exterior walls shall be of noncombustible fire-resistive construction.

Type III One-hour buildings shall be of one-hour fire-resistive construction throughout.

3.2 Structural Framework. Structural framework shall be of steel, iron, concrete, masonry, or wood, as specified in Chapter 4 and this Chapter.

3.3 Exterior Walls. Openings, and Partitions.

3.3.1 Exterior Walls. Exterior walls shall be constructed of noncombustible materials and shall comply with the fire-resistive requirements set forth in Chapter 3, Section 9 and Tables 3-A and 3-I-A.

3.3.2 Openings in Walls. Openings in exterior walls shall conform to the requirements of Chapter 3, Section 9.2 and Table 3-A.

3.3.3 Partitions. Bearing partitions, when constructed of ply with provisions as promulgated by the UAP.
3.4 Stairway Construction.

3.4.1 General. Stairways shall comply with the requirements of this Code.

3.4.2 Interior. Interior stairways serving buildings not exceeding three stories in height may be constructed of any material permitted by this Code.

In buildings more than three stories in height, interior stairways shall be constructed as required for Type I buildings.

3.4.3 Exterior. Exterior stairways shall be of noncombustible materials except that on buildings not exceeding two stories in height, they may be of wood not less than 2 inches (51 mm) in nominal thickness.

3.5 Roofs. Roof coverings shall be as specified in this Code.

3.5.1 Except in retail sales and storage areas classified as Group M or S, Division I Occupancies and in Group I Occupancies, roofs and their members other than the structural frame may be of unprotected noncombustible materials when every part of the roof framing, including the structural frame, is 25 feet (7620 mm) or more above the floor, balcony, or gallery immediately below. Heavy-timber members in accordance with Chapter 3, Section 3.6 may be used for such unprotected members in one-storey buildings.

3.6 Architectural/Structural Element of the Building

3.6.1 Structural Framing All elements of the building wooden construction completely similar to Type II Building. For all metal (steel) construction as steel lally columns, steel roof framing (trusses and purlins) spray treat or paint with fire/heat resistive emulsions or coating of 1-hour fire-resistive rating; columns/posts apply fire protective covering 38.11 (1-1/2") thk. cement stucco on metal lath or cement mortar mixed with vermiculite or perlite.

3.6.2 Flooring Similar to Type II and may include pre-cast reinforced concrete or cast-in-place reinforced concrete floor.

3.6.3 Exterior Walls / Cladding Interior All similar to type II and may use concrete masonry units, adobe, bricks or terra cotta; pre-cast / tilt-up or CIP reinforced concrete panels; cement stucco work throughout expanded metal lath over cold rolled steel framing system.

3.6.4 Partitions Fiber cement, calcium silicate and/or portland cement bonded wood particle board 50 (2") thick / pre-cast reinforced concrete paneling, cement stucco work on expanded metal lath with cold rolled steel framing system; concrete masonry unit, brick or terra cotta; glass blocks.

3.6.5 Ceiling All similar to Type II Building and/or cement stucco with keen cement finish work on expanded metal lath on cold rolled furring steel framing.

3.6.6 Stairs Similar to Type II Building by protected under surface and sides (stringers) with fire-resistive materials as used in Type N. II partitions and/or use of structural or mild
steel built-up sections and covered / finished with cement
stucco work similarly applied as in Type II partitions; all
reinforced concrete construction with wood handrail and
steel balustrades. Built-up completely structural steel
with adequate fire-resistive coating.

3.6.7 Mouldings
All similar to Type II Buildings and/or pre-cast moulded
plaster of Paris or any cementitious materials or extruded
PVC sections.

3.6.8 Window and Doors
All similar to Type II Buildings and/or use of
standardized extruded frame sections of steel, aluminum,
PVC with steel or aluminum extruded section including
fire-rated metal and tempered glass doors.

3.6.9 Transoms
All similar to Type II Buildings or open reinforced or cut-
out metal sheets WI grille or welded/expanderd metal.

3.6.10 Roofing
All similar to Type II Buildings / include CIP reinforced
concrete or pre-cast pre-stressed concrete deck / concrete
composite metal decks, pre-cast / cast-in-place concrete
or standard extruded structural steel or open web long
pre-engineered span structural joints with R.C. slab.

Type IV. Buildings.

Definition. Type IV Buildings shall be of wood construction with protective fire-resistant
materials and one hour fire-resistant throughout. Except permanent non-bearing partitions may use
fire-retardant treated wood within the framing assembly.

Types IV Construction shall conform to Chapter 3, Section 5.6, except that permanent
partitions and members of the structural frame may be of other materials, provided they have a
fire-resistance of not less than one hour.

Structural Framework. Structural framework shall be of steel or iron, concrete,
masonry or wood, as specified in Chapter 4 and this Chapter.

4.3 Exterior Walls, Openings and Partitions.

4.3.1 Exteriors Walls. Exterior walls shall be constructed of noncombustible materials and
shall comply with the fire-resistive requirements set forth in Chapter 3, Section 9
and Tables 3-A and 3-I-A.

4.3.2 Openings in Walls. Openings in exterior walls shall conform to the requirements of
Chapter **, Section 9 and Tables 3-A and 3-I-A.

4.3.3 Partitions. Bearing partitions, when constructed of wood, shall comply with
provisions of this Code.

4.4 Stairway Construction.

4.4.1 General. Stairways shall comply with the requirements of this Code or NBC
whichever is more restrictive.

4.4.2 Interior. Interior stairways serving buildings not exceeding three stories in height
may be constructed of wood or as required for Type I buildings. If constructed of
wood, treads and risers shall not be less than 2 inches (51 mm) in thickness, except
where built on laminated or plank inlines as required for floors, where they may be
of 1-inch (25 mm) thickness. Wood stair stringers shall be a minimum of 3 inches (76 mm) in thickness and not less than 2.54 mm (10 inches) in depth.

In buildings more than three stories in height, interior stairways shall be constructed as required for Type I buildings.

4.4.3 Exterior. Exterior stairways shall be of noncombustible material except that on buildings not exceeding two stories in height they may be of wood not less than 2 inches (51 mm) in nominal thickness.

4.5 Roofs. Roof coverings shall be as specified in this Code.

4.6 Heavy-timber Construction.

4.6.1 General. Details of heavy-timber construction shall be in accordance with the provisions of this Section. Unless otherwise specified, all dimensions are nominal.

4.6.2 Columns. Wood columns may be of sawn timber or structural glued-laminated timber not less than 203 mm (8 inches) in any dimension when supporting roof or loads except as specified in Chapter 3, Section 5.6.4.

4.6.2.1 Columns shall be continuous or superimposed and connected in an approved method of joint.

4.6.3 Floor Framing. Beams and girders may be of sawn timber or structural glued-laminated timber and shall not be less than 6 inches (152 mm) in width and not less than 10 inches (254 mm) in depth.

4.6.3.1 Framed sawn timber or structural glued-laminated timber arches, which spring from the floor line and support floor loads, shall not be less than 8 inches (203 mm) in any dimension.

4.6.3.2 Framed lumber or structural glued-laminated timber trusses supporting floor loads shall have members of not less than 8 inches (203 mm) in any dimension.

4.6.4 Roof Framing. Framed sawn timber arches or structural glued-laminated timber arches for roof construction, which spring from the floor line and do not support floor loads, shall have members not less than 6 inches (152 mm) in width and not less than 8 inches (203 mm) in depth for the lower half of the height and not less than 6 inches (152 mm) in depth for the upper half.

4.6.4.1 Framed sawn timber or structural glued-laminated timber arches for roof construction, which spring from the top walls or wall abutments, framed lumber or structural glued-laminated timber trusses, and other roof framing that does not support floor loads, shall have members not less than 102 mm (4 inches) in width and not less than 152 mm (6 inches) in depth. Space members may be composed of two or more pieces not less than 76 mm (3 inches) in thickness, when blocked solidly throughout their intervening spaces, or when such spaces are tightly closed by a continuous wood cover plate of not less than 2 undersides of the members. Splice plates shall not be less than 76 mm (3 inches) in thickness. When protected by an approved automatic sprinkler system under the roof deck, framing members shall not be less than 76 mm (3 inches) in thickness.

4.6.5 Floors. Floors shall be without concealed spaces. Floors shall be of plank, spliced or tongue and groove, of not less than 3 inches (76 mm) in thickness covered with 1-inch (25 mm) tongue-and-groove flooring laid crosswise or diagonally, or 15/32-inch (12 mm) wood structural panels or of plank not less than 4 inches (102 mm) in width set on edge close together and well spiked and covered with 1-inch (25 mm) flooring of 15/32-inch (12 mm) wood structural panels. The lumber shall be laid so that no
continuous line of joints will occur except at points of support. Floors shall not extend a closer that ½ inch (12.7 mm) to walls. Such ½-inch (12.7 mm) space shall be covered by a molding fastened to the wall and arranged so that it will not obstruct the swelling or shrinkage movements of the floor. Corbelling of masonry walls under floors may be used in place of such molding.

4.6.6 Roof Decks. Roofs shall be without concealed spaces and roof deck shall be of planks, splined or tongue-and-groove, of not less than 2-inch (51 mm) thickness, or 1/2-inch (29 mm) tongue-and-groove wood structural panels with exterior glue, or of a double thickness of 1-inch (25 mm) boards with tongue-and-groove joints, or with staggered joints, of lumber not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors.

4.6.7 Construction Details. Approved wall plate boxes or hangers shall be provided where wood, beams, girders or trusses rest on masonry or concrete walls.

4.6.7.1 Girders and beams shall be closely fitted around columns, and adjoining ends shall be cross tied to each other, or intended by caps or ties, to transfer horizontal loads across the joints. Wood bolster may be placed on top of columns which support roof loads only.

4.6.7.2 Where intermediate beams are used to support a floor, they shall rest on top of the girders, or shall be supported by ledgers or blocks securely fastened to the sides of the girders, or they may be supported by approved metal hangers into which the ends of the beam shall be closely fitted.

4.6.7.3 In heavy-timber roof construction, every roof girder and at least every alternate roof beam shall be anchored to its supporting member; roof decks, where supported by a wall shall be anchored to such wall at intervals not exceeding 20 feet (6096 mm); every monitor and every sawtooth construction shall be anchored to the main roof construction. Such anchors shall consist of steel or iron bolts of sufficient strength to resist vertical uplift of the roof.

4.7 Mechanically Laminated Floors and Roof Decks. Mechanically laminated floors and roof decks conforming to provisions as promulgated by the UAP may be used as heavy-timber floors or roof decks, provided the minimum thickness and other applicable requirements of the section are followed.

4.8 Partitions. Partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction of 4-inch (102 mm) thickness, or of one-hour fire-resistive construction.

4.9 Architectural/Structural Element of the Building

4.9.1 Structural Framing Similar to Type I Building except for the application of fire-retardant paint particularly on principal structural members/under floor and under roofing structural members/combustible walls and partitions all of wood.

4.9.2 Flooring Similar to Type I but with floor covering of fire-rated wearing surface finish as: quartz vinyl tiles, linoleum, fire rated tile carpeting.

4.9.3 Exterior Walls / Cladding Interior Double faced 6.3 (1/4") to 12.5 (1/2") thk. gypsum board covered with wood facing/wood sheathing similar to Type I Wood elements with fire-retardant paint.

4.9.4 Partitions 6.3 (1/4") to 12.5 (1/2") thk. Gypsum board/fire retardant, fiber cement/eukelium silicate, 12.5 mm thk. Portland cement board bonded or fire-retardant treated wood
particle board, boards on fire-retardant treated wood studs.

4.9.5 Ceiling

6.3 mm to 12.5 (1/2") thk. Gypsum board on 50 x 50 (2"x2") wood nailing at 400 x 400 mm O.C. retardant paint treated / 4.76 (1/16") to 3.18 (1/8") fiber cement board ceiling; 25 (1") for under floor joists or under roofing suspended ceiling of acoustic/insulation and 1-hour fire-rated ceiling boards on T-runners.

4.9.6 Stairs

Similar to Type I Building treated with fire retardant paint.

4.9.7 Mouldings

-do-

4.9.8 Windows and Doors

-do-

4.9.9 Transoms

-do-

4.9.10 Roofing

Preformed metal roofing on fire-resistant treated wood framing roofing insulation shall be of blanket type fiber glass, rockwool or polyethylene, fire resistant material and/or fiber cement boards/termo cotta roofing tiles/fiber glass/corrugated wire glass/plastics or PVC of practically zero (0) flame spread/built-up roof deck of wood decking with water proofing membrane laid over mopping of bituminous asphalt with protective wearing surface of cement or vitrified tiles.

Type V. Buildings.

5.1 Definition. Type V Buildings may be of any materials allowed by this Code.

Type V One-hour buildings shall be of one-hour fire-resistive construction throughout.

Materials of construction and fire-resistive requirements shall be as specified in this code.

For requirements due to occupancy, see Chapter 2.

5.2 Structural Framework. Structural framework shall be of steel or iron, concrete, masonry, or wood, as specified in Chapter 4 and this Chapter.

5.3 Exterior Walls and Openings. Exterior walls shall comply with fire-resistive requirements set forth in this code.

5.4 Stairway Construction.

5.4.3 General. Stairways shall comply with the requirements of provisions of this Code.

5.4.4 Interior. Interior stairways may be constructed of any materials permitted by this Code.

5.4.5 Exterior. Exterior stairways shall be constructed of wood not less than 2 inches (51 mm) in nominal thickness, or may be of noncombustible materials.

5.5 Roofs. Roof coverings shall be as specified in provisions of this Code.
5.5.3 Except in retail sales and storage areas classified as Group M or S, Division 1 Occupancies and in Group H Occupancies, roofs and their members other than the structural frame may of unprotected noncombustible materials when every part of the roof framing, including the structural frame, is 7620 mm (25 feet) or more above the floor, balcony or gallery immediately below. Heavy-timber members in accordance with Chapter 3, Section 5.6 may be used for such unprotected members in one-story buildings.

Pursuant to Section 401 of the NBC PD 1096 the following rules/regulations and specifications shall be observed.

5.6 Architectural/Structural Element of the Building

5.6.1 Structural Framing Posts, girders, beams, joists, roof framing, roof girts, rafters, trusses, purlins, horizontal, vertical studding for partitions and exterior walls, ceiling runners/nailers—all wood of select commercial lumber and structural grade.

5.6.2 Flooring T&G – 12.5 (½") to 25 (1") x 100 wider/plywood/plyboard or waft wood.

5.6.7 Exterior Walls / Cladding Interior Rizal board, T&G, bead center bead board, BCB shiplaped, wood shingles of coco lumber or wood.

5.6.4 Partitions 12.5 (¼") Plywood, (⅜") thk. paneled board (wood) 12.5 (⅜") plywood/ 6.3 (⅛"") particle board – ‘Lawa’it’/ double 6.3 (⅛") plywood.

5.6.5 Ceiling 6.3 (⅘") – 9.5 (⅝") Plywood, T&G, stone cut, V-Cut, “bcb” brd. commercial sidings (varying thickness and width), 6.3 (⅛") – 9.5 (⅝") – 12.5 (⅜") – 19 (⅛") x 76(3") x 102 (4") or 152 (6").

5.6.6 Stairs Stringers, treads of wood including handrails/balusters

5.6.7 Mouldings Ceiling corner mouldings, trims, baseboard, chair rail, picture mouldings, casing all of wood.

5.6.8 Windows and Doors Framings and sashes of all wood of select specie.

5.6.9 Transoms Top partitions openings (traditional, ‘calados’) or lattice work of wood.

5.6.10 Roofing Preformed metal roofing on wood purlins, and wood, roof frammings, coco wood singles.

NOTE: Type V Buildings shall be limited to not more than two (2) storeys with limited floor areas as prescribed in this Code.
CHAPTER 6

GENERAL DESIGN AND CONSTRUCTION REQUIREMENTS

SECTION 1. Title

1.1 General. Chapter 12, Sections 1201 up to Section 1215 inclusive of the National Building Code (NBC) is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Amplifications in any such provisions in this referral Code objectively to cope with the latest advancements in Science and Technology as to new systems, methods and procedures in design and construction of buildings and other structures and the use of new materials of universal standards of acceptance, as most restrictive provision shall apply.

SECTION 2. Architectural Design

Normally architectural design of buildings and other structures requires the creative simultaneous conceptualization of orderly functional spaces, appropriate structural modulation and its resulting 3-dimensional form. As such, in the essence, the architect inherently makes preliminary assumptions of the structural frame and its tentative calculations to ascertain the practicability, economic viability in the selection of materials for its construction – the “column free” space; head room clearances, as depth to span ratio of beams, girders and allowances for the proper aesthetic integration of the building’s environmental technologies and other requirements of which he is conversant in order to come up with a totally complete building. The detailed engineering design aspects of which may require the collaborative expertise of allied professional engineers, usually commissioned by the architect.

SECTION 3. Structural Systems

3.1 General

3.1.1 Architectural design of buildings requires the architect’s concept of structural systems consistent with the inherent architectural character.

3.1.2 Such structural systems basically classified are as follows:

3.1.2.1 Post and Lintel – a linear system that includes: beams, girders and simple columns.

3.1.2.2 Planar system typified by trusses waffle slab system in floors which is superior to the linear system in terms of performance and design exhibits long span capabilities.

3.1.2.3 Arches and rigid frames continuously supported vaults under certain type of support systems may be considered as planar system but likely sensitive to variable concentrated loads.

3.1.2.4 Cable or suspended structure in which the mount capacity is negligible. Such systems are stiff only when loads remain constant and could be sensitive to unsymmetrical loading.

3.1.2.5 Spatial systems – includes doubly curved shells, membranes and space frames both curved or flat and other 3-dimensional systems as the geodesic dome.
3.1.2.6 Tents – or so called skin stressed structures or special cases of membranes structure.

3.1.2.7 Air supported structures or pressure inflated structures or self-supporting structures which depend entirely on mechanical systems to maintain pressurization.

3.1.2.8 Thin shell slabs are those whose thickness are small compared with their other dimensions. They may be classified in a number ways, two of which are type of curvature and method of generation.

3.1.2.9 Folded plates are slabs acting as continuous one way slabs the stiffness of which results from its folded (joints) along its span in the manner of a beam with thin polygonal (folded) sections.

SECTION 4. Detailed Building Requirements

4.1 Building and other structures shall comply with the location on property, buildable area depending upon lot location, height, and other provisions of this code and/or PD 1096-NBC and its IRR (chapter 8, section 801 to 811 inclusive).

4.2 Premises Identification.

4.2.1 Approved numbers or addresses in accord with the LGU ordinance, rules and regulations shall be provided for all new buildings in such a position as to be plainly visible and legible from the street or road fronting the property.

4.3 Location of Property.

4.3.1 General: Buildings shall adjoin or have direct access to a public way or yard on not less than one side.

4.3.2 All types of buildings as to occupancies are subject to all applicable provisions of PD 1096-NBC, chapter 9, sanitation sections 801-811 inclusive and its IRR.

4.3.3 For the purpose of this section, the center line of an adjoining public way shall be considered an adjacent property line.

4.4 Fire Resistance of Walls.

4.4.1 General: Exterior walls shall have fire resistance and opening protection as set forth in accordance with such additional provisions as set forth in PD 1096-NBC or PD 1185-FCP Division I. Distance shall be measured at right angles from the property line. The above provisions shall not apply to walls at right angles to the property line.

4.4.2 Projections beyond the exterior wall shall comply with the provisions of this Code.

4.4.3 A point one third the distance to the property line from an assumed vertical plane located where fire-resistant protection of openings is first required due to location on property, or

4.4.4 Projections of not more than 305 mm (12 inches) into areas where openings are prohibited.

4.4.5 Area of Openings. When openings in exterior walls are required to be protected due to distance from property line, the sum of the area of such openings shall not exceed 50 percent of the total area of the wall in each story.
4.4.6 Buildings on Same Property and Building Containing Courts. For the purposes of determining the required wall opening protection and roof-covering requirements, buildings on the same property and court walls of buildings over one storey in height shall be assumed to have a property line between them, subject to Easement of Light and View, section 5, article 670-civil code of the Philippines and other applicable provision in this code.

4.4.7 Exception:

4.4.7.1 In court walls where openings is required such protection may be omitted, provided: (1) not more than two levels open into the court, (2) the aggregate area of the building including the court is within the allowable buildable area and (3) the building is not classified as a Group I Occupancies.

4.4.7.2 When a new building is to be erected on the same property with an existing building, the siting of which shall be within the assumed property line in relation to the existing building, so that the exterior wall and opening protection of both buildings meet the criteria as set forth in this code, PD 1096-NBC its IRR which ever is most restrictive.

4.4.8 Two or more buildings on the same property may be considered as portions of one building if the aggregate area of such buildings is within the limits specified in NBC Chapter 8, Section 803 all applicable provisions under Rule XVI for a single building.

4.4.8.1 When the buildings so considered house different occupancies or are different types of construction the area shall be that allowed for the most restricted occupancy or construction.

4.9 One storey Groups B, F, M and S Occupancies. In Groups B, F, M and S Occupancies, a fire-resistant time period will not be required for an exterior wall of a one-storey Type II-N building, provided the floor area of the building does not exceed 93m² (1,000 square feet) and such wall is located not less than 1524 mm (5 feet) from a property line.

4.10 Fire-retardant-treated wood framing. In Types III and IV construction, approved fire-retardant-treated wood framing may be used within the assembly of exterior walls with a fire-resistant rating of two hours or less, provided the required fire resistance is maintained and the exposed outer and inner faces of such walls are noncombustible.

4.11 Wood columns and arches. In Types III and IV construction, wood columns and arches conforming to heavy-timber sizes may be used externally when exterior walls are permitted to be unprotected, noncombustible construction or when one-hour fire-resistant noncombustible exterior walls are permitted.

4.12 Group H Occupancies – minimum distance to property lines. Regardless of any other provisions. Group H Occupancies shall be set back a minimum distance from property lines as set forth in this code or PD 1185 FCP. Distances shall be measured from the walls enclosing the occupancy to all property lines, including those on a public way.

4.12.1 Group H, H1 Occupancies. Not less than 2286 mm (75 feet).

4.12.2 Group H, H2 Occupancies. Not less than 9144mm (30 feet) when the area of the occupancy exceeds 95 m² (1,000 square feet) and it is not required to be located in a detached building.

4.12.3 Group H, H2 and H3 Occupancies. Not less than 15240 mm (50 feet) when a detached building is required.

4.12.4 Group H, H2 and H3 Occupancies containing materials with explosive characteristics. Not less than the distances required by this Code or PD 1185 FCP.
4.12.5 Group H, H1, H2 or H3 Occupancies-detached buildings. When a detached building is required no requirements for wall and opening protection based on location on property.

4.12.6 Group H, H4 Occupancies. Group H, H4 Occupancies having a floor area not exceeding 232 m² (2,500 square feet) may have exterior-bearing walls of not less than two-hour fire-resistive construction when the less than 1524 mm (5 feet) from a property line and not less than one hour when less than 6096 mm (20 feet) from a property line.

4.13 Group U, U1 Occupancies. In Group U, U1 Occupancies, exterior walls that are required to be of one-hour fire-resistive construction due to location on property may be protected only on the exterior side with materials approved for one-hour fire-resistive construction.

4.14 Exterior wall assemblies. Exterior wall assembly shall comply with the provisions of this Code or PD 1185 FCP which ever is most restrictive shall apply.

4.15 Allowable Floor Areas.

4.15.1 One-storey Area. The area of a one-storey building shall not exceed the limits set forth in Table 3-B, except as provided in Chapter 3, Section 11.

4.15.2 Areas of Buildings over One Storey. The total combined floor area for multistorey buildings may be twice that permitted by Table 3-B for one-storey buildings, and the floor area of any singly storey shall not exceed that permitted for a one-storey building.

4.15.3 Allowable Floor Area or Mixed Occupancies. When a building houses more than one occupancy, the area of the building shall be such that the sum of the ratios of the actual area for each separate occupancy divided by the total allowable area for each separate occupancy shall not exceed one.

4.15.4 Exceptions:

4.15.4.1 The major occupancy classification of a building may be used to determine the allowable area of such building when the major use occupies not less than the percent of the area of any floor of the building and provided that other minor accessory uses shall not exceed the basis area permitted by Table 3-B for such minor uses are separated as specified in Chapter 2, Section 2.4.

4.15.4.2 Group B, F, M and S and Group H, H3 Occupancies complying with the provisions of Chapter 3, Section 11.2 may contain other occupancies provided that such occupancies do not occupy more than 10 percent of the area of any floor of a building, nor more than the basis area permitted in the occupancy by Table 3-B for such occupancy, and further provided that such occupancies are separated as specified in Chapter 2, Section 2.4.

4.15.4.3 Mezzanines. Unless considered as a separate storey, the floor area of all mezzanines shall be included in calculating the allowable floor area of the stories in which mezzanines are located. Mezzanines shall not exceed 50% of the area of the floor into which it is located.

4.15.4.4 Basements. A basement need not be included in the total allowable area, provided such basement does not exceed the area permitted for one storey building.
4.16 Area Separation Walls.

4.16.1 General: Each portion of a building separated by one or more area separation walls that comply with the provisions of this section may be considered a separate building. The extent and location of such area separation walls shall provide a complete separation shall apply.

4.16.2 Fire resistance and openings. Area separation walls shall not be less than four-hour fire-resistive construction in Type I, II-F.R., III and IV buildings and two-hour fire resistive construction in Type II one-hour, Type II-N or Type V buildings. The total width of all openings in such walls shall not exceed 25 percent of the length of the wall in each story. All openings shall be protected by a fire assembly having a three-hour fire-protection rating in four-hour fire-resistive walls and one-half hour fire protection rating in two-hour fire-resistive walls and.

4.16.3 Extensions Beyond Exterior Walls. Area separation walls shall extend horizontally to the outer edges of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees or architectural projections extending beyond floor area as defined in the provisions of this Code as provided for in the NBC PD 1096-IRR.

4.16.4 Exceptions:

4.16.5 When horizontal projecting elements do not contain concealed spaces, the area separation wall may terminate at the exterior wall.

4.16.6 When the horizontal projecting elements contain concealed spaces, the area separation wall need not extend through the concealed space to the outer edges of the projecting elements.

4.16.7 In either Exception 1 or 2, the exterior walls and the projecting elements above shall not be of less than one-hour fire-resistive construction for a distance not less than the depth of the projecting elements on both sides of the area separation wall. Openings within such widths shall be protected by fire assemblies having a fire-protection rating of not less than three-fourths hour.

4.17 Terminating. Area separation walls shall extend vertically from the foundation to a point at least 200 mm (8 inches) above the roof.

4.17.1 Exceptions:

4.17.2 Any area separation wall may terminate at the underside of the roof sheathing, deck or slab, provided the roof-ceiling assembly is of least two-hour fire-resistive construction.

4.17.3 Two-hour area separation walls may terminate at the underside of the roof sheathing, deck, or slab, provided.

4.17.4 When the roof-ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than one-hour fire-resistive construction for a width of not less than 1524 mm (5 feet) on each side of the wall.

4.17.5 When roof-ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than one-hour fire-resistive construction.

4.17.6 Openings in the roof shall not be located within 1524 mm (5 feet) of the area separation wall.
4.17.7 The entire building shall be provided with not less than a Class B roof covering as specified in the provisions in this code.

4.17.8 Two-hour area separation walls may be terminated at the underside of noncombustible construction, provided:

4.17.9 Openings in the roof are not located within 1524 mm (5 feet) of the area separation wall.

4.17.10 The entire building is provided with not less than a Class B roofing assembly.

4.17.11 Parapet Faces. Parapets of area separation walls shall have noncombustible faces for the uppermost 457 mm (18 inches) including counter-flashing and coping materials.

4.18 Building of Different Heights. Where an area separation wall separates portions of a building having different heights, such wall may terminate at a point 762 mm (30 inches) above the lower roof level, provided the exterior wall for a height of 3048 mm (10 feet) above the lower roof is one-hour fire-resistive construction with openings protected by assemblies having a three-fourths-hour fire-protection rating.

4.18.1 Exception:

4.18.1.1 Two-hour area separation walls may terminate at the underside of the roof sheathing, deck or slab of the lower roof, provided:

4.18.1.2 When the roof-ceiling framing elements are parallel to the wall, such framing and elements supporting such framing shall not be less than one-hour fire-resistive construction for a width of 3048 mm (10 feet) along the wall at the lower roof.

4.18.1.3 When the lower roof-ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than one-hour fire-resistive construction.

4.18.1.4 Openings in the lower roof shall not be located within 3048 mm (10 feet) of the area separated wall.

4.19 Combustible Framing in Area Separation Walls. Adjacent combustible members entering into a masonry area separation wall from opposite sides shall not have less than a 102 mm (4-inch) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 102 mm (4-inch) above, below and between the structural members, with noncombustible materials approved for fire-blocking.

4.20 Allowable Area Increases.

4.20.1 General. The floor areas specified in this code may be increased by employing one of the provisions of this Section.

4.20.2 Separation on two sides. Where public ways or yards more than 6096 mm (20 feet) in width extend along and adjoin two sides of the building, floor areas may be increased at a rate of 1 1/4 percent for each 305 mm (1-foot) by which the minimum width exceeds 6096 mm (20 feet), in width extend along and adjoin three sides of the building, floor areas may be increased at a rate of 1 1/2 percent for each 305 mm (1-foot) by which the minimum width exceeds 6096 mm (20 feet), but the increase shall not exceed 100 percent.

4.20.3 Separation on All Sides. Where public ways or yards more than 6096 mm (20 feet) in width extend on all sides of a building and adjoin the entire perimeter, floor areas may be increased at a rate of 5 percent for each 305 mm (1-foot) by which the
minimum width exceeds 6096 mm (20 feet). Such increases shall not exceed 100 percent, except that hereafter increased shall be permitted for the following occupancies.

4.20.4 Group S, S5 aircraft storage hangars not exceeding one storey in height.

4.20.5 Group S, S2 or Group F, F2 Occupancies not exceeding two stories in height.

4.20.6 Group H, H5 aircraft repair hangars not exceeding one storey in height. Area increases shall not exceed 500 percent for aircraft repair hangars except as provided in this code.

4.21 Unlimited Area. The area of any one- or two-storey building of Groups B, F, B1, B2, F1 or F2, M, S, M1, M2, M3, M4, M5; S1, S2, S3, S4 or S5 and H, H5 Occupancies shall not be limited if the building is provided with an approved automatic sprinkler system throughout in conformity with the provisions of the FCP-PD 1185 and entirely surrounded and adjoined by public ways or yards not less than 18288 mm (60 feet) in width.

4.22 The area of a Group S, S2 or Group F, F2 Occupancy in a one-storey Type II, Type III one-hour or Type IV building shall not be limited if the building is entirely surrounded and adjoined by public ways or yards not less than 18288 mm (60 feet) in width.

4.23 Automatic Sprinkler Systems. The areas specified in PD 1185 FCP area be tripled in one-storey buildings or more than one storey if the building is provided with an approved automatic sprinkler system throughout. The area increases permitted in this Section may be compounded with that specified. The increases permitted in this Section shall not apply when automatic sprinkler systems are installed under the following provisions:

4.24 For Group H, H1 and H2 Occupancies.

4.24.1 Substitution for one-hour fire-resistive construction.

4.24.2 Atria, the provisions for open courts.

4.25 Maximum Height of Buildings and Increases.

4.25.1 The maximum height and number of stories of buildings shall be dependent on the character of the occupancy and the type of construction and shall not exceed the limits set forth in this code, except as provided in this Section and as specified in for mixed occupancy buildings.

4.25.2 Exceptions:

4.25.2.1 Towers, spires and steeples erected as a part of a building and not used for habitation or storage are limited as to height only by structural design if completely of noncombustible materials, or may extend not to exceed 6096 mm (20 feet) above the height limit in Table 3-B if constructed of combustible materials.

4.25.2.2 The height of one-storey aircraft hangars and buildings used for manufacture of aircraft shall not be limited if the building is provided with automatic sprinkler systems throughout as specified in the provisions of PD 1185-FCP and is entirely surrounded by public ways or yards not less in width than one and one-half times the height of the building.

4.25.2.3 The storey limits as set forth in this code may be increased by one storey if the building is provided with an approved automatic sprinkler system throughout. The increase in the number of stories for automatic sprinkler systems shall not apply when the automatic sprinkler systems throughout are installed under the following provisions:
4.26 For Group H, H1, H2, H3, H6 and H7 Occupancies, the provisions in this code, the NBC or FCP whichever is most restrictive.

4.26.1 Substitution for one-hour fire-resistive construction pursuant to PD 1185-FCP.

4.27 For Group I, II.1 and II.2 Occupancies used as hospitals, nursing homes or health-care centers in Type II one-hour, Type III One-hour, Type IV or Type V one-hour construction.

4.28 Mezzanines.

4.28.1 A mezzanine need not be counted as a storey for determining the allowable number of stories when construction in accordance with the following:

4.28.2 The construction of a mezzanine shall be consistent with the requirement for the type of construction in which the mezzanine, is located, but the fire resistive time period need not exceed one hour for unenclosed mezzanines. The clear height above and below the mezzanine floor construction shall not be less than 7 feet (2134 mm).

4.28.3 There shall not be more than two levels of mezzanines in a room. However, there is no limitation on the number of mezzanines within a room provided that the aggregate area of mezzanines within a room shall not exceed fifty percent of the area of the room in which they are located.

4.28.4 All portions of a mezzanine shall be open and unobstructed to the room in which they are located, except for columns and posts and protective walls or railings not more than 1118mm (44 inches) in height.

4.28.5 Exceptions:

4.28.5.1 Partitions may be installed if either of the following conditions exist:

4.28.5.2 The aggregate floor area of the enclosed space does not exceed 10 percent of the mezzanine area, or

4.28.5.3 The occupant load of the enclosed area of the mezzanine does not exceed 10.

4.28.5.4 A mezzanine having two or more means of egress need not be open into the room in which it is located, provided at least one of means of egress gives direct access to a protected corridor, exit court of exit.

4.28.5.5 In industry facilities mezzanines used for control equipment may be glazed on all sides.

4.29 Two means of egress shall be provided from a mezzanine when the length of the room is 6.00 meters or more pursuant to PD 1096-NBC and limited to 600 mts. (20'0") permissible length of dead end corridors.

4.29.1 If any required means of egress enters the room below, the occupant load of the mezzanine shall be added to the occupant load of the room in which it is located.

4.30 Fire-Resistive Substitutions.

4.30.1 When approved automatic sprinkler system is not required throughout a building by other sections of this Code or PD 1096-NBC and PD 1185-FCP, it may be used in a building of Type II One-hour, Type III One-hour and Type V One-hour construction to substitute for the one-hour fire-resistive construction. Such substitution shall not waive or reduce the required fire-resistive construction for:
4.31 Occupancy separations.

4.31.1 Exterior wall protection due to proximity of property lines.

4.31.2 Area separations.

4.31.3 Dwelling unit separations.

4.31.4 Shaft enclosures shall be built of fire-resistive materials appropriate for degree of hazardousness as ascertained.

4.31.5 Corridors (the fire resistive materials for the needed duration for safe evacuation of the occupancies it serves).

4.31.6 Stair enclosures shall be of fire resistivity rating as required for the type of construction and occupancy it is supposed to serve.

4.32 Exit passageways shall be of minimum 1-hour fire resistive.

4.33 Type of construction separation as provided in this code.

4.34 Boiler, central heating plans or hot-water supply boiler room enclosures shall be of fire resistive rating as provided for in PD 1185-FCP.

4.35 Guardrails

4.35.1 When Required. Unenclosed floor and roof openings, open and glazed sides of stairways, aisles, landings and ramps, balconies or porches, which are more than 762 mm (30 inches) above grade or floor below, and roofs used for other than service of the building shall be protected by a guardrail of at least 900mm (36 inches). Guardrails shall be provided at the ends of aisles where they terminated at a fascia of boxes, balconies and galleries of the same height.

4.36 Exception:

4.36.1 Guardrails need not be provided at the following locations

4.36.2 On the loading side of loading docks.

4.36.3 On the auditorium side of a stage, raised platforms and other raised floor areas such as runways, ramps and side stages used for entertainment or presentation. Along the side of an elevated walking surface when used for the normal functioning of special lighting or for access and use of other special equipment. At vertical openings in the performance area of stages.

4.36.4 Along vehicle service pits not accessible to the public.

4.36.5 Height. The top of guardrails shall not be less than 900mm (3'-0") for stairs and minimum of 42 inches (1067 mm) in height for deck roofs terraces and balconies for a three (3) story level and over.

4.36.6 Exceptions:

4.36.6.1 The top of guardrails for Group R, R3 and Group U, R1 Occupancies and interior guardrails within individual dwelling units, Group R, R3 congregate residences and guest rooms of Group R, R1 Occupancies may be 914 mm (36 inches) in height.

4.36.6.2 The top of guardrails on a balcony immediately in front of the first row of fixed seats in auditoriums and that are not at the end of an aisle may be 660
mm (26 inches) in height but the top of which shall extend towards the outer end to no less than 600 mm (24 inches)

4.36.6.3 The top of guardrails for stairways and of their landings shall be at the height of 900 mm or (3'-0'') recoed from the nosings of the stairs steps or the floor of the landing.

Where an elevation change of 762 mm (30 inches) or less occurs between an aisle parallel to the seats (cross aisle) and the adjacent floor or grade below, guardrails not less than 660 mm (26 inches) above the aisle floor shall be provided.

4.37 Exception:

4.37.1 Where the backs of seats on the front of the cross aisle project 610 mm (24 inches) or more above the adjacent floor of the aisle, a guardrail need not be provided.

4.37.2 The top of guardrails at the ends of aisles terminating at the fascia of boxes, balconies and galleries shall extend for the width of the aisle and be no closer than 1067 mm (42 inches) to the closest surface of the aisle where there are steps and 914 mm (36 inches) otherwise.

4.37.3 Openings. Open guardrails shall have intermediate rails or an ornamental ballusters such that a sphere 102 mm (4 inches) in diameter cannot pass through.

4.38 Exceptions:

4.38.1 The open space between the intermediate rails or ornamental pattern of guardrails in areas of commercial and industrial type occupancies which are not accessible to the public may be such that a sphere 305 mm (12 inches) in diameter cannot pass through.

4.38.2 The triangular openings formed by the riser, tread and bottom element of a guardrail at the open side of a stairway may be of such size that a sphere 152 mm (6 inches) in diameter cannot pass through.

4.38.3 For all guardrails requirements at grandstands, bleachers or other elevated seating facilities, the height atop of railing shall not be less than 900 mm (3'-0'') and shall have a lateral strength of not less than 100 lbs. per lineal ft. applied to the top of the railing.

4.39 Site Work, Demolition and Construction.

4.40 Excavations and Fills

4.40.1 General. Excavation or fills for buildings or other structures shall be so constructed or protected that they do not endanger life or property.

4.40.1.1 Slopes for permanent fills shall not be steeper than 1 unit vertical in 2 units horizontal (50% slope). Cut slopes for permanent excavations shall not be steeper than 1 unit vertical in 2 units horizontal (50% slope) unless substantiating data justify steeper cut slopes are submitted. Deviation from the foregoing limitations for cut slopes submit soil investigation and justification report acceptable to the building official for approval.

4.40.1.2 Fill or other surcharge loads shall not be placed adjacent to any building or structure of withstanding the additional loads caused by the fill or surcharge.
4.40.1.3 Existing footings or foundations that may be affected by any excavation shall be adequately underpinned or otherwise protected against settlement and/or any protected against lateral movement.

4.40.1.4 Existing footing shall not be subject to encroachment as super-impositions of any new footing unless pre-engineered or underpinned to carry the new superimposed load.

4.40.1.5 In cases of deep excavations beyond practical application of sheet piling and shoring excavation shall be by means of pre-engineered Caisson system.

4.40.1.5.1 In the above case (16.1.5), no excavation shall be done unless a precise investigation of the adjoining property and the affected foundation/footings of the building(s) thereon is subjected to adopt engineering measures for the protection of the same is submitted to the Office of the Building Official with a properly documented written assurance. totals full responsibility for any damages caused by the excavation to the said adjacent property and building and other structures thereon.

4.40.1.6 For footings on adjacent slopes shall be pre-engineered to ascertain stability of the foundation bed depending upon the nature of the soil and distance particularly between the isolated footings.

4.40.1.7 Fills to be used to support the foundations of any building or structure shall be placed in accordance with internationally accepted engineering practice. A soil investigation report for satisfactory placement and 95% compaction of the fill tests results shall be submitted to the building official.

4.40.1.8 Protection of Adjoining Property. The requirements for protection of adjacent property and depth to which protection is required shall be as defined by prevailing law. Where not defined by law, the following shall apply. Any person making or causing an excavation to be made to a depth of 3658 mm (12 feet) or more below the grade shall protect the excavation so that the soil of adjoining property will not cave-in or settle, but shall not be liable for the expense of underpinning or extending the foundation of buildings or adjoining properties when excavation is not in excess of 3658 mm (12 feet) in depth. Before commencing the excavation, the person making or causing the excavation to be made shall notify in writing the owners of the affected adjoining buildings not less than 10 days before such excavation is conducted and that the excavation is to be made and that the adjoining buildings shall be protected.

4.40.1.9 The owners of the adjoining properties shall be given access to the excavation for the purpose of protecting such adjoining buildings.

4.40.1.10 Any person making or causing an excavation to be made exceeding 3658 mm (12 feet) in depth below the grade shall protect the excavation so that the adjoining soil will not cave in or settle and shall be responsible to extend the foundation of any adjoining buildings below the depth of 3658 mm (12 feet) below grade at the expense of the person causing or making the excavation. The owner of the adjoining building shall allow the extension of foundation of these buildings to a depth of 3658 mm (12 feet) below grade. The expense, as provided in the preceding paragraph.

4.41 Preparation of Building Site

4.41.1 All stumps and roots of vegetation shall be removed from the soil to a depth of at least 12 inches (305 mm) below the surface of the natural ground. The area to be occupied by the building shall be free from any under growth of trees.
4.41.2 All wood forms that have been used in placing concrete, if within the ground or between foundation sills and the ground, shall be removed before a building is occupied or used for any purpose. Before completion, loose or casual wood forms or scaffolds shall be removed from direct contact with the ground under the building.

4.42 Protection of Pedestrian During Construction or Demolition Pursuant to PD 1096-NBC and its IRR

4.42.1 General. In conformance to NBC-IRR, no person shall use or occupy any public street, alley or sidewalk for the performance of any work under a building permit except in accordance with the provisions of this code or NBC-IRR whichever is more restrictive shall apply.

4.42.2 No person shall perform any work on any building or other structure to any public way or general use by the public for pedestrian travel unless the pedestrians are protected as specified in this code or PD 1096-NBC its IRR which ever is most restrictive shall govern.

4.42.3 Any material or structure temporarily occupying public property, including protective fence and walkways, shall be adequately lighted and provided with proper warning signs between sunset and sunrise most particularly during construction operations.

4.42.4 For additional requirements for temporary buildings or structures, the provisions as provided in the PD 1096-NBC-IRR shall prevail.

4.42.5 Temporary Use of Streets and Alleys. The use of public property shall meet the requirements of this code or PD 1096-NBC-IRR and LGU or the public agency having jurisdiction or affected. Whenever such is needed, plot plans and construction details shall be submitted to the Building Official for review and approved by the LGU affected or concerned for issuance of permit for such purpose intended.

4.42.6 Storage on Public Property. Material and equipment necessary for work to be done under a permit shall not be placed or stored on public property so as to obstruct free and convenient approach to and use of any fire hydrant, fire and police alarm box, utility box, catch basin, or manhole or so to interfere with the free flow of water in any street or alley gutter subject to the provisions of "18.5" above.

4.42.7 Mixing Mortar on Public Property. The mixing or handling of mortar, concrete or other material on public property shall be done on a built up platform for the purpose in a manner that will not deface public property or create a nuisance.

4.42.8 Protection of Utilities. A substantial protective frame and boarding shall be provided and built around and over every street lamp, utility box, fire or police alarm box, fire hydrant, catch basin, sub surface sewer, manhole and all other public utility lines that may be damaged by any work being done under the permit. This protection shall be maintained while such work is being done and shall not obstruct the normal functioning of any public/private facilities.

4.42.9 Walkway. A temporary walkway not less than 1219 mm (4 feet) wide shall be maintained on the sidewalk in front of the building site during construction, alteration or demolition unless the public agency having jurisdiction authorizes the sidewalk to be fenced and closed. Adequate signs and railings shall be provided to direct pedestrian traffic. Railings shall be provided when needed required.

The walkway shall be capable of supporting a uniform live load of 7.18 kN/m² (150 pounds per square foot (psf)). A durable wearing surface shall be provided.
4.42.10 Pedestrian Protection

4.42.10.1 Protection Required. Pedestrian traffic shall be protected by a railing on the street side when the walkway extends into the roadway, by a railing adjacent to excavation and such other protection as set forth in this code. The construction of such protective devices shall be in accordance with the provisions of this Chapter or PD 1096-NBC-IRR.

4.42.10.2 Railings. Railings shall be substantially built and, when of wood, shall be constructed of new materials having a nominal size of at least 51 mm by 102 mm (2 inches by 4 inches). Railings shall be at least 1067 mm (3 feet and 6 inches) in height and, when adjacent to excavations, shall be provided with a midrail.

4.42.10.3 Fences. Fences shall be solid and substantially built, be not less than 2438 mm (8 feet) in height above grade and be placed on the side of the walkway nearest to the building site. Fences shall extend the entire length of the building site and each end shall be coursed returned to the normal sidewalk building line.

4.42.10.4 Openings in such fences shall be protected by doors that are normally kept closed.

4.42.10.5 All fences shall be provided with 51 mm by 102 mm (2-inch-by-4-inch) plates, top and bottom, and shall be well braced. The fence material shall be a minimum of 19.1 mm (¾ - inch) boards or 6.44 mm (¼ - inch) plywood. Plywood fences shall conform to the following requirements:

4.42.10.5.1 Plywood panels shall be bonded with an adhesive identical to that for exterior or marine plywood.

4.42.10.5.2 Plywood 6.4 mm (¼ inch) or 7.9 mm² (⅛ inch) in thickness shall have appropriate size studs spaced not more than 610 mm (2 feet) on centers.

4.42.10.5.3 Plywood 9.5 mm (¼ inch) or 12.7 mm (½ inch) in thickness shall have studs spaced not more than 1219 mm (4 feet) on center, provided a 51 mm by 102 mm (2-inch-by-4-inch) stiffener is placed horizontally at the mid-height when the stud spacing exceeds 610 mm (2 feet) on center.

4.42.10.5.4 Plywood 15.9 mm (⅛ inch) or thicker shall have an supported not span over 2438 mm (8 feet).

4.42.10.6 Canopies. The protective canopy shall have a clear height of 2438 mm (8 feet) above the walkway. The roof shall be adequately and tightly sheathed. The sheathing shall be 51 mm (2-inch) nominal wood planking or equal. Every canopy shall have a solid fence built along its entire length on the construction side and extend horizontally to a length/horizontal distance to shield pedestrians from falling construction debris.

4.42.10.7 If materials are stored or work is done on the roof of the canopy, the street sides and ends of the canopy roof shall be protected by a tight curb board not less than 305 mm (1 foot) high and a railing not less than 1067 mm (3 feet 6 inches) high.

4.42.10.8 The entire structure shall be designed to carry the loads to be imposed on it, provided the live load shall not be less than 7.18 kN/m²PT2PTO (150 psf). In lieu of such design, a protection canopy supporting not more than 7.18 kN/m²PT2PTO (150 psf) may be constructed. As follows:
4.42.10.8.1 Footings shall be continuous 51 mm by 152 mm (2-inch-by-6-inch) members with scabbed joints.

4.42.10.8.2 Posts not less than 102 mm by 52 mm (2-inch-by-4-inch) in size shall be provided on both sides of the canopy and spaced not more than 3658 mm (12 feet), center to center.

4.42.10.8.3 Stringers not less than 102 mm by 305 mm (4 inches by 12 inches) in size shall be placed on edge upon posts.

4.42.10.8.4 Joists resting upon the stringers shall be at least 51 mm by 305 mm (2 inches by 8 inches) in size and shall be placed not more than 610 mm (2 feet), center to center.

4.42.10.8.5 The deck shall be of planks at least 51 mm (2 inches) thick nailed to the joists.

4.42.10.8.6 Each posts shall be of knee-braced to joists and stringers by members 1219 mm (4 feet) long, not less than 51 mm by 102 mm (2 inches by 4 inches) in size.

4.42.10.8.7 A curb not less than 51 mm by 305 mm (2 inches by 12 inches) in size shall be set on edge along the outside edge of the deck.

4.42.11 Exception:

4.42.11.1 Protection canopies for new, light-frame construction not exceeding two stories in height may be designed for a live load of 3.59 kN/m (75 psf) or the loads to be imposed on it, whichever is the greater.

4.42.12 Maintenance and Removal of Protective Devices.

4.42.12.1 Maintenance. Pedestrian protection required by this code shall be maintained in place and kept in good order for the entire length of time pedestrians may be endangered.

4.42.12.2 Removal. Every protection fence or canopy shall be removed within 30 days after such protection is no longer required for protection of pedestrians.

4.42.12.3 Demolition. The work of demolishing any building shall not commence until required pedestrian protection structures are in place.

4.42.12.4 The building official may require the to submit plans and a complete schedule for demolition. Where such are required, no work shall be done until such plans or schedule, or both, are approved by the building official.

4.43 Mixed Use or Occupancy

4.43.1 General. When a Building is of mixed occupancy or used for more than one occupancy, each part of the building comprising a distinct “occupancy” shall be provided with adequate fire separation either horizontal, vertical or both depending on the latent degree of hazardousness of each area.

4.43.2 Fire rated occupancy separations shall be vertical or horizontal or both, or when necessary and of such other form may be needed or required to afford protection between the various occupancy areas in the building.
4.44 Exceptions:

4.44.1 When an approved spray booth constructed in accordance with the Fire Code is installed, such booth need not be separated from Group B, F, H, M or S Occupancies.

4.44.2 The following occupancies need not be separated from the uses to which they are accessory:

4.44.2.1 Assembly rooms having a floor area of not over 69.7 m² (750 square feet).

4.44.2.2 Administrative and clerical offices and similar rooms that do not exceed 25 percent of the floor area of the major use when not related to Group H, H2 and Group H, H3 Occupancies.

4.44.2.3 Gift Shops, administrative offices and similar rooms in Group R, R1 Occupancies not exceeding 10 Percent of the floor area of the major use.

4.44.2.4 The kitchen serving the dining area of which it is part.

4.44.2.5 Customer waiting rooms not exceeding 41.8 m² (450 square feet) when not related to Group H Occupancies and when such waiting rooms have an exit directly to the exterior.

4.44.2.6 An occupancy separation need not be provided between a Group R, R3 Occupancy and a carport having no enclosed uses above, provided the carport is entirely open on two or more sides.

4.44.2.7 A Group S, S3, Occupancy used exclusively for the parking or storage of private or pleasure-type motor vehicles need not be separated from Group S, S4 Occupancy open parking garage as defined in Section 11.1.

4.45 When a building houses more than one occupancy, each portion of the building shall conform to the requirement for the occupancy housed therein. An occupancy shall not be located above the storey, except as provided in Chapter 5, Section 12. When a mixed occupancy building contains a Group H, H6 Occupancy, the portion containing the Group H, H6 Occupancy shall not exceed three stories or 16,764 mm (55 feet) in height.

4.46 Forms of Occupancy Separations.
Occupancy separation shall be vertical or horizontal or both or when necessary, of such other form as may be required to afford a complete separation between the various occupancy divisions in the building. When the occupancy separation is horizontal, structural members supporting the separation shall be protected by equivalent fire-resistive construction.

4.47 Types of Occupancy Separations.
Occupancy separations shall be classed as “four-hour fire-resistive”, “three-hour fire-resistive”, “two-hour fire-resistive”, and “one-hour fire-resistive”.

4.47.1 A four-hour fire-resistive occupancy separation shall have no opening therein and shall not be less than four-hour fire-resistive construction.

4.47.2 A three-hour fire-resistive occupancy separation shall not be of less than four-hour fire-resistive construction. All openings in walls forming such separation shall be protected by a fire assembly having a three-hour fire protection rating. The total width of all openings in any three-hour fire-resistive occupancy separation wall in any one storey shall not exceed 25% of the length of the wall in that storey and no single opening shall exceed 11.15 sq. meters (120 sq. ft.).

4.48 Fire ratings for Occupancy Separations.
Occupancy separations shall be provided between the various groups and divisions of occupancies as set forth in this code. For required separation of specific uses in Group I, II hospitals and nursing homes.

4.49 Exceptions:

4.49.1 A three-hour occupancy separation may be used between a Group A, A1 and a Group S, A3 Occupancy used exclusively for the parking or storage of private or pleasure-type motor vehicles provided no repair or fueling is done. A two-hour occupancy separation may be used between a Group A, A2, A2.1, A3 or A4 or B or I Occupancy and a Group S, S3 Occupancy used exclusively for the parking or storage of private or pleasure-type motor vehicles provided no repair or fueling is done.

4.49.2 Unless required by Chapter 4, Section 11.2.2, the three-hour occupancy separation between a Group R, R1 Occupancy and a Group S, S3 Occupancy used only for the parking or storage of private or pleasure-type motor vehicles without repair or fueling facilities may be reduced to two hours. Such occupancy separation may further reduced to one hour where the area of such Group S, S3 Occupancy does not exceed 279 m² (3,000 square feet).

4.49.3 In the one-hour occupancy separation between Group R, R3 and Group U Occupancies, the separation may be limited to the installation of materials approved for one-hour fire-resistant construction on the garage side and a self-closing, tight-fitting solid-wood door 35 mm (1-3/8 inches) in thickness is permitted in lieu of a one-hour fire assembly. Fire dampers need not be installed in air ducts passing through the wall, floor or ceiling separating a Group R, R3 Occupancy from a Group U Occupancy, provided such ducts within the Group U Occupancy are constructed of steel having a thickness not less than 0.48 mm (0.019 inch) (No. 26 galvanized sheet gauge) and have no openings into the Group U Occupancy.

4.49.4 Group H, H2, and Group H, H3 Occupancies need not be separated from Group H, H7 Occupancies when such occupancies also comply with the requirements for a Group H, H7 Occupancy.

4.50 Heating Equipment Room Occupancy Separation.
In Groups A; B; E; F; I; M; R Division I and S Occupancies, rooms containing a boiler central heating plant of hot-water supply boiler shall be separated from the rest of the building by no less than a one-hour occupancy separation.

SECTION 5. Structural Design

5.1 General

5.2 Pursuant to Chapter 12 above the architect's concept of the structural system of a building or other structure, is based on his preliminary design, assumptions and analysis with respect to the architectural requirements as to appropriate spatial dimensioning and proper inter-relationships of its various functions together with the environmental technologies or utilities, mechanical equipment etc, which are integral parts of the building as a whole, headroom clearances, normal or monumental, all significant aspects considered, shall be respected by the collaborating detail engineering designers supposedly commissioned by the architect.

5.3 The detailed engineering design of the structure shall be adeptly based on a rational/rigorous analysis in accordance with well established principles of mechanics, analysis and of universally accepted methods, systems and procedures, and standards and/or as adopted in the Referral Structural Engineering Code under the purview of PD1096 –NBC and its IRR which ever is the more restrictive applicable provision shall govern.

5.3.1 Definitions

The following definitions give the meaning of certain terms used in this chapter.
5.3.2 Considerations for loading analysis consist of the following:

5.3.2.1 Dead Load due to the weight of any part of a structure.

5.3.2.2 Live Load due to the use and occupancy of the structure.

5.3.2.3 Wind Load due to wind pressure.

5.3.2.4 Seismic Loads

5.3.2.5 Impact Loads

5.3.3 Stresses

5.3.3.1 Tension is the state of stress in a structural element in which the particles of the material are pushed one against the other.

5.3.3.2 Compression is the state of stress in structural element in which the particles of the material are pushed one against the other.

5.3.3.3 Shear (horizontal or vertical) is the state of stress in a structural element in which the particles of the material tend to slide relative to the other.

5.3.3.4 Torsion is the state of stress in a structural element in which the material tends to be twisted.

5.3.3.5 Bending or flexural is the state of stress in a structural element in which a state of compression and of tension occurs in different fibers of the same structural element.

5.3.3.6 Combined Stress is the state of stress in a structural element in which more than one of the basic stresses mentioned above occurs simultaneously on the same part of a structural element.

5.4 The Structural System of a building is dictated by the simultaneous conceptual structural envelope and the modulation and orderly juxtaposition of functional spaces, as a means to aptly serve man’s multifarious needs and to an end result of a significant architectonic 3-dimensional form

5.5 Design Methods

5.5.1 Distribution of horizontal shear. The total lateral force shall be distributed to the various vertical elements in proportion to their rigidities considering the rigidity of the horizontal bracing system or diaphragm.

5.5.2 Horizontal torsional moments.

5.5.3 Stability against overturning. To resist overturning effects caused by lateral forces.

5.5.4 Anchorage of the whole framing system down to the foundations to resist uplift and sliding forces resulting from prescribed forces.

5.5.4.1 Critical live loads distribution to create continuity. Investigation of loading conditions causing maximum shear and bending moments along members of the structure.

5.5.4.2 Stress increases in allowable stresses and soil bearing values in considering wind or earthquake forces.

5.5.4.3 Load factors for ultimate strength design of concrete and plastic for steel.
5.5.4.4 Load combinations - to provide adequate strength to resist the most critical effects in combining dead plus floor load, load, plus roof live load, plus wind, plus seismic load in various combination consideration.

5.6 Floor Design

5.6.1 General. Floors shall be designed for the unit uniform or concentrated loads as prescribed according to use or occupancy.

5.6.2 Distribution of uniform floor loads. In consideration of concentrated or uniform loads, loads producing the greater stresses shall govern.

5.6.3 Partition live loads. If the type of occupancy of the building is subjected to change, changes in locations of partitions shall be designed to support this in addition to all other loads.

5.6.4 Special Design

5.6.5 General. In addition to design loads as specified in this Chapter, the design of all structures shall consider special loads set forth in the latest edition of the referral Structural Code as per PD1096 - National Building Code or universally-accepted systems, methods, procedures, principles, state-of-the-art sciences and technologies as they relate to traditional or new materials and structural assemblies in the design and construction of buildings and other structures.

5.6.6 Primary frame systems. Frame systems or the load-resisting system of every structure shall be designed for forces both lateral and vertical – coplanar or non-coplanar. Primary as well as secondary resisting systems shall conform with the latest referral Structural Engineering Code as per PD1096 - NBC and/or universally-accepted engineering standards, methodologies and procedures in design and construction, as conditions set forth and tested/proven in the advancement of sciences and technologies.

5.7 IMPORTANCE FACTOR. A FACTOR OF 1.5 SHALL BE USED FOR ESSENTIAL FACILITIES WHICH SHALL BE SAFE AND USABLE FOR EMERGENCY PURPOSES DURING CALAMITIES SUCH AS TYPHOONS, EARTHQUAKES, CONFLAGRATIONS, OR OTHER NATURAL OR MAN-MADE DISASTERS IN ORDER TO PRESERVE THE HEALTH, SAFETY AND WELFARE OF THE GENERAL PUBLIC. SUCH FACILITIES SHALL INCLUDE:

5.7.1 Hospitals and other medical facilities having surgery or emergency treatment areas.

5.7.2 Municipal government disaster operations and communications center deemed vital in emergencies.

5.7.3 Fire and police stations.

5.7.4 School buildings.

5.8 Earthquake Regulations

5.8.1 General. Every building or structure and every portion thereof shall be designed and constructed to resist stresses produced by lateral and/or vertical forces provided in the Referral Structural Engineering Code. Innovative structural concepts other than those set forth in this section may be approved when evidence submitted shows that equivalent ductility and seismic energy absorption are provided for.

5.8.2 Definitions. The following definitions apply to the provisions of this section:

5.8.2.1 Base of structure. The level at which earthquake motions are assumed to be imparted to the structure or the level at which the structure as a dynamic
vibrator is supported but does not necessarily coincide with the ground level.

5.8.2.2 Box system. A structural system without a complete vertical load-carrying space frame and which requires shear walls or braces to resist lateral forces.

5.8.2.3 Braced frame. A truss system which is provided to resist lateral forces in its frame system and in which the members are subjected to primary axial stresses.

5.8.2.4 Ductile moment-resisting space frames. A moment-resisting space frame complying with the requirements for moment-resisting space frames.

5.8.2.5 Lateral forces resisting system. That part of the structural system assigned to resist lateral forces.

5.8.2.6 Moment-resisting space frame. A vertical load-carrying space frame in which members and joints are capable of resisting forces primarily by flexure.

5.8.2.7 Shear wall. A wall designed to resist lateral forces parallel to the wall.

5.8.2.8 Space frame. A three-dimensional structural system without bearing walls composed of interconnected members laterally supported so as to function as a complete self-contained unit with or without the aid of horizontal diaphragms or floor systems.

5.8.2.9 Vertical frame load-carrying space. A space frame designed to carry all vertical loads.

5.8.2.10 "Tube" structure. Usually of monolithic all cast-in-place reinforced concrete where the enveloping exterior walls and interior partitions and/or division walls act as a honeycombed vertical homogeneous uniform thickness of walls throughout its vertical height, interspersed with floors as diaphragms. Literally designed as reinforced concrete silos but provided with fenestration for light and ventilation, although not necessarily cylindrical in plan and may be of any desirable footprint or plan pattern.

Structural design is premised on a rigorous analysis of the total core moment of inertia of the juxtaposed exterior walls, partitions, and division walls to resist overturning and destabilizing moment, deflection, and lateral shear.

5.8.2.11 Core structure, ideally also of monolithic, cast-in-place concrete structure, a good example of which is Frank Lloyd Wright's design of Johnson Wax research laboratory tower; wherein there exists a central structural core (circular in this case) from which floor spaces are cantilevered and wholly symmetrical all around. Structurally the core is designed to take the brunt of all vertical and horizontal forces by its overturning and seismic-resistant properties.

5.8.2.12 Cable structures. A good example of this is the New York State Pavilion, 1964-65, at New York's World Fair. The curved cable (catenary) if the basic circular component of the uniformly-spaced and suspended cables from a full circular structural ring in compression. A variation in this type of prestressed cables suspended on a pair of semi-circular rings or arches positioned opposite each other with the abutments of the arch rested on the ground while the two arches rise way above, rigidly supported by cables. The resulting surface generated by the double layer of cable is hyperbolic paraboloid.
5.8.2.13 Framed cone structure with rafters equally-spaced radially from its geometric center at each base and the code is truncated at its top. The base acts as a circular ring the support of which are only along the base ring.

5.8.2.13.1 Tension and compression rings in self-supported roofs. The ring is an elastic member with N equal radial loads W considered positive outward. The loading produces bending and direct stress on the ring with maximum stresses occurring at the load point and at midpoints between loads.

5.9 Truss Structures

5.9.1 Open-web truss structures may be used for floor and roof systems of considerable spans, such as long span open web structural steel joints which are pre-engineered and shop prefabricated, ready to install.

5.9.2 Open-web truss structures are of varied patterns of configurations and their web members are at wide variations in arrangements to effectively sustain internal stresses in tension, compression, or both combined. Truss members may be designed and fabricated from extruded structural shapes or cold-roofed steel sections, square, rectangular, circular, or tubular hollow sections, and aluminum or stainless steel also timber or wood.

5.9.3 Open-web trusses are widely used and are popularly know as follows: Howe, Pratt, scissors, Warren quadrangular, crescent arched, king post, Queen post, hammer beam.

5.10 Arches and Rigid Frames

Solid-web structures are usually termed as arched or rigid frame structures of composite elements as pre-engineered reinforced concrete beams at column joints and/or prefabricated from structural steel plates. Cross-sections of which as designed for thrust, moment and shear, with magnitudes depending on the location of pressure line as in a uniformly-loaded parabolic arch. If the pressure line falls at the knees of rigid frames, the moment at center span are smaller compared to simple spans of the same length. Rigid frames are also appropriately applicable to reinforced concrete buildings.

5.11 Prestressed Precast Concrete; (Cast-in-Place) Post Tensioned

5.11.1 This refers to the intentional creation of permanent internal forces in a structure or assembly to improve its strength and structural behavior under various service conditions. In convention reinforced concrete, for example, depth-to-span ratio is 1/10 to 1/12 of the span, while prestressed or post-tensioned beams allow for 1/20 to 1/22 depth-to-span ratio. This allows for a significant deduction in the dead load of the whole structure even with the use of high compression concrete.

5.12 RATIONALE

5.12.1 Any systems, methods or procedures in the rational analysis and design of buildings and other structures shall be in accordance with well established, universally accepted principles of mechanics and ascertained scientific engineering and technological standards of practice applicable to selected materials of construction.

5.12.2 Detailed structural engineering design as mentioned hereunder on concrete, steel, aluminum, wood and other materials, shall be in accordance with the latest updated REFERRAL STRUCTURAL ENGINEERING CODE of the PHILIPPINES, as approved by the Secretary of The Department of Public Works and Highways –
DPWH under the purview of PD 1096 – NBC and/or American Concrete Institute – 
ACI in conjunction with AMERICAN SOCIETY FOR TESTING MATERIALS – 
ASTM as adapted by the ASSOCIATION OF STRUCTURAL ENGINEERING

SOCIETY of the PHILIPPINES – ASEP depending upon the most restrictive 
provision or requirements most-applicable to the project and even requiring most 
rigorous design analysis and in accord with the latest advancement in Science and 
Technology accepted universally as the architect or the Office of The Building 
Official may require.

SECTION 5.1 Concrete And Reinforced Concrete

5.1.1 Consists: Plain concrete, Cast-in-place reinforced concrete, Precast concrete, Precast-
prestressed reinforced concrete with post-tensioning Fiberglass reinforced concrete.

5.1.2 DESIGN APPROACH: The design of the reinforced concrete structure maybe of:

5.1.2.1 Concrete has a compressive strength (in 6” x 12” in cylinder at 28 days) of about 
3,000 to 4,000 psi with possible range from 2,500 or less to 10,000 or 12,000 psi or 
more if special methods and design mix are used. Tensile strength of concrete is 
roughly 10% of its compressive strength.

SECTION 5.2 METHODS OF DESIGN

5.2.1 WORKING STRESS DESIGN
This method requires reliable laboratory tests of samples of materials. To establish ultimate 
stress capacities in tension compression, shear and bonding of rebars, where it is possible to 
use “working stress.” Levels to about 50 to 45 percent of the ultimate capacity for average, 
likely service loads, automatically providing an excess capacity of around 100% in one overall 
factor to cover the sum of all deviations and variations ACI 318 establishes a range of working 
stress.

5.2.2 ULTIMATE STRENGTH METHOD
Ultimate stress design is a little more precise than working stress design. Where the capacity 
of a member can be predicted quite precisely, once the strength of steel and concrete are 
known, the overload factors are more readily varied to recognize better controls, low 
coefficient of variation and more refined techniques.

5.2.3 The ACI CODE (318 – 63) permits analysis by working stress design or ultimate stress design 
at the designer’s option. The factor of safety should be governed by overload from (1) Low 
assumption of loads, approximation in Structural Analysis, Simplification in Calculation, 
effects of construction sequence and methods, (2) under strength or allowance from: 
workmanship, dimensional tolerances, degree of supervision and control, predicted strength 
deficiencies in materials.

5.2.3.1 Definitions

The following terms are defined for general use in this code are intended to be in 
strict conformity, adhering and compatible with the American Concrete Institute or 

5.2.3.2 ADMIXTURE is material other than water, aggregate, or hydraulic cement used as 
an ingredient of concrete and added to concrete before or during its mixing to modify 
its properties.

5.2.3.3 AGGREGATE is granular material, such as sand, gravel, crushed stone and iron-
blast furnace slag, and when used with a cementing medium forms a hydraulic 
cement concrete or mortar.
5.2.3.4 AGGREGATE, LIGHTWEIGHT, is aggregate with a dry, loose weight of 70 pounds per cubic foot (pcf) (1120 kg/m) or less.

5.2.3.5 AIR-DRY WEIGHT is the unit of weight of a lightweight concrete specimen cured for seven days with neither loss nor gain of moisture at 60°F to 80°F (15.6°C to 26.7°C) and dried in 50 + 7 percent relative humidity at 73.4°F + 2°F (23.0°C + 1.1°C).

5.2.3.6 ANCHORAGE in post tensioning is a device used to anchor tendons to concrete member, in pre-tensioning, a device used to anchor tendons during hardening of concrete.

5.2.3.7 BONDED TENDON is a pre-stressing tendon that is bonded to concrete either or through grouting.

5.2.3.8 CEMENTITIOUS MATERIALS are materials as specified in this Code which have cementing value when used in concrete either by themselves, such as Portland cement, blended hydraulic cements and expensive cement, or such materials in combination with fly, ash, raw or calcined natural pozzolans silica fume, or ground granulated blast-furnace slag.

5.2.3.9 COLUMN is a member with a ratio of height-to-least-lateral dimensions of 3 or greater used primarily to support axial compressive load.

5.2.3.10 COMPOSITE CONCRETE FLEXURAL MEMBERS are concrete flexural members or pre-cast and cast-in-place concrete elements or both constructed in separate placements but so interconnected that all elements responds to loads as a unit.

5.2.3.11 COMPRESSION-CONTROLLED SECTION is a cross section in which the net tensile strain in the extreme tension steel at nominal strength is less than or equal to the compression controlled strain limit.

5.2.3.12 COMPRESSION-CONTROLLED STRAIN LIMIT is the net tensile strain at balanced strain conditions.

5.2.3.13 CONCRETE SPECIFIED COMPRESSIVE STRENGTH Of (f 'c), is the compressive strength of concrete used in design and evaluated in accordance with provisions of this Code and the provisions as promulgated by the UAP, expressed in pounds per square inch (psi) (Mpa). Whenever the quantity of f 'c is under a radical sign, square root of numerical value only is intended, and result has units of psi (Mpa).

5.2.3.14 CONCRETE, STRUCTURAL LIGHTWEIGHT, is concrete containing lightweight aggregate having an air-dry unit weight as determined by definition above, not exceeding 115 pcf (1840 kg/m). In this Code, “a lightweight concrete” and lightweight concrete in which all fine aggregate consist of normal-weight sand is termed “sand-lightweight concrete.”

5.2.3.15 CONTRACTION JOINT is a formed, sawed, or tooled groove in a concrete structure to create a weakened plane and regulate the location of cracking resulting from the dimensional change of different parts of the structure.

5.2.3.16 CURVATURE FRICTION is friction resulting from bends or curves in the specified pre-stressing tendon profile.

5.2.3.17 DEFORMED REINFORCEMENT is deformed reinforcing bars, bar and rod mats, deformed wire, welded smooth wire fabric and welded deformed wire fabric.

5.2.3.18 DEVELOPMENT LENGTH is the length of embedded reinforcement required to develop the design strength of reinforcement at the critical section.
5.2.3.19 EFFECTIVE DEPTH OF SECTION (d) is the distance measure from extreme compression fiber to centroid of tension reinforcement.

5.2.3.20 EFFECTIVE PRESTRESS is the stress remaining in pre-stressing tendons after all losses have occurred, excluding effects of dead load and superimposed load.

5.2.3.21 EXTREME TENSION STEEL is the reinforcement (pre-stressed or non-stressed) that is the farthest from the extreme compression fiber.

5.2.3.22 ISOLATION JOINT is a separation between adjoining parts of a concrete structure, usually a vertical plane, at a designed location such as to interfere least with performance of the structure, yet such as to allow relative movement in three directions and avoid formation of cracks elsewhere in the concrete and through which all or part of the bonded reinforcement is interrupted.

5.2.3.23 JACKING FORCE is the temporary force exerted by device that introduces tension into pre-stressing tendons in pre-stressed concrete.

5.2.3.24 LOAD, DEAD, is the dead weight supported by a member, as defined by the provisions in this code (without load factors).

5.2.3.25 LOAD, FACTORED, is the load, multiplied by appropriate load factors, used to proportion members by the strength design method of this Code.

5.2.3.26 LOAD, LIVE, is the live load specified by the provisions as promulgated by the UAP (without load factors).

5.2.3.27 LOAD, SERVICE, is the live and dead load (without load factors).

5.2.3.28 MODULUS OF ELASTICITY is the ratio of normal stress to corresponding strain for tensile or compressive stresses below proportional limit of material.

5.2.3.29 NET TENSILE STRAIN is the tensile strain at nominal strength exclusive of stains due to effective pre-stress, creep, shrinkage and temperature.

5.2.3.30 PEDESTAL is an upright compression member with a ratio of unsupported height to average least lateral dimension of 3 or less.

5.2.3.31 PLAIN CONCRETE is structural concrete with no reinforcement or with less reinforcement than the minimum amount specified for reinforced concrete.

5.2.3.32 PLAIN REINFORCEMENT is reinforcement that does not conform to definition of deformed reinforcement.

5.2.3.33 POSTTENSIONING is a method of pre-stressing in which tendons are tensioned after concrete has hardened.

5.2.3.34 PRECAST CONCRETE is a structural concrete cement cast in other than its final position in the structure.

5.2.3.35 PRESTRESSED CONCRETE is structural concrete in which internal stresses have been introduced to reduce potential stresses in concrete resulting from loads.

5.2.3.36 PRETENSIONING is a method of pre-stressing in which tendons are tensioned before concrete is placed.

5.2.3.37 REINFORCED CONCRETE is structural concrete reinforced with no less than the minimum amounts of pre-stressing tendons or non-prestressed reinforcement specified in this Code.

5.2.3.38 REINFORCEMENT is material that conforms to the provisions in this code, excluding prestressing tendons unless specifically included.
5.2.3.39 RESHORES are shores placed snugly under a concrete slab or other structural member after the original forms and shores have been removed from a larger area, thus requiring the new slab or structural member to deflect and support its own weight and existing construction load applied prior to the installation of the reshores.

5.2.3.40 SHORES are vertical or inclined support members designed to carry the weight of the formwork, concrete and constructional loads above.

5.2.3.41 SPIRAL REINFORCEMENT is continuously wound reinforcement in the form of a cylindrical helix.

5.2.3.42 SPLITTING TENSILE STRENGTH (fct) is the tensile strength of concrete.

5.2.3.43 STIRRUP is reinforcement used to resist shear and torsion stresses in a structural member; typically bars, wires, or welded wire fabric (smooth or deformed) bent into L.U. or rectangular shapes and located perpendicular to or at an angle to longitudinal reinforcement. (The term “stirrups” is usually applied to lateral reinforcement in flexural members and the term “ties” to those in compression members.) See “tie.”

5.2.3.44 STRENGTH, DESIGN, is the nominal strength multiplied by a strength-reduction factor.

5.2.3.45 STRENGTH, NOMINAL, is the strength of a member or cross section calculated in accordance with provisions and assumptions of the strength design method of this code before application of any strength-reduction factors.

5.2.3.46 STRENGTH, REQUIRED, is the length of a member or cross section required to resist factored loads or related internal moments and forces in such combinations as are stipulated in this Code.

5.2.3.47 STRESS is the intensity of force per unit area.

5.2.3.48 STRUCTURAL CONCRETE is all concrete used for structural purposes, including plain and reinforced concrete.

5.2.3.49 TENDON is a steel element such as wire, cable, bar, rod or strand, or a bundle of such elements, used to impart pre-stress to concrete.

5.2.3.50 TENSION-CONTROLLED SECTION is a cross section in which the net tensile strain is greater than or equal to 0.005.

5.2.3.51 TIE is a loop of reinforcing bar or wire enclosing longitudinal reinforcement. A continuously wound bar or wire in the form of a circle, rectangle, or other polygon shape without re-entrant corners is acceptable. See “stirrup.”

5.2.3.52 TRANSFER is the act of transferring stress in pre-stressing tendons from jacks or pre-tensioning bed to concrete member.

5.2.3.53 WALL is a member, usually vertical, used to enclose or separate spaces.

5.2.3.54 WOBBLE FRICTION in pre-stressed concrete, is friction caused by unintended deviation of pre-stressing sheath or duct from its specified profile.

5.2.3.55 YIELD STRENGTH is the specified minimum yield strength or yield point of reinforcement psi.
SECTION 5.3 SPECIFICATIONS FOR TEST AND MATERIALS

5.3.1 Tests of Materials

5.3.1.1 The building official may require the testing of any materials used in concrete construction to determine if materials are of quality specified.

5.3.1.2 Tests of materials and of concrete shall be made by an approved agency and at no expense to the jurisdiction. Such tests will be made in accordance with the standards listed in 4.4.

5.3.1.3 A complete record of tests of materials and of concrete shall be available for inspection during progress of work and for two years after completion of the project, and shall be preserved by inspecting engineer or architect for that purpose.

5.3.1.4 Material and Test Standards. The standards listed in this chapter labeled a “UBC Standard” are listed and shall be as specified in the provisions as adopted in the latest referral Structural Engineering Code as part of this Code. The other standards listed in this chapter are recognized standards.

SECTION 5.4 REINFORCED CONCRETE MATERIALS

5.4.1 Cement

5.4.1.1 ASTM C 845, Expansive Hydraulic Cement

5.4.1.2 ASTM C 150, Portland Cement

5.4.1.3 ASTM C 595 or ASTM 1157, Blended Hydraulic Cements

5.4.2 Aggregates

5.4.2.1 Recognized ASTM Standards.

5.4.2.2 ASTM C 33, Concrete Aggregates

5.4.2.3 ASTM C 330, Lightweight Aggregates for Structural Concrete

5.4.2.4 ASTM C 332, Lightweight Aggregates for Insulating Concrete

5.4.2.5 ASTM C 144, Aggregate for Masonry Mortar

5.4.3 Aggregates failing to meet the above specifications but which have been shown by special test or actual services to produce concrete of adequate strength and durability may be used where authorized by the building official.

5.4.3.1 The nominal maximum size of coarse aggregate shall not be larger than: One fifth the narrowest dimension between sides of forms, or one third the depth of slabs, or

5.4.3.2 Three fourths the minimum clear spacing between individual reinforcing bars, or wires, bundles or bars, or pre-stressing tendons or ducts.

5.4.3.3 These limitations may be waived if, in the judgment of the building official, workability and methods of consolidation are such that concrete can be placed without honeycomb or voids.

5.4.4 Water

5.4.4.1 Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalies, salts, organic materials or other substances deleterious to concrete or reinforcement.
5.4.4.2 Mixing water for pre-stressed concrete that will contain aluminum embedments, including that portion of mixing water contributed in the form of free moisture on aggregates, shall not contain deleterious amounts of chloride ions.

5.4.4.3 Non-potable water shall not be used in concrete unless the following are satisfied:

5.4.4.4 Selection of concrete proportions shall be based on concrete mixes using water from the same source.

5.4.4.5 Mortar test cubes made with non-potable mixing water shall have seven-day and 28-day strengths equal to at least 90 percent of strengths of similar specimens made with potable water. Strength test comparison shall be made on mortars, identical except for the mixing water, prepared and tested in accordance with ASTM C 109 (Compressive Strength of Hydraulic Cement Mortars).

5.4.5 Steel Reinforcement

5.4.5.1 Reinforcement shall be deformed reinforcement, except that plan reinforcement may be used for spiral or tendons, and reinforcement consisting of structural steel, steel pipe or steel tubing may be used in this chapter.

5.4.5.2 Welding of reinforcing bars shall conform to approved nationally recognized standards. Type and location of welded splices, and other required welding of reinforcing bars shall be indicated on the design drawings or in the project specifications. ASTM reinforcing bar specifications, except for A 706, shall be supplemented to require a report of material properties necessary to conform to requirement in UBC Standard 19-1.

5.4.5.3 Deformed Reinforcements

5.4.5.3.1 ASTM A 615, A 616, A 617, A 706, A 767 and A 775, Reinforcing Bars for Concrete.

5.4.5.3.2 Deformed reinforcing bars with a specified yield strength by exceeding 60,000 psi (45.8 Mpa) may be used, provided fy shall be the stress corresponding to a strain of 0.35 percent and the bars otherwise conform to approved national standards see ASTM A 615, ASTM A 616, ASTM I 617, ASTM A 706, ASTM A 767 and A 775.

5.4.5.3.3 ASTM A 184. Fabricated Deformed Steel bar Mats. For reinforced bars used in bar mats, see ASTM A 615, A 616, A 617, A 706, A 767 or A 775.

5.4.5.3.4 ASTM 496. Steel Wire, Deformed, for Concrete Reinforcement.

5.4.5.3.5 For deformed wire for concrete reinforcement, see ASTM A 496, except that wire shall not be smaller than size D4, and for wire with a specified yield strength by exceeding 60,000 psi 945.8 Mpa), fy shall be stress corresponding to a strain of 0.35 percent if the yield strength specified in design exceeds 60,000 psi (45.8 Mpa).

5.4.5.3.6 ASTM A 185. Steel Welded Wire, Fabric, Plain for concrete reinforcement.

5.4.5.3.6.1 For welded plain wire fabric for concrete reinforcement see ASTM A 185, except that for wire with a specified yield strength fy exceeding 60,000 psi (45.8 Mpa), fy shall be the stress corresponding to a strain of 0.35 percent, if the yield specified in design exceeds 60,000 psi (413.7 Mpa). Welded intersections shall not be spaced farther apart than 12 inches (305 mm) in direction of calculated stress, except for wire fabric used as stirrups in accordance with the applicable provisions of ASTM.
5.4.5.3.6.2 ASTM A 497, Welded Deformed Steel Sire Fabric for Concrete Reinforcement

5.4.5.3.6.3 For welded deformed wire fabric for concrete reinforcement see ASTM A 497, except that for wire with a specified yield strength fy exceeding 60,000 psi (45.8 Mpa), fy shall be the stress corresponding to a strain of 0.35 percent, if the yield strength specified in design exceeds 60,000 psi (45.8 MPa). Welded intersections shall not be spaced further apart than 16 inches (406 mm) in direction of calculated stress, except for wire fabric used as stirrups in accordance with applicable ASTM standards.

5.4.6 Deformed reinforcing bars may be galvanized or epoxy coated. For zinc or epoxy-coated reinforcement, see ASTM A 615, A 616, A 617, A 706, A 767 and A 775 and ASTM A 934 (Epoxy-Coated Steel Reinforcing bars).


5.4.7 Plain Reinforcement

5.4.7.1 Plain bars for spiral reinforcement shall conform to approved national standards, see ASTM A 615, A 616, and A 617.

5.4.7.2 For plain wire for spiral reinforcement, see ASTM A 82 except that for wire with a specified yield strength fy exceeding 60,000 psi (45.8 Mpa), fy shall be the stress corresponding to a strain of 0.35 percent, if the yield strength specified in design exceeds 60,000 psi (45.8 Mpa).

5.4.8 Prestressing Tendons

5.4.8.1 ASTM A 416, Uncoated Seven-wire Stress-relieved Steel Standard for Prestressed Concrete.

5.4.8.2 Uncoated-relieved Wire for Prestressed Concrete.

5.4.8.3 ASTM 722, Uncoated High-Strength Steel Bar for Prestressing Concrete.

5.4.8.4 Wire, strands, and bars not specifically listed in ASTM A 416 and A 722 may be used, provided they conform to minimum requirement of these specifications and do not have properties that make them less satisfactory than those listed.

5.4.9 Structural steel, steel pipe or tubing

5.4.9.1 For structural used with reinforcing bars in composite compression members, meeting requirement of Section 1910.16.7 or 1910.16.8, see ASTM A 36, A 242, A 572 and A 588.

5.4.9.2 For steel pipe or tubing for composite compression members composed of a steel-encased concrete core meeting requirements of section 1910.16.4, see ASTM A 53, A 500 and A 501.

5.4.10 UBC Standard 19-1, Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

5.4.11 Admixtures

5.4.11.1 Admixtures to be used in concrete shall be subject to prior approval by the building official.
5.4.11.2 An admixture shall be shown capable of maintaining essentially the same composition and performance throughout the work as the project used in establishing concrete proportions in accordance with the ASTM applicable provisions.

5.4.11.3 Calcium Chloride or admixtures containing chlorides from other than impurities from admixture ingredients shall not be used in prestressed concrete, in concrete cast against stay-in-place galvanized steel forms.

5.4.11.4 ASTM C 260, Air-entraining Admixtures for Concrete.

5.4.11.5 ASTM C 494 and C 1017, Chemical Admixtures for Concrete.

5.4.11.6 ASTM C 618, Fly Ash and Raw or Calcined Natural Pozzolans for Use as Admixtures in Portland Cement Concrete.

5.4.11.7 ASTM C 989, Ground-Iron Blast-Furnace Slag for Use in Concrete and Mortars.

5.4.11.8 Admixtures used in concrete containing ASTM c 845 expansive cements shall be compatible with the cement and produce no deleterious effects.

5.4.11.9 Silica Fume used as admixture shall conform to ASTM C 1240 (Silica Fume for Use in Hydraulic Cement Concrete and Mortar).

5.4.12 Storage of Materials

5.4.12.1 Cementitious materials and aggregate shall be stored in such a manner as to prevent deterioration or instruction of foreign matter.

5.4.12.2 Any material that has deteriorated or has been contaminated shall not be used for concrete.

SECTION 5.5 Concrete Testing

5.5.1 ASTM C 192, Making and Curing Concrete Test Specimens in the Laboratory.

5.5.2 ASTM C 31, Making and Curing Concrete Test Specimens in the Field.

5.5.3 ASTM C 42, Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

5.5.4 ASTM C 39, Compressive Strength of Cylindrical Concrete Specimens.

5.5.5 ASTM C 172, Sampling Freshly Mixed Concrete.

5.5.6 ASTM C 496, Splitting Tensile Strength of Cylindrical Concrete Specimens.

5.5.7 ASTM C 1218, Water Soluble Chloride in Mortar and Concrete.

SECTION 5.6 Concrete Mix

5.6.1 ASTM 94, Ready-Mixed Concrete.

5.6.2 ASTM C 685, Concrete Made by Volumetric Batching and Continuous Mixing.

5.6.3 UBC Standard 19-2, Mill-mixed Gypsum Concrete and Poured Gypsum Roof Diaphragms.

5.6.4 ASTM C 109, Compressive Strength of Hydraulic Cement Mortars.

5.6.5 ASTM C 567, Unit Weight of Structural Lightweight Concrete.

SECTION 5.7 Welding
5.7.1 The welding of reinforcing steel, metal inserts and connections in reinforced concrete construction shall conform to UBC Standard 19-1.


SECTION 7. Masonry Construction

7.1 General

7.1.1 Materials, design, construction and quality control of all masonry materials shall be in accordance with this division.

7.1.2 Masonry materials includes:

7.1.2.1 Burned Clay units include: common and face bricks: ASTM C 62 as locally manufactured.

7.1.2.2 Structural Clay Tile Load Bearing ASTM C 34 (obsolete, not locally available).

7.1.2.3 Concrete masonry Unit – otherwise known as Concrete Hollow Blocks available in LOAD BEARING and NON-LOAD BEARING.

7.2 Adobe Stone – locally quarried.

7.2.1 Definitions

7.2.1.1 Bedded Area is the area of the surface of a masonry unit, which is in contact with mortar in the plane of the joint.

7.2.1.2 Effective Area of Reinforcement is the cross-sectional area of reinforcement multiplied by the cosine of the angle between the reinforcement and the direction for which the effective area is to be determined.

7.2.1.3 Gross Area is the total cross-sectional area of a specified section.

7.2.1.4 Net Area is the gross cross-sectional area minus the area of ungrouted cores, nothces, cells and unbedded areas. Net area is the actual surface area of a cross section masonry.

7.2.1.5 Transformed Area is the equivalent area of one material to a second base on the ratio of elasticity of the first material to the second.

7.2.2 Bonds:

7.2.2.1 Adhesive Bond is the adhesion between surfaces of masonry units and mortar or grout.

7.2.2.2 Reinforcing Bond is the adhesion between steel reinforcement and mortar or grout.

7.2.2.3 BOND BEAM is a horizontal grouted element within the masonry in which the reinforcement is embedded.

7.2.2.4 CELL is a void space having a gross-sectional area greater than 1-1 1/2 square inches (967 mm²).

7.2.2.5 CLEANOUT is an opening to the bottom of grout space of sufficient size and spacing to allow the removal of debris.
7.2.2.6 COLUMN, REINFORCED, is a vertical structural member in which both the reinforcement and masonry resist compression.

7.2.2.7 COLUMN, UNREINFORCED, is a vertical structural member whose horizontal dimension measured at right angles to the thickness does not exceed three times the thickness.

7.2.3 Dimensions:

7.2.3.1 Given Commercial dimensions of concrete masonry unit or concrete hollow blocks (OHB / CMU) are generally nominal for example an 8" unit is actually 7 5/8" to provide for 3/8" thick mortar joint so that an 8" x 8" x 16" = 7 5/8" x 7 5/8" x 15 5/8", ALLOWED mortar joint thickness is 1/4" for glazed bricks and structural facing tile; 3/8" or 1/2" for facing brick and glazed facing tile, and 1/2" for building and structural tiles.

7.2.3.2 Nominal: Dimensions shall be used for modular coordination is construction which includes allowance for thickness of a mortar bond is given in “2.3” above.

7.2.3.3 LOAD BEARING CHB are classified ASTM C 90; NON LOAD BEARING CHB as ASTM 125.

7.2.4 GROUT LIFT is an increment of grout height within the total grout pour.

7.2.5 GROUT POUR is the total height of masonry wall to be grouted prior to erection of additional masonry. A grout pour will consist of one or more grout lifts.

7.2.6 Grouted Masonry:

7.2.6.1 Grouted hollow unit masonry is that the form of grouted masonry construction in which certain designated cells of hollow units are continuously filled with grout.

7.2.6.2 Grouted multiwythe masonry is that form of grouted masonry construction in which the space between the wythes is solidly or periodically filled with grout.

7.2.7 Joints:

7.2.7.1 Bed Joint is the thickness of mortar bond that is horizontal at the time the masonry units are placed.

7.2.7.2 Head Joint is the mortar joint having a vertical transverse plane.

7.2.8 MASONRY UNIT is a brick, concrete, hollow block, stone, cut stone, glass block or concrete block conforming to the ASTM standards, requirement, size dimensions and quality.

7.2.8.1 Hollow-masonry Unit is a masonry unit whose net cross-sectional area in any plane parallel to the surface containing the cores or cells are at least 75 percent of the gross cross-sectional area measured in the same plane. Such Hollow Masonry Units may be of any lightweight materials bond in Portland cement.

7.2.8.2 PRISM is an assemblage of masonry units and mortar with or without grout used as a test specimen for determining properties of the masonry.

7.3 Reinforced Masonry Design
7.3.1 General: In addition to foregoing requirements, this section governs masonry construction in which reinforcements are used to resist forces.

7.3.1.1 Design Assumptions:

7.3.1.1.1 Masonry carries no tensile stress.

7.3.1.1.2 Reinforcement is completely surrounded by and bonded to masonry material to work together as a homogenous material within the range of working stresses as allowed in ASTM 90 for LB.CHB and NLB.CHB-ASTM 129.

7.3.1.1.3 Mortar and grout for reinforced masonry as per ASTM C 476.

7.3.1.1.4 Cold drawn wire as per ASTM A 82; rebars as per ACI reinforced concrete.

7.3.1.2 Design:
Tests indicate that the structural performance of reinforced masonry is analogous to that of reinforced concrete within the extremely low limits that are permitted as per ASTM given stresses for LB.CHB and NLB.CHB.

7.3.1.2.1 Detail engineering designs, methods, analysis and procedures shall be in conformity with UBC. See 2049 General Design Requirements or as adopted in the referral Structural Engineering Code of the Philippines which is even more restrictive.

7.3.2 SHELL is the outer portion containing the voids of hollow masonry unit.

7.4 Definition of Terms

7.4.1 Walls:

7.4.1.1 Bonded Wall is a masonry wall of two or more wythes bonded to act as a structural unit.

7.4.1.2 Cavity Wall is a wall containing continuous air space with a minimum width of 2 inches (51 mm) and a maximum width of 4 1/2 inches (114 mm) between wythes, which are tied with metal ties.

7.4.2 WALL TIE is a mechanical metal fastener, which connects wythes of masonry to each other or to other materials.

7.4.3 WEB is an interior solid portion of hollow masonry unit as found in hollow masonry.

7.4.4 WYTHE is the portion of wall, which is one masonry unit in thickness. A collar joint is not considered a wythe.

7.5 Material Standards

7.5.1 Quality. Materials used in all masonry construction shall conform to the standards in size, dimension and quality of materials in this code or applicable standards as required in the referral Structural Code of NBC or ASTM, whichever is more restrictive as determined by O.B.O. of the LGU.

7.5.2 Reclaimed or previously used masonry units shall meet the applicable requirements as for new masonry units of the same material for their intended use.

7.5.2.1 Aggregates
7.5.2.1.1 ASTM C 144, Aggregates for Masonry Mortar.

7.5.2.1.2 ASTM C 404, Aggregates for Grout

7.5.2.2 Cement

7.5.2.2.1 UBC Standard 21-11, Cement, Masonry, (Plastic cement conforming to the requirements of UBC Standard 25-1 may be used in lieu of masonry cement when it also conforms to UBC Standard 21-11).

7.5.2.2.2 ASTM Standard C 150, Portland Cement

7.5.2.2.3 UBC Standard 21-14, Mortar Cement

7.5.2.3 Lime

7.5.2.3.1 UBC Standard 21-12, Quicklime for Structural Purposes.

7.5.2.3.2 UBC Standard 21-13, Hydrated Lime for masonry purposes. When Types N and NA hydrated lime are in masonry mortar, they shall comply with the provisions of UBC standard 21-15, Section 21.1506.7, excluding the plasticity requirement.

7.5.2.4 Masonry units of clay or shale.

7.5.2.4.1 ASTM C 34, Structural Clay Load-bearing Wall Tie.

7.5.2.4.2 ASTM C 56, Structural Clay Nonload-bearing Tile.

7.5.2.4.3 UBC Standard 21-1, Section 21.101. Building Brick (Solid Units).

7.5.2.4.4 ASTM C 126, Ceramic Glazed Structural Clay Facing Tile, Facing Brick and Solid Masonry Units. Load-bearing glazed brick shall conform to the weathering and structural requirements of UBC Standard 21-1, Section 21.106. Facing Brick.

7.5.2.4.5 UBC Standard 21-1, Section 21.106, facing Brick (solid units).

7.5.2.4.6 UBC Standard 21-1, Section 21.107, Hollow Brick.

7.5.2.4.7 ASTM C 67, Sampling and Testing Brick and Structural Clay Tile.

7.5.2.4.8 ASTM C 212, Structural Clay Facing Tile.

7.5.2.4.9 ASTM C 530, Structural Clay Nonload-bearing Concrete Masonry Units.

7.5.2.5 Masonry Units of Concrete

7.5.2.5.1 UBC Standard 21-3, Concrete Building Brick.

7.5.2.5.2 UBC Standard 21-3, Hollow and Solid Load-bearing Concrete Masonry Units.

7.5.2.5.3 UBC Standard 21-5, Nonload-bearing Concrete Masonry Units.
7.5.2.5.4 ASTM C 140, Sampling and Testing Concrete Masonry Units.

7.5.2.5.5 ASTM C 426, Standard Test Method for Driving Shrinkage of Concrete Block.

7.5.2.6 Masonry Units of other Materials.
7.5.2.6.1 Calcium Silicate.

7.5.2.6.2 UBC Standard 21-1, calcium Silicate Face Brick (Sand-lime Brick).

7.5.2.6.3 UBC Standard 21-9, Unburned Clay Masonry Units and Standard Methods of Sampling and Testing Unburned Clay Masonry Units.

7.5.2.6.4 ACI-704, Cast Stone.

7.5.2.6.5 UBC Standard 21-17, Test Method for Compressive Strength of Masonry Prism

7.5.2.7 Connectors

7.5.2.7.1 Wall ties and anchors made from steel wire shall conform to UBC Standard 21-10, Part II, and other steel wall ties UBC Standard 22-1. Wall ties and anchors made from copper, tensile yield strength of 30,000 psi (207 MPa).

7.5.2.7.2 All such items not fully embedded in mortar or grout shall either be corrosion resistant or shall be coated after fabrication with copper, zinc or metal having at least equivalent corrosion-resistant properties.

7.5.2.8 Mortar.

7.5.2.8.1 UBC Standard 21-15, Mortar for Unit Masonry and Reinforcement Masonry other than Gypsum.

7.5.2.8.2 UBC Standard 21-16, Field Tests Specimens for Mortar.

7.5.2.8.3 UBC Standard 21-20, Standard tests Method for Flexural Bond Strength of Mortar Cement.

7.5.2.9 Grout.

7.5.2.9.1 UBC Standard 211-18, Method of Sampling and testing Grout.

7.5.2.9.2 UBC Standard 21-19, Grout for Masonry.

7.5.2.10 Reinforcement.

7.5.2.10.1 UBC Standard 21-10, Part I, joint Reinforcement for Masonry.

7.5.2.10.2 ASTM A 615, A 616, A 617, A 767, and A 775, Deformed and Plain Billet-steel Bars, Rail-steel Deformed and Plain Bars, Axle-Steel Deformed and Plain Bars.

7.5.2.10.3 UBC Standard 21-10, Part II, Cold-drawn Steel Wire for Concrete Reinforcement.
SECTION 8. Structural Steel

8.1 General

8.1.1 The quality, testing and design for steel used structurally in buildings or other structures shall conform to the requirements specified in this Chapter.

8.1.2 Standards of Quality

8.1.2.1 Structural Steel for load carrying purposes (structural grade) are basically grouped as follows:

8.1.2.1.1 Carbon Steel

ASTM A 7 -------- RBW – for bridges and buildings (discontinued)
ASTM A 373 ------ RBW – structural for welding (discontinued)
ASTM A 36 ------- RBW – structural steel

8.1.2.1.2 High Strength Low Alloy Steel

ASTM A 242 ------ RBW – high strength low alloy structural steel
ASTM A 440 ------- RBW – high strength structural steel
ASTM A 441------- RBW – high strength low alloy Structural Manganese
Vanadium Steel
ASTM A 514 ------ RBW – high yield quenched / Tempered
ASTM A 572 ------ RBW - high strength low alloy
Columbium Vanadium Structural Steel

8.2 NOTE:

8.2.1 Propriety grades meeting American Society for Testing Materials, ASTM A 572 are available in six grades; 42, 45, 50, 55, 60 and 65 for each of which the minimum yield point is in ksi is the grade number

8.2.2 Legend:
R = riveted connection
B = bolted
W = welded connection

8.3 Material Standards as contained herein are either UBC or ASTM as preferred by structural designer. If in conflict, UBC shall prevail or as adopted in the latest edition of the Referral Structural Engineering Code of the Philippines as per PD 1096 NBC

8.3.1 UBC Standard 22-1, Materials Specifications for Structural Steel.

8.3.2 Design Standards

8.3.2.1 ANSI/ASCE 8. Specification for the Design of Cold-formed Stainless Steel Structural Members, shall confrom with the American Society of Civil Engineers and/or Association of Structural Engineers of the Philippines-ASEP.

8.3.2.2 Connectors

8.3.2.3 ASTM A 502, Structural Rivet Steel

8.4 Material Identification

8.4.1 General. Steel furnished for structural load-carrying purposes shall be properly identified in conformity to the ordered grade in accordance with approved standards,
the provisions of this chapter and the appropriate UBC standards. Steel which is not readily identifiable as to grade from marking and test records shall be tested to determine conformity to such standards.

8.4.2 Structural Steel. The mill in accordance with approved national standards shall identify Structural Steel. When such steel is furnished to a specified minimum yield point greater than 36,000 pounds per square inch (psi) 248 MPa, the American Society for Testing and Materials (ASTM) or other specification designation shall also be indicated.

8.4.3 The fabricator shall maintain identity of the material and shall maintain suitable procedures and records attesting that the specified grade has been furnished in conformity with the applicable standard. The fabricator’s identification mark system shall be established and on record prior to the fabrication.

8.4.4 When structural steel is furnished to a specified minimum yield point greater than 36,000 psi (248 MPa), the ASTM or other specification designation shall be included near the erection mark on each shipping assembly or important construction component over any shop coat of paint prior to shipment from the fabricator’s identification mark on each of the smaller-sized pieces to provide continuity of identification. When subject to fabrication operations, prior to assembling into members, which might obliterate paint marking, such as blast cleaning, galvanizing or heating for forming, such as pieces of steel, shall be marked by steel dye stamping or by a substantial tag firmly attached.

8.4.5 Individual pieces of steel having a minimum specified yield point in excess of 36,000 psi (248 MPa), which are received by the fabricator in at tagged bundle or lift marked by the fabricator’s established identification marking system.

8.4.6 Cold-formed Carbon and Low-alloy Steel. Cold-formed carbon and low-alloy steel used for structural purposes shall be identified by the mill in accordance with approved national standards. When such steel is furnished to a specified minimum yield point greater than 33,000 psi (228 MPa), the fabricator shall indicate the ASTM or other specification designation, by painting, decal, tagging or other suitable means, on each lift or bundle of fabricated elements.

8.4.7 When the cold-formed carbon and low-alloy steel used for structural purposes has a specified yield point equal to or greater than 33,000 psi (228 MPa), which was obtained through additional treatment, the resulting minimum yield point shall be identified in addition to the specification designation.

8.4.8 Cold-formed Stainless Steel. Cold-formed stainless steel structural members designed in accordance with recognized standards shall be identified as to grade through mill test reports. A certification shall be furnished that the chemical and mechanical properties of the material supplied equals or exceeds that considered in the design. Each lift or bundle of fabricated elements shall be identified by painting, decal, tagging or other suitable means.

8.4.9 Open –Web Steel Joints. Open-web steel joints and similar fabricated light steel load-carrying members shall be identified in accordance with internationally accepted standard of practice most particularly in systems, methods and procedure in the details and construction of joints as to welded, bolted, or riveted or combination thereof as to type, size and manufacturer by tagging or other suitable means at the time of manufacture or fabrication. Such identification shall be maintained continuously to the point of their installation in a structure.

8.5 Structural Design for Steel Construction

92
8.5.1 General. In a structural assembly the forces and displacements of the joints are analyzed in relation to their degrees of freedom. The degrees of freedom provide a basis for the study of structural equilibrium and redundancy and for the formation of the problem coordinates us in analysis. Structural analysis dwells in the (1) equilibrium of forces under the actions of applied loads and reactions, (2) compatibility of displacements of all the members of the structure which should be consistent with each other or the continuity of which should be carried throughout.

8.5.2 Statistically determinate structures condition ‘2’ above is automatically satisfied as the internal forces distribution completely determined from ‘1’.

8.5.3 Statistically indeterminate structures both conditions above ‘1’ and ‘2’ must be applied, the internal forces distribution being the function of the applied loading.

8.5.4 Detailed Engineering analysis and design shall conform to requirements as to type of construction and precise systems, methods and procedures, criteria, parameters, pre-engineered design charts of internationally established standards of practice as adopted by in the latest edition as approved referral Structural Engineering Code of the Philippines under PD 1096-NBC. Otherwise, quality of materials, testing and design of steel for use structurally in buildings or other structures shall conform to the requirements as specified in UBC Chapter 27 and applicable standards listed in UBC Chapter 60.

8.5.4.1 Analysis: The choice of the best analysis procedure in structural design is a matter of experience however the following may guide.

8.5.4.2 For continuous beams of uniform section and/or single storey single bay frames both the statistical method and the mechanism method work with equal advantage

8.5.4.3 For continuous beams of non-uniform section, the statistical method is best.

8.5.4.4 For regular framed structures of few stories and bays, the mechanism method is best.

8.5.4.5 For multibay single-storey gabled and lean-to frames, use of charts is most efficient.

8.5.4.6 For relatively complex frames the moment-balancing procedure has merit.

8.6 Fabrication and Erection of Structural Steel.

8.6.1 General

8.6.1.1 Fabrication of structural steel consist of manufacturing the parts required construct the steel frames of buildings and related structures. It involves the precise interpretations of the design drawings and specifications, making the shop and erection drawings, furnishing of the appropriate quality and quantity of materials its formation assemblage and shop fastening of materials into units and shipping the complete fabricated units as per schedule of delivery dates.

8.6.1.2 Erection. A pre-engineered erection diagrams consisting of a complete set of plans with elevations and sections, connection joints, details, templates anchorages, alignment, camber, erection bolts, splices, locations, wind or sway bracings, fixed hinged or rolling points of supports non-shrink cement grouts and others for a complete workmanlike job.

SECTION 9. Wood

9.1 General
9.1.1 Wood is assumed to be an orthotropic material of nature with three principal
elasticity directions coinciding with the longitudinal, radial and tangential directions
in the tree. The most important elastic constant is the modulus of elasticity $E$, along
the grain, which is usually given for a 12% moisture content. Green timber "$E$" is
usually 25% lower than 12% moisture content. Relationships between load, duration
of load deformation and material strength is a significant consideration in design.

9.1.2 Working Stress for timber is approximately 20 to 75% of the ultimate strength. The
large variation of factor of safety is due to variability of the strength properties which
depend on knots, moisture content, grain, density, shakes, splits, checks and other
factors.

9.1.3 For various working stress grading of structural grade lumber and all other design
properties, refer to the latest edition as approved by the Referral Structural
Engineering Code of the Philippines, as approved by the Secretary of DPWH under
the purview of PDI096 NBC.

9.1.4 Scope. The quality and design of wood members and their fastenings shall conform
to the provisions of this Chapter.

9.1.5 Design methods, systems and procedures shall be based on and shall comply with the
provisions of one of the following design methods in this chapter as well as the
requirements.

9.1.5.1 Allowable Stress Design. Design using allowable stress design methods
shall comply with the provisions under the PDI096 NBC Referral Structural
Code or applicable provisions in the UBC, which ever is more restrictive
governs.

9.1.5.2 Conventional Light-Frame Construction. The design and construction of
conventional light-frame wood structures shall comply with the provisions
under the Referral Structural Engineering Code or an applicable provision in
the UBC, which ever is more restrictive governs.

9.2 Definitions

Definitions. The following terms used in this Chapter shall have the meanings indicated in
this section.

9.2.1 AFPA is the American Forest and Paper Association, 1111 19th St., N.W., Suite 800,
Washington, DC 20036 (Formerly NifoPa, National Forest Products Association)

9.2.2 AHA is the American Harboard Association, Inc., 1210 W. Northwest Highway,
Palatine, Illinois 60067.

9.2.3 ATTC is the American Institute of Timber Construction, 7012 S. Revere Oakway,
Suit 140, Englewood, Colorado 80112.

9.2.4 ALSC is the American Lumber Standard Committee, Post Office Box 210,
Germantown, Maryland 20875-0210.

9.2.5 APA is the American Plywood Association, 7011 South 10th St., Tacoma Washington
98411.

9.2.6 AWPA is the American Wood Preservers Association, Post Office Box 286,
Woodstock, Maryland.

9.2.7 BLOCKED DIAPHRAGM is a diaphragm in which all sheathing edges not
occurring on framing members are supported on and connected to blocking.
9.2.8 BRACED WALL LINE is a series of braced wall panels in a single storey that meets the requirements of provisions as promulgated by the UAP.

9.2.9 BRACED WALL PANEL is a section of wall braced in accordance with provisions as promulgated by the UAP.

9.2.10 CONVENTIONAL LIGHT-FRAME CONSTRUCTION is a type of construction whose primary structural elements are formed by a system of repetitive wood-framing members.

9.2.11 DIAPHRAGM is a horizontal or nearly horizontal system acting to transmit lateral forces to the vertical-resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems.

9.2.12 FIBERBOARD is a fibrous-felted, homogenous panel made from lignocellulosic fibers (usually wood or cane) and having a density of less than 31 pounds per cubic foot (497 kg/m³), but more than 10 pounds per cubic foot (160 kg/m³).

9.2.13 GLUED BUILT-UP MEMBERS are structural elements, the sections of which are composed of built-up lumber, wood structural panels or wood structural panels in combination with lumber, all parts are bonded together with adhesives.

9.2.14 GRADE (lumber) is the classification of lumber in regard to strength and utility in accordance with UBC Standard 23-1 and the grading rules of an approved lumber grading agency.

9.2.15 HARDBOARD is a fibrous-felted, homogenous panel made from lignocellulosic fibers consolidated under heat and pressure in hot press to a density not less than 31 pounds per cubic foot (497 kg/m³).

9.2.16 NOMINAL LOADING is a design load that stresses a member of fastening to the full allowable stress tabulated in this chapter. This loading may be applied for approximately 10 years, either continuously or cumulatively, and 90 percent of this load may be applied for the remainder of the life of the member or fastening.

9.2.17 NOMINAL SIZE (lumber) is the commercial size designation of width and depth, in standard sawn lumber and glued-laminated lumber grades, somewhat larger than the standard net size of dressed lumber, in accordance with UBC Standard 23-1 for sawn lumber.

9.2.18 PARTICLEBOARD is a manufactured panel product consisting of particles of wood or combination of particles and wood fibers bonded together.

9.3 Grading Rules

9.3.1 UBC Standard 23-1, Classification, Definition, methods of Grading and Development of Design Values for all Species of Lumber.

9.3.2 Standard Grading Rules for Canadian Lumber, United States Edition, NLGA.

9.3.3 Standard Grading Rules No. 17, WCLIB.

9.3.4 Standard Grading Rules, WWPA.

9.3.5 Grading Rules, NHPMA.

9.3.6 Grading Rules SPIB.

9.3.7 Standard Specifications for Grades of California redwood Lumber, RIS.
9.3.8 Standard Grading Rules, NELMA.

9.3.9 Structural glued-laminated timber


9.3.9.4 AITC 500, Determination of design Values for Structural Glued-Laminated Timber in accordance with ASTM 3737, American Institute of Timber Construction.

9.3.9.5 Preservative treatment by pressure process and quality control.

9.3.10 Product Standards

9.3.10.1 UBC Standard 23-2, Construction and Industrial Plywood.


9.3.10.3 ANSI A 208.1. Particleboard.

9.3.10.4 ASTM D 1037. Evaluating the properties of Wood-based Fiber and Particle Panel Materials.

9.3.10.5 ASTM D 1333. Determining Formaldehyde Levels from Wood-based products Under Defined Test conditions Using a Large Chamber.

9.3.10.6 ANSI 05.1, Wood Poles-Specifications and Dimensions.

9.3.10.7 ASTM D 25, Round Timber Piles.

9.3.10.8 ANSI/AHA A 194.1, Cellulosic Fiber Insulating Board (Fiberboard).

9.3.10.9 ANSI / AHA 135.6, Hardboard Siding.

9.3.11 Design Standards

9.3.11.1 ASTM D 5055, Structural Capacities of Prefabricated Wood I – Joists.

9.3.11.2 ANSI/TPI 1 National Design Standard for Metal Plate Connected Wood Truss Construction.

9.3.11.3 ANSI / TPI 2 Standard for testing Performance for Metal Plate Connected Wood Truss.

9.3.11.4 ASCE 16, Load and Resistance Factor Design Standard for Engineered Wood Construction.

9.3.12 Fire retardancy.

9.4 Adhesives and Glues

9.4.1 ASTM D 3024. Dry Use Adhesive with Protein base, Casein Type.

9.4.2 ASTM D 2559. Wet Used Adhesives.

9.4.3 APA Specification AFG-01, Adhesives for Gluing Plywood to Wood Framing.


9.5 Design Values

9.5.1 ASTM 1990, Establishing Allowable Properties for Visually-Graded Dimension Lumber from In-grade tests of Full-size specimens.


9.5.3 ASTM D 2555, Standard Test Methods for Establishing Clear Wood Strength Values.

Table on Allowable Unit Stress for Stress Grade Lumber in psi

<table>
<thead>
<tr>
<th>Common Philippine Species and Commercial Grade</th>
<th>Extreme Fiber Stress in Bending &amp; Tension Parallel to Grain (F_e)</th>
<th>Horizontal Shear (F_s)</th>
<th>Compression Perpendicular to the Grain (F_c)</th>
<th>Compression Parallel to the Grain (F_p)</th>
<th>Modulus of elasticity in bending</th>
</tr>
</thead>
<tbody>
<tr>
<td>APITONG</td>
<td>2360</td>
<td>160</td>
<td>375</td>
<td>1400</td>
<td>1600</td>
</tr>
<tr>
<td>GUIJO</td>
<td>3000</td>
<td>212</td>
<td>630</td>
<td>1800</td>
<td>1800</td>
</tr>
<tr>
<td>IPIL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YAKAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANGACHAPUEY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAWAN (red)</td>
<td>1900</td>
<td>132</td>
<td>250</td>
<td>1000</td>
<td>1600</td>
</tr>
<tr>
<td>TANICLE</td>
<td>2240</td>
<td>150</td>
<td>300</td>
<td>1250</td>
<td>1320</td>
</tr>
<tr>
<td>BENGUE PINE</td>
<td>2240</td>
<td>170</td>
<td>335</td>
<td>1250</td>
<td>1320</td>
</tr>
<tr>
<td>ALMON</td>
<td>2000</td>
<td>160</td>
<td>475</td>
<td>1600</td>
<td>1250</td>
</tr>
<tr>
<td>USUAL DIMENSIONS OF LUMBER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOMINAL DIMENSIONS</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>DRESSED (FINISHED)</td>
<td>1⅞</td>
<td>3⅞</td>
<td>5</td>
<td>11</td>
<td>13⅞</td>
</tr>
</tbody>
</table>

Note: Odd size dimension may be halved from above given sizes. Length comes in 4′, 8′, 10′, 12′. Length beyond 16′(0") is extra length.

9.6 Structural Design

9.6.1 Detailed engineering design of wood structural framing – methods, systems, procedures, analysis shall be in accordance with universally accepted standards UBC Chapter 5 Wood and/or latest edition and approved Referral Structural Engineering Code under the purview of PD1096 – NBC which ever is more rigorous and restrictive.

SECTION 10. Aluminum

10.1 General
10.1.1 The quality of material structural design, fabrication and erection of Aluminum use structurally in buildings and other structures shall conform to the requirements set forth in UBC Chapter 28 and UBC standards No. 28-1.

10.1.2 Alloys.

10.1.2.1 The use of aluminum alloys and tempers for structural members and assemblies, standards of performance shall not be less that those required universally accepted standards properly authenticated certification of alloys and tempers shall be furnished by the manufacturer as to allowable stresses for members and fasteners.

10.2 Design

10.2.1 Combined stresses: Members subjected to combination of compression, bending and shear shall be proportional in accordance with the provision of UBC Standard No. 28-1.

10.2.2 Light gauge members. Where light gauge structural members is used in design UBC standard No 28-1 special provision shall be applied.

10.2.3 Structural Roofing and Siding. The livelihood deflection of structural roofing and siding made of formed shot shall not exceed one sixtieth ($\frac{1}{60}$) of the span length.

10.3 Fabrication and Erection

10.3.1 Cutting, oxygen cutting of aluminum alloys is prohibited.

10.3.2 Fasteners, bolts and other fasteners shall be of aluminum, stainless steel or aluminized hot dip galvanized or electro-galvanized steel.

10.3.3 Dissimilar materials, where aluminum alloy parts are in contact with dissimilar metals (other than those mentioned in '3.2' above) laying surface shall be painted or provided with separation as per UBC standard no 28-1.

10.4 Welding

10.4.1 Aluminum parts shall be welded with an inert gas shielded arc. Welding with welding flux is not allowed.

10.4.2 Filler alloys shall comply with UBC Standard No. 28-1.

10.5 Qualification

10.5.1 Welding of aluminum structural member shall be performed only by welders duly qualified under UBC Standard No. 28-1 procedures.

10.6 Erection

10.6.1 Structural assemblies in aluminum shall be adequately braced and fastened to resist wind, dead and erection loads.

SECTION 11. Life Safety Requirements for Existing Buildings other than Highrise Buildings

Pursuant NBC Chapter 21 Transitory and Final Provision particularly section 210.

11.1 General.
11.1.1 Purposely to provide alternatives of reasonable degree of safety for occupants of existing buildings which do not conform with the minimum safety requirements of the NBC, the FCP nor this code prior to their adoption

11.1.2 Within 18 months after the effectively date of this code plans for such compliance shall be submitted to the O.B.O. for approval and thereafter a fixed time period shall be set forth to complete the implementations of such remedial alternatives.

11.2 Exits.

11.2.1 Number of exits shall conform as required in the NBC, FCP or this code based on occupancy on use, occupant load, type of construction location as to fire zone and location of the building on its property.

11.2.2 Stair construction:

11.2.3 Required stairs shall have a minimum tread width of 230 mm. Minimum. (9 inches) and rise 200 mm. Maximum (8") provided at least one handrail.

11.2.4 Fire escape stairways pitch shall not exceed 60° (1:2 slope) minimum width 600 mm (24 inches) minimum tread width 100 mm (4") riser 250 mm (10") maximum. Stairs and balcony railings shall support a horizontal force of 25 kilograms per 300 mm (50 lbs. per linear foot).

11.2.5 Fire escape ladders shall be at least 400 mm wide (16") shall stand a horizontal force of 46 kilograms per 300 mm linear run (100 lbs. per linear foot) and a concentrated load of 230 kilograms (500 lbs.) at any point on the rung. ladder rungs shall not be less than 20 mm in diameter (⅜") placed at 300 mm. (12") o.c. max. placed flatwise relative to the face of the building. Balconies for such fire escape shall not be less than 750 mm x 850 mm (30 x 33 inches).

11.2.6 All fire escapes shall extend to the ground or provided with counter balanced stairs reaching to the ground.

11.2.7 Provide properly lighted signage for all fire exit and fire escapes.

11.3 Enclosure of vertical shafts.

11.3.1 All interior vertical shafts such as stairways, elevator hoistways, pipe chases, chutes - laundry/refuse, service and utility shafts shall be enclosed by a minimum of one hour fire resistive construction. Openings into such shafts shall be protected with one-hour fire assemblies which shall be maintained self closing or be automatic closing by smoke detection. Fusible line type automatic trap door closing device may be permitted if fusible link does not exceed 135°F.

11.3.2 Vertical openings need not be protected if the building is protected by an approved automatic sprinkler system.

11.3.3

11.4 Stand pipes.

11.4.1 Buildings of 4 storeys in height and above shall be provided with an approved stand pipe system.

11.5 Smoke Detectors.

11.5.1 Every dwelling unit or guest room in hotels, lodging houses or rooms use for sleeping shall be provided with smoke detectors as prescribed on this code.

11.6 Separation of Occupancies.
11.6.1 Occupancy separations shall be provided in accordance with NBC FCP or specified in this code. The degree of fire resistivity shall be of fire resistivity rating appropriate for the degree of hazardousness of the occupancies to be effectively separated.

SECTION 12. Life Safety Requirements for Existing Highrise Buildings

12.1 General. Pursuant to chapter 21 Transitory and Final Provision particularly section 2101. This provisions apply to existing high rise building constructions prior to the adoption of this architectural code under the purview of PD 1096 - NBC.

12.2 To purposely provide alternatives of reasonable degree of safety for occupants of existing buildings which do not conform with the minimum safety standards of the NBC, FCP and/or this code prior to the adoption of such codes.

12.2.1 Existing high rise building when found to be not in conformance within the minimum standards of safety as provided for in the NBC, FCP and/or this referral code shall be modified to conform with all such provision subject to revocation of certificate of occupancy.

12.2.2 After the adoption of this code, the building official shall duly notify the owners whose buildings are subject to the provision of NBC, FCP or this code. Upon receipt of such notice, the owner shall be subject to the time limits to take necessary actions to comply with such provision.

12.2.2.1 Plans and specifications for the necessary alterations or modifications shall be filed with the local - D.B.O. within 18 months from the date of said notification.

12.2.2.2 Extension time for compliance to above time limit may be granted on showing of good cause and subject to filing an acceptable systematic progressive plan of correction with the building officials.

12.3 Authority of the Building Official.

12.3.1 For purpose of this Code the building official shall have the authority to consider alternative or innovative approaches and may grant necessary deviation from the code as follows:

12.3.1.1 Allow alternative materials or methods of compliance provided such alternative or innovations will effectively provide levels of fire and life safety equal or greater than specifically set forth in the NBC FCP and or this Code as evidenced by actual tests or satisfactory proven facts.

12.3.1.2 Waive specific case requirements if such is proven to be not physically possible or practical and that practical alternative cannot be provided.

12.4 Appeals board.

12.4.1 Pursuant to NBC - Chapter 3 section 307 appeal.

12.4.1.1 Non-issuance, suspension and or revocation of certificate of Occupancy issued by the H.B.O. due to the provisions of this Chapter. May appeal there from shall be governed by applicable provision of sections 306 and 307 of the NBC.

12.5 Specific Provisions and Alternatives

12.5.1 The following provisions shall apply:

100
12.5.1.1 Type of Construction. Buildings found to be of less restrictive type of construction other than specifically required under NBC, FCP or this Code shall be equipped with approval automatic sprinkler system installed in accordance with the applicable codes or as per internationally accepted standards.

12.5.1.2 Fire Department Communication System.

12.5.1.2.1 When determined by actual test that portable fire department communication equipment is ineffective, a communication system acceptable to the local fire department shall be installed within the existing highrise building to permit emergency communications with fire department personnel.

12.5.1.3 Single Station Smoke Detectors.

12.5.1.3.1 Single station smoke detectors conforming to NBC, FCP or this code and U.B.C. standards No. 43-6 shall be installed within all occupant rooms to provide audible alarm in such rooms more partially in sleeping rooms such detectors shall be battery operated.

12.5.1.4 Manual Fire Alarm System.

12.5.1.4.1 An approved manual fire alarm system connected to a central or remote station service, constantly attended location shall be provided.

12.5.1.5 Occupant Voice Notification System.

12.5.1.5.1 Such system shall provide emergency communication from a central station the location of which shall be approved by the fire department such system shall permit communication to all normally occupied area.

12.5.1.5.2 Fire alarm and voice communication system controlled from a central station maybe combined if design to permit voice transmission to override the fire alarm but the fire alarm shall not terminate in less than 3 minutes.

12.5.1.5.3 All such fire alarm or voice communication system shall be designed to include video annunciator in central stations to graphically indicate the location on the floor or storey and occurrence of fire as de as detected to be able to relay emerging instructions as to direction of exit away from affected area.

12.5.1.6 Vertical Shaft Enclosures.

12.5.1.6.1 Openings for piping, ducts, chases, gas vents, dumbwaiters and rubbish or mail and linen chutes of metal construction are permitted without shaft enclosure provided the floor openings are provided with effective fire stopped at each floor level.

12.5.1.7 Shaft Enclosure Opening Protection.

12.5.1.7.1 Vertical shaft enclosures openings other than those provided for elevator shall be provided with approved 20 minute fire rated assemblies, 45 mm (3/4") thick solid wood or equivalent thereto be self closing or automatic closing and latching.
12.5.1.8 Manual Shut-Off of HVAC System.

12.5.1.8.1 Heating, ventilating and air conditioning system shall be equipped with manual shut-off controls installed in an approved location if required by the fire department.

12.5.1.9 Automatic Elevator Recall System.

12.5.1.9.1 All elevators shall be equipped with automatic recall system

12.5.1.10 Unlocked Stairway Doors.

12.5.1.10.1 Exit doors into exit stairway/enclosures shall be maintained unlocked from the stairway side on at least 4th floor level. All unlock doors shall bear a sign stating: ACCESS ON TO FLOOR AT THIS LEVEL.

12.5.1.10.2 Doors locked on stairway sides, subject to the following:

12.5.1.10.2.1 Aforesaid locked doors shall be capable of being unlocked simultaneously from an approved location.

12.5.1.10.2.2 A telephone or other 2-way emergency communication system which operates continuously is provided at every fourth floor stairway side. Locked doors are so provided to control fire draft.

12.5.1.11 Stair Shaft Ventilation.

12.5.1.11.1 Stair shaft enclosures extending up to the roof shall be vented to the outside with manual or automatic smoke detection vent opening of not less than 1.5 sq.mts. (16 sq.ft) with 30 mm min. (2'-0") dimension.

12.5.1.11.2 Except approved pressurized enclosed mechanically operated smoke proof stairs.

12.5.1.12 Elevator Shaft Ventilation.

12.5.1.12.1 Elevator hoistways shall be vented to outside air with openings of not less than 3.5 percent of the area of the shaft or a minimum of 0.30 sq.mt. (3 sq.ft.) per elevator.

12.5.1.12.2 Exceptions pressurized hoistway that vents be normally closed.

12.5.1.13 Posting of Elevators.

12.5.1.13.1 Permanent sign conspicuously place in each elevator to read: DO NOT USE ELEVATOR IN CASE OF FIRE.

12.5.1.14 Exits.

12.5.1.14.1 General: All floors of existing highrise building shall have access to two separate means of egress, one of which may be an existing exterior fire escape or an exterior stairway not less than 800 mm clear width, minimum tread width of 230 mm (9") and a
maximum rise of 200mm (8") provided with railings on both sides, steps variation clearance not more than 9.5 mm (\(\frac{3}{8}\)"") each.

12.5.1.14.2 Adequacy of fire escapes shall be demonstrated to the satisfaction of the building official.

12.5.1.14.3 Fire escapes access.

12.5.1.14.3.1 Through a room between the corridor and the fire escape provided the door to the room is operable from the corridor with approved panic hardware.

12.5.1.14.3.2 Directly through a door provided the interior with a minimum opening dimension of 750 mm (29") and not more than 800mm (30") above the floor and landing.

12.5.1.15 Protection of Exterior Openings.

12.5.1.15.1 A fire escape accepted as one of the required means of egress shall accessible from landings or openings within 3000 mm (10'-0") distance, shall be protected as approved by the O.B.O.

12.5.1.16 Exit Corridor Construction.

12.5.1.16.1 Corridors serving as an exit for 30 or more occupants shall have walls and ceilings of not less than one hour fire resistive construction.

12.5.1.17 Exit Corridor Openings.

12.5.1.17.1 Openings thru exit corridor walls and ceilings shall be protected by at least 75 mm (1\(\frac{2}{3}\)"") thick solid bonded wood core doors or approved 6 mm (\(\frac{1}{4}\)"") thick wire glass or approved fire dampers conforming to U.B.C. - Standards No. 43-7 or as provided for by NBC, FCP or this Code whichever is most restrictive shall govern.

12.5.1.18 Exit Corridors Door Closers.

12.5.1.18.1 Exit doors into corridors shall be provided with self-closing devices or shall be automatically closing by actuation of a smoke detector.

12.5.1.19 Exit Corridor Dead Ends.

12.5.1.19.1 Length of dead end corridors serving an occupant load of 30 or more shall not exceed 6000 mm (20 feet).

12.5.1.20 Interior Finish

12.5.1.20.1 Interior finish in exit corridors, exit stairways and extension thereof shall be of at least 1-hour fire resistive and or as provided in this Code.

12.5.1.21 Exit Stairway Illumination.

12.5.1.21.1 When building is occupied exit doors and exit ways shall be illuminated at no less than 1-foot candle at floor level. Such
lighting shall be powered from independent alternate source of power such as a storage battery pack or from on site standby generator set.

12.5.1.22 Exit Stairway Exit Signs.

12.5.1.22.1 Location of exit stairways shall be clearly directed by appropriately self illumination or lighted signages with independent source of power as given in 16.5.1.21.1 above.

12.5.1.23 Emergency Planning - see FCP.

12.5.1.24 Posting of Emergency Plans - see FCP.

12.5.1.25 Fire Drill - see FCP.

12.5.1.26 Sprinkler System Alternatives

12.5.1.26.1 When an approved automatic sprinkler system is installed through out the building in accordance with UBC standards No. 38-1 (NBC, FCP or this Code whichever is most restrictive shall govern) some of the specific provisions and alternatives as set forth in 16.5, may be waived upon written recommendation of the O.B.O. depending upon the Type of Construction and Occupancy.

SECTION 13. Existing Covered Mall Buildings

13.1 General. To establish minimum standards of safety for the covered mall buildings constructed before the adoption of this referral Architectural Code, use of covered mall buildings.

13.1.1 Covered Mall Building Defined.

13.1.1.1 Covered mall buildings is a single building enclosing a number of Tenants and Occupancies such as retail stores, drinking and dining establishments, entertainment and amusement even recreational facilities, offices and other similar uses wherein two or more tenants have a main entrance into one more malls.

13.1.1.2 Anchor store: is an exterior perimeter department store or major merchandizing center having direct access to a covered mall building but having all required exits independent of a mall.

13.1.1.3 Gross Leasable Area - is the total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the center lines of joint partitions to the outside of tenant walls. All tenant areas, including areas for storage shall be included in calculating gross leasable area.

13.1.1.4 Mall is a roofed area or covered common pedestrian area within a covered mall building which serves as access for two or more tenants and may have three levels that are open to each other.

13.2 Applicability of Other Provisions. Except as specifically required by this Code covered mall buildings shall meet all applicable provisions of NBC, FCP and this Code governing mixed occupancies and types of constructions.

13.3 Type of Construction and Required Yards for Ultimated Area.

104
13.3.1 Type of Construction One and two level malls maybe of any type of construction permitted by this Code. Three to four level malls shall be at the least Type II one hour construction or better. Provision of Sprinkler System shall comply with specific provision of the FCP or UBC of the latest edition, the more restrictive provision shall apply.

13.3.2 Anchor stores or shops and parking garages.

13.3.3 Covered mall buildings may be of unlimited area provided the covered mall building, attached anchor stores or shops and parking garage are adjoined by public ways, streets or yards not less than 18.00 meters (60 feet) in width along exterior walls.

13.4 Smoke Control System.

13.4.1 Smoke-control system shall be connected to both the sprinkler system and the smoke detector system and shall automatically operate when either the sprinkler or smoke detection system is actuated. Installation and operations whether automatic or manual shall be in strict compliance as to the detailed provision of FCP or UBC of the latest edition.

13.5 Acceptance Testing.

13.5.1 Smoke control system shall be subject to actual test by the O.B.O. or fire marshal as per FCP (PD 1185) to confirm that their system of operation complies with the requirements of this Code.

13.5.1.1 Storage is prohibited in exit passageways which are also exit. Said shall be posted.

13.6 Fire Department Access to Equipment.

13.6.1 Rooms or areas containing controls for air conditioning systems automatic fire extinguishing systems or other fire/smoke detection, suppression or control elements shall be identified for use by the fire department.

13.7 Tenant Separator.

13.7.1 Each tenant shall be provided with wall separation of at least 1-hour resistive rating. Such separation wall shall fully extend from the floor to the underside of the ceiling above and shall be provided with smoke control device either manual or automatically operated.

13.8 Public Address System.

13.8.1 Covered mall buildings exceeding 15,240 sq.mts (50,000 sq.ft.) shall be provided with public address system that is readily accessible for use by the fire department.

13.9 Plastic Panels ad Plastic Signis.

13.9.1 Within every storey or floor level and from side wall to side wall of each tenant space or mall approve plastic panels and sign boards shall be limited as follows:

13.9.1.1 They shall not exceed 20% of the wall area facing the mall.

13.9.1.2 They shall not exceed a height of 300 mm (36") except when the sign is vertical the height shall not be more than 2.50 meters (39") and a width not more than 900 mm (36").

13.9.1.3 They shall be located at a minimum distance of 500 mm (18") from the adjacent tenant.
13.10 Lease Plan.

13.10.1 Each covered mall building owner shall provide both the building and the fire department with a lease plan indicating clearly thereon each type of occupancy and exits in accordance with the one filed and approved for the issuance of Certificate of Occupancy. Such plans shall be kept current. No modifications or changes shall be made without written approval of the O.B.O.

13.11 Mixed Type of Construction.

13.11.1 Openings between an anchor store or shops of Type I or II of one hour fire resistive construction need not be protected.

13.12 Standby Power covered mall buildings exceeding 4,650 sq.mts. (50,000 sq.ft.) shall be provided with standard power system which are capable of operating the public address system, exist signages, emergency lighting, the smoke control activation system and smoke control equipment from four adjacent zone acting simultaneously.

13.13 Exits. Each tenant space and the covered mall building shall be provided with exits as required hereunder.

13.13.1 Number of exits. When the distance of travel to the mall exceeds 23 meters (75'-0") within the public area of a tenant space or when the occupant load serve by the exit to the mall exceeds 50, not less than 2 exits shall be provided. The occupant load of a public sales area shall be computed at 3 sq.m. per occupant. Occupant loads for other areas shall be computed in accordance with the provisions of NBC, FCP or of this Code whichever is most restrictive shall apply.

13.13.2 Arrangement of Exits.

13.13.2.1 Arrangement of exits shall be as per occupant load and type of occupancy and types of construction as provided for in PD 1096 - NBC or FCP or this Code which ever is most restrictive shall apply.

13.13.2.2 Distance to Exits. The maximum distance of travel from any point within a mall to an exterior exit door horizontal exit, exit passageway or an enclosed stairway shall not exceed 61 meters (200 ft.)

13.13.2.3 Access to Exits. Exits shall be arranged to make it possible to go in either direction from any point in the mall to a separate exit except for dead ends not exceeding a length equal to twice the width of the mall measured of the narrowest location within the dead end portion of the mall.

13.13.2.4 Exit passageways that serves secondary exit from a tenant space doors for such shall be of 1-hour fire door with self closing or automatic closing by smoke detector actuation.

13.14 Malls for the purpose of providing egress, malls shall be considered as corridors but need not comply with one hour fire, resistive ratings construction of floor, wall, ceiling or roof when the width of the mall is not less than 6.00 meters (20 feet)

13.15 Security Grilles and Doors. Horizontal sliding or vertical security grilles or doors which are required means of egress shall conform to the following:

13.15.1 They must remain secured in full open position during the period of occupancy by the general public.

13.15.2 Doors or grilles shall not be closed when there are more than 20 persons occupying spaces served by the exit or 50 persons occupying spaces served by more than 1 exit.
13.15.3 Doors or grilles shall be openable from within without the use of any special knowledge or effort when the space is occupied.

13.15.4 When two or more exits are required not more than half of the no. of exits shall be equipped with horizontal sliding or vertical rolling grilles or doors.


14. General Requirements

14.1.1 Pursuant to the rules and regulations promulgated by the National Historical Institute under its charter, and the provisions of this part of the Architectural Code, all national shrines, buildings, monuments, and landmarks that shall have been identified, declared, and classified by the National Historical Institute (NHI), are enforced to be restored, reserved, conserved and preserved.

14.1.2 Pursuant to the provisions of the National Integrated Project Areas System (NIPAS) Act (R.A. 7586), and to the provisions of this part of the Code, all designated protected areas shall be classified and administered in order to preserve and/or maintain its natural, essential ecological system to preserve the genetic diversity, to ensure sustainable use of resources found therein, and to preserve and maintain their natural habitation to the greatest extent possible.

14.2 Definition of Terms

14.2.1 Conservation is a multi-disciplinary means of safeguarding the country’s historic-cultural heritage to suitably adapt it to the needs of society.

14.2.2 Preservation is the cleaning and maintaining of a building or structure in good repair in order to maintain its continued existence for posterity.

14.2.3 Restoration is the methodological replication controlled repair and strengthening of a building or structure to have it as close and authentic as possible to its original style and/or character and to arrest further decay and deterioration.

14.2.4 Renovation is the adaptation for possible use of a building or structure to serve modern needs.

14.2.5 Reconstruction is the rebuilding of a faithful replica of a building or structure based on its original architectonic character and style of the period plans and materials under precise and strict supervision.

14.2.6 Remodeling is a drastic renovation without regard to its original design, style, or character or state of authenticity as a whole, of the past.

14.2.7 Protected Areas refer to identified portions of land and water set aside by reason of their environmental habitats or ecosystems, unique physical of ecological significance, for reservation, preservation and conservation, managed to enhance biological diversity and protected against destructive human exploitation.

14.2.8 A monument is any structure or group of buildings with the following attributes:

14.2.8.1 Historical value- associated with important historical places, events and birth places, monuments of illustrious Filipinos.

14.2.8.2 Socio-cultural value-inherent socio-cultural significance identifying traditional, indigenous traits or life style of the Filipino people.
14.2.8.3 Aesthetical or architectural value— an artifact, building or other structures, sculpture, pottery, painting or arrangement bearing strong (foreign and local) influences of a certain character or period style.

14.2.8.4 Uniqueness - expressing distinct characteristics (e.g. the first printing press, fine theater, etc).

14.2.9 National Shrines are historic sites hallowed or honored for their history or association with an illustrious Filipino (e.g. the Rizal and Mabini Shrines).

14.2.10 National Monuments are objects, natural features of areas of specific historic interest that are set aside by local or national governments as public properties (e.g. Rizal and Bonifacio Monuments, the Walls of Intramuros).

14.2.11 National Landmarks are places and objects that are associated with an event, achievement, characteristic or modification that presents a turning point or stage in Philippine history (e.g. the first Normal School, etc.).

14.2.12 NIPAS Act is the classification and administration of all designated protected areas to maintain essential ecological processes and life-support systems to preserve genetic diversity, to ensure sustainable use of resources found therein, and to maintain their natural conditions to the greatest extent possible.

14.2.13 Period Architecture is a distinct architectural style from a certain period in history.

14.2.14 Protected Areas refers to identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against human exploitation.

14.2.15 Public buildings are any infrastructure owned by the national government and the local government unit.

14.2.16 A site is any area which has played a significant role in the history of our country. Such significance may be historical, cultural, archaeological, sociological, or scientific.

14.2.17 National cultural treasures are unique structures/objects found locally, possessing outstanding historical, cultural, artistic and/or scientific value which are significant and important to the country and nation.

14.2.18 Important cultural properties are cultural properties which have been singled out from among the innumerable structural properties having exceptional cultural and historical significance of the Philippines.

14.2.19 Reaffirmation and Implementation of Existing Laws

14.2.19.1 This code enforces the National Integrated Protected Areas System (NIPAS) Act in the view that any infrastructure design must be relevant and sensitive to the needs of the environment declared protected areas.

14.2.19.2 This code enforces the preservation and conservation laws drawn out by the National Historical Institute (NHI) of its declared, classified, and identified national shrines, monuments, and landmarks.

14.2.19.3 This code reaffirms the enforcement of the Rules and Regulations Governing the Development of Intramuros in accordance with the rules and other requirements as set and published by the Intramuros Administration (IA).
14.2.20 Reaffirmation and Implementation of Existing Laws

14.2.20.1 The format for the documentation is recommended as follows:

14.2.20.1.1 Written Report of the proceedings, complete with reactions and recommendations of the community with regards to the design of the project.

14.2.20.1.2 Copies of the design and details furnished by the Architect of the Project.

14.2.20.1.3 Recommendations from the local UAP chapter are optional.

14.2.21 Submission of Listing of Sites and Architecture with Cultural Significance

14.2.21.1 All Architects are enjoined to periodically produce a listing of private and public architecture and sites that they perceive to have cultural significance for both the locality and the nation at any time that they become aware of such sites that are not so listed.

14.2.21.2 The listing will have the following information:

14.2.21.2.1 Name of client, if applicable

14.2.21.2.2 Name of project, if applicable

14.2.21.2.3 Name of designer and all practitioners involved in the creation of the project, if applicable

14.2.21.2.4 Brief explanation of its cultural merits

14.2.21.2.5 Date built

14.2.21.2.6 Picture and/or sketch of the project

14.2.21.3 Such listing shall be submitted to the following:

14.2.21.3.1 LGU

14.2.21.3.2 The National Secretariat of the UAP

14.2.21.3.3 The appropriate and cognizant government authority

14.2.21.4 Guidelines for drawing up a list of architecture and sites with cultural significance is contained in the Bureau Charter.

14.2.22 Conservation, Preservation, Restoration, Renovation or Rehabilitation Of Historic Buildings

14.2.22.1 A historic building is both a challenge and an opportunity. If the building is significant, the architect has the responsibility not only to preserve, but to record consistent information for posterity at least include a summary of the research, measured drawings to fit Standards of the Historic Buildings Survey. Record all information uncovered during work on the building or structure and information about the treatments as planned and as carried out.

14.2.22.2 Reasonable effort shall be made to provide the compatible use for a property which requires minimal alteration of the building, structure, or
site and its environment, or to use the property for its originally intended purpose.

14.2.22.3 The distinguishing original qualities or character of a building structure, or site and its environment should be preserved. The removal or alteration of any historic material or distinctive architectural features should be avoided as much as possible.

14.2.22.4 All buildings, structures, and sites shall be recognized as distinctive works of their own time. Alterations that have no historic basis that seek to create an earlier appearance shall be discouraged.

14.2.22.5 Changes in the course of time are evidence of the history and development of a building, structure, or site and its environment. Such changes may have acquired significance which should be recognized and preserved.

14.2.22.6 Distinctive features as examples of skilled craftsmanship characterizing a building, structure, or site shall be treated with sensitivity.

14.2.22.7 shall be repaired rather than replaced. When replacement is necessary, the new material should match the material being replaced. In composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features, should be based on accurate duplications of features, substantiated by historic, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.

14.2.22.8 The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will change the historic building materials shall be avoided.

14.2.22.9 Reasonable effort to protect and preserve archeological resources affected by, or adjacent to, any project.

14.2.22.10 Contemporary design for alterations and additions to existing properties may be allowed when such alterations and additions do not destroy significant historical, architectural, or cultural material, and such design is compatible with the size, scale, color, material, and character of the property, neighborhood or environment.

14.2.22.11 Wherever possible, new additions or alterations to structures shall be done in such a manner that if such additions or alterations were to be removed in the future, the essential form and integrity of the structure would be unimpaired
CHAPTER 7

REQUIREMENTS OF FIRE ZONES

GENERAL. Chapter 5, Sections 501 to Section 507 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 1. Fire Zone Defined

All provisions set forth in PD 1096-NBC, chapter 5, sections 501 to 507 inclusive originally mandatory shall apply with equal force and effect. In case of conflict with this Architectural Code, the amplifications of all such original provisions of NBC shall govern.

Fire zones arc areas within which only certain types of buildings are permitted to be constructed based on their use or occupancy, type of construction and resistance to fire.

The local government units shall enact ordinances, rules and regulations governing fire zones within its area of governance or jurisdiction purposely to contain or control spread of conflagration within predetermined areas as to degree of fire hazardlessness.

1.3.1 There should be at least 3-categories of fire zones within its urban and suburban areas as: non-restrictive, restrictive, highly restrictive areas as to contain within such designated areas types of construction of specific degree of fire-resistivity as follows:

1.3.1.1 Fire Zone 1. Non-restrictive Zone – Areas where upon no restriction as to types of construction is required. Use of indigenous materials of construction as bamboo, nipa, cogon, or anahaw tatched roofing or all wood construction with metal roofing is permitted. Usually, such areas designated falls within the outer fringes of the suburban or rural areas.

1.3.1.2 Fire Zone 2. Restrictive Zone – Areas within suburban but in the outer periphery of urban zone, wherein only fire resistive construction materials is allowed to be used, such as: fire retardant treated wood through out as to framing, exterior cladding and partitions with masonry “socalos” up to window sill level of the ground floor or all masonry construction of the ground floor and completely of timber construction of the upper floor.

1.3.1.3 Fire Zone 3. Highly Restrictive Zone – Practically only non-combustible material is allowed in construction such as structural steel with fire protective covering combined with masonry and reinforced concrete or precast, reinforce concrete construction.

SECTION 2. Buildings Located in More than One Fire Zone

2.1 A building or structure which is located partly in one fire zone and partly in another shall be considered to be in the more highly restrictive fire zone, when more than one-third of its total floor area is located in such zone.

SECTION 3. Moved Building

3.1 Any building or structure moved within or into any fire zone shall be made to comply with all the requirements for buildings in that fire zone.

SECTION 4. Temporary Buildings

4.1 Temporary buildings such as reviewing stands and other miscellaneous structures conforming to the requirements of this Code, and sheds, canopies and fences used for the protection of the public around and in conjunction with constructional work, may be erected in the fire zones by
special permit from the Building Official for a limited period of time, and such buildings or structures shall be completely removed upon the expiration of the time limit stated in such permits.

SECTION 5.  Center Lines of Streets

5.1  For the purpose of this Chapter, the center of an adjoining street or alley shall be considered an adjacent property line. Distances shall be measured at right angles to the street or alley.

SECTION 6.  Restrictions of Existing Buildings

Existing buildings or structures in fire zones that do not comply with the requirements for a new building erected therein shall not hereafter be enlarged, altered, remodeled, repaired or moved except as follows:

Such building is entirely demolished.

Such building is to be moved outside the limits of the more highly restrictive Fire Zone to a zone where the building meets the minimum standards.

Changes, alterations and repairs may be made provided that in any 12-month period, the value of the work does not exceed twenty percent of the value of the existing building, and provided that, such changes do not add additional combustible material, and do not, in the opinion of the Building Official, increase the fire hazard.

Additions thereto are separated from the existing building by firewalls, as set forth in this code.

Damage from fire or earthquake, typhoons or any fortuitous event may be repaired, using the same kind of materials of which the building or structure was originally constructed, provided that, the cost of such repair shall not exceed twenty percent of the replacement cost of the building or structure.

SECTION 7.  Designation of Fire Zones

7.1  The Secretary shall approve specific restrictions for each type of Fire Zone. Cities and municipalities shall be divided into such Fire Zones in accordance with local, physical, and spatial framework plans submitted by city or municipal planning and/or local environmental planning development agency.
CHAPTER 8

FIRE RESISTIVE REQUIREMENTS IN CONSTRUCTION

SECTION 1. Title

1.1 General. Chapter 6, Sections 601 up to Section 604 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Amplifications on NBC Chapter 2 Section 603 Fire Resistive Standards.

SECTION 2. Floor Construction

2.1 Floors shall be of such materials and construction as specified under chapter 5 Fire Zones and Fire-Resistive Standards and as provided for under Chapter 6 – Types of Construction.

2.2 All floors shall be so framed and secured into the framework and supporting walls as to form an integral structural part of the whole building.

2.2.1 CRITERIA FOR SELECTION OF FLOOR FRAMING SYSTEM

<table>
<thead>
<tr>
<th>NO.</th>
<th>LIVE LOAD P.S.F</th>
<th>SPAN RANGE</th>
<th>STRUCTURAL FRAMES</th>
<th>PROTECTED BY</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Up to 50</td>
<td>Up to 18</td>
<td>Wood, Masonry, Ceiling</td>
<td></td>
<td>Combust</td>
</tr>
<tr>
<td>2</td>
<td>Up to 60</td>
<td>10'-20'</td>
<td>Wood, Masonry, Check Local Acceptance of Fire Resistance Treatments</td>
<td>Ceiling</td>
<td>Combust</td>
</tr>
<tr>
<td>3</td>
<td>Up to 100</td>
<td>9'-30'</td>
<td>Wood, Steel, Masonry</td>
<td>Ceiling</td>
<td>Combust</td>
</tr>
<tr>
<td>4</td>
<td>60'-100'</td>
<td>Up to 40'</td>
<td>Steel, Masonry</td>
<td>Ceiling</td>
<td>2-3</td>
</tr>
<tr>
<td>5</td>
<td>60-200</td>
<td>6'-14'</td>
<td>Steel</td>
<td>Spray-on Ceiling</td>
<td>3-4</td>
</tr>
<tr>
<td>6</td>
<td>60-150</td>
<td>8'-16'</td>
<td>Steel</td>
<td>Spray-on Ceiling</td>
<td>3-4</td>
</tr>
<tr>
<td>7</td>
<td>60-150</td>
<td>Up to 32'</td>
<td>Steel, Mas. Concrete</td>
<td>Self</td>
<td>3-4</td>
</tr>
<tr>
<td>8</td>
<td>60-150</td>
<td>Up to 36</td>
<td>Steel, Mas. Concrete</td>
<td>Self</td>
<td>3-4</td>
</tr>
<tr>
<td>9</td>
<td>60-150</td>
<td>Up to 25</td>
<td>Steel, Conc.</td>
<td>Concrete</td>
<td>1-4</td>
</tr>
<tr>
<td>10</td>
<td>60-250</td>
<td>10'-30'</td>
<td>Steel, Conc.</td>
<td>Concrete</td>
<td>2-4</td>
</tr>
<tr>
<td>11</td>
<td>60-150</td>
<td>20'-32'</td>
<td>Concrete</td>
<td>Ceiling</td>
<td>2-4</td>
</tr>
<tr>
<td>11-A</td>
<td>60-200</td>
<td>20'-32'</td>
<td>Concrete</td>
<td>Ceiling</td>
<td>2-4</td>
</tr>
<tr>
<td>12</td>
<td>60-100</td>
<td>15'-25'</td>
<td>Poured Conc. or Lift Slab</td>
<td>Concrete</td>
<td>2-4</td>
</tr>
<tr>
<td>13</td>
<td>60-250</td>
<td>15'-35'</td>
<td>Concrete</td>
<td>Concrete</td>
<td>2-4</td>
</tr>
<tr>
<td>14</td>
<td>60-150</td>
<td>15'-35'</td>
<td>Concrete Mas.</td>
<td>Concrete</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>60-150</td>
<td>15'-35'</td>
<td>Concrete Mas.</td>
<td>Concrete</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>60-200</td>
<td>Up to 35'</td>
<td>Steel</td>
<td>Concrete</td>
<td>1-4</td>
</tr>
</tbody>
</table>

2.2.2 CEILINGS ARE INDICATED WHERE USUALLY REQUIRED

<table>
<thead>
<tr>
<th>DESCRIPTION OF PARTITIONS</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>½&quot; Label Gypsum Board Ceiling</td>
<td>1 HR</td>
<td>CLG. WGT. 3 LB/SQ. FT</td>
</tr>
<tr>
<td>Amer. Plywood Assoc. 2-4-1 Fir. 4 x 10 wd. Joint 48&quot;o.c. M&quot;L fur. chan SPA 24&quot;o.c. waldb. Atl With 1&quot; type S screws, joints fin.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>½&quot; Label Gypsum Wallboard Ceiling</td>
<td></td>
<td>CLG. WGT. 3 LB/SQ. FT</td>
</tr>
<tr>
<td>½&quot; Cr. Shum. 4&quot;o.c. M&quot;L Fur. Chan 24&quot;o.c. joints finished</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3 The types of floor construction used shall be provided with adequate bridging or means to keep the beam and girders from lateral buckling.

113
SECTION 3. Roof of Construction and Covering

3.1 Roof Covering. Roof covering for all buildings shall be either fire-retardant or ordinary depending upon the fire-resistant requirements of the particular type of roofing framing system.

Construction for corresponding type of occupancy or use. The use of combustible roof insulation shall be permitted in all types of construction provide it is covered with approved fire roof covering applied directly thereto.

3.2 Roof Trusses. All roofs shall be so framed and tied into the framework and supporting walls so as to form an integral structural part of the whole building. Roof trusses shall have all joints well fitted and shall have all tension members well tightened before any load is placed in the truss. Diagonal and sway bracing shall be used to brace all roof trusses. The allowable working stresses of materials in trusses shall conform to this Code. Pre-engineered Camber shall be provided to prevent sagging.

3.3 CRITERIA FOR SELECTION OF ROOF FRAMING SYSTEMS

CEILINGS ARE INDICATED WHERE USUALLY REQUIRED

<table>
<thead>
<tr>
<th>NO</th>
<th>LIVE LOAD</th>
<th>SPAN RANGE</th>
<th>STRUCTURAL</th>
<th>PROTECTED</th>
<th>HRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Up to 40#</td>
<td>Up to 20&quot;</td>
<td>Wood, Masonry</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Up to 40#</td>
<td>10&quot; to 14&quot;</td>
<td>Wood, Masonry</td>
<td>Check local accepted of fire</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Up to 40#</td>
<td>11&quot; to 25&quot;</td>
<td>Wood, Sil., Masonry</td>
<td>See detail 1 Combust</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Up to 40#</td>
<td>Up to 90°</td>
<td>Steel, Masonry</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Up to 50#</td>
<td>Up to 90°</td>
<td>Sil., Masonry</td>
<td>Ceiling</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Up to 40#</td>
<td>12&quot; to 25&quot;</td>
<td>Steel</td>
<td>Ceiling</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Up to 40#</td>
<td>Up to 9°</td>
<td>Steel</td>
<td>Spray on Ceiling</td>
<td>2,3</td>
</tr>
<tr>
<td>8</td>
<td>Up to 40#</td>
<td>Up to 33°</td>
<td>Masonry Slab</td>
<td>Spray on Ceiling</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Up to 45#</td>
<td>Up to 33°</td>
<td>Steel, Masonry Conc.</td>
<td>Self</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Up to 40#</td>
<td>15&quot; to 50&quot;</td>
<td>Conc., Masonry Slab</td>
<td>Self</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Up to 60#</td>
<td>Up to 25&quot;</td>
<td>Conc., Conc.</td>
<td>Concrete</td>
<td>3/4 - 4</td>
</tr>
<tr>
<td>12</td>
<td>Up to 60#</td>
<td>10&quot; to 30&quot;</td>
<td>Concrete</td>
<td>Concrete</td>
<td>2 - 4</td>
</tr>
<tr>
<td>13</td>
<td>Up to 60#</td>
<td>20&quot; to 34&quot;</td>
<td>Concrete</td>
<td>Ceiling</td>
<td>2 - 4</td>
</tr>
<tr>
<td>14</td>
<td>Up to 60#</td>
<td>20&quot; to 50&quot;</td>
<td>Concrete</td>
<td>Ceiling</td>
<td>2 - 4</td>
</tr>
<tr>
<td>15</td>
<td>Up to 60#</td>
<td>15&quot; to 30&quot;</td>
<td>Concrete</td>
<td>Concrete</td>
<td>2 - 4</td>
</tr>
<tr>
<td>16</td>
<td>Up to 60#</td>
<td>15&quot; to 75&quot;</td>
<td>Conc., Masonry</td>
<td>Concrete</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>Up to 60#</td>
<td>25&quot; to 110&quot;</td>
<td>Concrete, Masonry</td>
<td>Concrete</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>Up to 60#</td>
<td>Up to 35°</td>
<td>Steel</td>
<td>Ceiling</td>
<td>Concrete</td>
</tr>
<tr>
<td>19</td>
<td>Up to 40#</td>
<td>30&quot; to 50&quot;</td>
<td>Wood Masonry</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

3.3.1 CRITERIA FOR SELECTION OF ROOF FRAMING SYSTEMS

METRIC EQUIVALENT MAYBE PROVIDED.

TOP SURFACE SUITABLE TO RECEIVE INSULATION.

<table>
<thead>
<tr>
<th>NO</th>
<th>ROOF SYSTEM</th>
<th>STANDARD</th>
<th>DEPTH OF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WOOD JOIST</td>
<td>4&quot;, 6&quot;, 8&quot;, 10&quot;</td>
<td>4&quot; to 12&quot;</td>
</tr>
<tr>
<td>2</td>
<td>WOOD PLANK</td>
<td>2&quot;, 3&quot;, 4&quot;, 5&quot;</td>
<td>2&quot; to 5&quot;</td>
</tr>
<tr>
<td>3</td>
<td>STRESSED SKIN PANEL</td>
<td>3 ¼&quot;, 8 ¼&quot;</td>
<td>3 ¼&quot;, to 8 ¼&quot;</td>
</tr>
<tr>
<td>4</td>
<td>STEEL JOIST/POURED GYP.</td>
<td>8&quot; to 48&quot;</td>
<td>11&quot; to 51&quot;</td>
</tr>
<tr>
<td>5</td>
<td>STEEL JOIST/INSUL. DECK</td>
<td>2&quot; to 3&quot;</td>
<td>9 ½&quot; to 51&quot;</td>
</tr>
<tr>
<td>6</td>
<td>STEEL BEAM/PRECAST PLANK</td>
<td>2&quot; to 3&quot;</td>
<td>8&quot; to 15&quot;</td>
</tr>
<tr>
<td>7</td>
<td>STEEL DECK/INSUL. OR FILL</td>
<td>3 5/8&quot; to 7 1/2&quot;</td>
<td>3 5/8&quot; to 7 1/2&quot;</td>
</tr>
<tr>
<td>8</td>
<td>LONG SPAN STEEL DECK</td>
<td>1 1/2&quot; to 7 1/2&quot;</td>
<td>1 1/2&quot; to 7 1/2&quot;</td>
</tr>
<tr>
<td>9</td>
<td>UNIT MASONRY PLANKS</td>
<td>4&quot;, 6&quot;, 8&quot;, 10&quot;</td>
<td>4&quot; to 10&quot;</td>
</tr>
<tr>
<td>10</td>
<td>PRECAST CONC. PLANKS</td>
<td>4&quot;, 6&quot;, 10&quot;, 10&quot;</td>
<td>4&quot; to 10&quot;</td>
</tr>
<tr>
<td>11</td>
<td>CONC. SLAB (ONE WAY)</td>
<td>3&quot; - 10&quot;</td>
<td>3&quot; to 10&quot;</td>
</tr>
<tr>
<td>12</td>
<td>CONC. SLAB (TWO WAY)</td>
<td>6&quot; - 10&quot;</td>
<td>6&quot; to 10&quot;</td>
</tr>
<tr>
<td>13</td>
<td>CONC. PAN JOIST</td>
<td>Standard Pan</td>
<td>11&quot; to 17&quot;</td>
</tr>
<tr>
<td>14</td>
<td>CONC. WAFFLE SLAB</td>
<td>Standard Pan</td>
<td>11&quot; to 17&quot;</td>
</tr>
<tr>
<td>15</td>
<td>CONC. FLAT SLAB</td>
<td>6&quot; to 12&quot;</td>
<td>6&quot; to 12&quot;</td>
</tr>
</tbody>
</table>
### SECTION 4. Walls/Partitions

#### 4.1 FIRE RATINGS OF CONSTRUCTION ASSEMBLIES

<table>
<thead>
<tr>
<th>DESCRIPTION OF PARTITIONS</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WOOD STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resil. Label Gypsum Board 2 layers one side &amp; 1 layer Opposite Side 2 x 4 x 16&quot; o.c., Resil. Chan Both Sides SPA, Horiz. 24&quot; o.c., 1 layer 5/8&quot; BD. Screw Att. One side Opp. Side Base Layer of 5/8&quot; Wallbd. Screw Att. &amp; Face Layer of 1/2&quot; Wallbd. Lamin Joints Fin., Perimeter Caulked</td>
<td>1 HR</td>
<td>Width 6 1/2&quot;</td>
</tr>
<tr>
<td><strong>WOOD STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; GYPS. Wallbd., 2 x 4 at 16&quot; o.c., Base Layer 1/2&quot; Sound Deadening Board attached with 1 5/8&quot; CTD. Nails 12&quot; o.c. wallboard Face Layer Strip Lamin &amp; 2 1/2&quot; CTD. Nails 24&quot; o.c. into wood studs</td>
<td>45 MIN</td>
<td>Width 5 5/8&quot;, See Sec on construction detail page</td>
</tr>
<tr>
<td><strong>METAL FRAMED TYPE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 layers 5/8&quot; label Gypsum Wallbd. EA. Side, 3 5/8&quot; MTL Studs 24&quot; o.c. Base layer screw attached, face layer lamin 1 1/2&quot; Insul. Blankets, perimeter caulked</td>
<td>2 HRS</td>
<td>Width 6 1/8&quot;, See Sec on construction detail page</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot; label Gypsum Wallbd., 3-5/8&quot; metal studs 24&quot; o.c., 2 layer, base layer 5/8&quot; Min. Fiber Sound dead BD. EA. Side shrew attachment, wallbd. Face Layer lamin &amp; screw att., joints stag &amp; fin., perimeter caulked</td>
<td>2 HRS</td>
<td>Width 5 7/8&quot;, see Sec on construction detail page</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DESCRIPTION OF PARTITIONS</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 layers 5/8&quot; label gypsum wallbd., 3 5/8&quot; MTL. Studs 24&quot; o.c. 3&quot; insul. Blankets, 2 layers wallbd., lamin. one side, opposite side 2 layers wallbd., separ. by resil. chan. spaced horiz. 24&quot; o.c. screw attachment., face joints fin.</td>
<td>2 HRS</td>
<td>Width 6 1/2&quot; see sec on construction detail page</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 layers 5/8&quot; label gypsum wallbd., 3 5/8&quot; MTL., studs 24&quot; o.c., 2 layers wallbd., screw attachments one side, opposite side 2 layers wallbd., separ. by resil., chan spaced. horizontally 24&quot; o.c. screw attachment, face joints fin</td>
<td>2 HRS</td>
<td>Width 6 5/8&quot;</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 layers 5/8&quot; label gypsum board plain or vinyl faced, 3 5/8&quot; studs 24&quot; o.c., base layer screw attachment, face layer lamin. or screw attachment, JTS, FIN. or UNFIN</td>
<td>2 HRS</td>
<td>Width 6 1/8&quot; See sec on construction detail page</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 layers 5/8&quot; label gypsum board 1 5/8&quot; MTL. Studs 24&quot; o.c. 2 layers EA Side vert. Appl. &amp; Screw attachment joints Stag &amp; fin.</td>
<td>2 HRS</td>
<td>Width 3 5/8&quot; see sec on construction detail page</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; label gypsum board 3 5/8&quot; MTL.. Studs 24&quot; o.c. single layer wallbd., One side appl. Vert. &amp; screw attachment 1&quot; insul. Blankets one side 2 layer wallbd., opposite side appl., vert. &amp; screw attachment jts, stag &amp;</td>
<td>1 1/8 HRS</td>
<td>Width 5 1/8&quot;</td>
</tr>
<tr>
<td>DESCRIPTION OF PARTITIONS</td>
<td>FIRE RATING</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>METAL STUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; label GYP. Wallbd., 1 5/8&quot; MTL. Studs 24&quot; o.c. 2 layer, base layer 1/2&quot; min fiber sound dead bd. Screw att., wallbd. Face layer strip lamin &amp; screw attachment joints stag &amp; fin.</td>
<td>1 HR</td>
<td>Width 1 5/8&quot; See Sec Oc construction detail page</td>
</tr>
<tr>
<td>**DESCRIPTION OF PARTITIONS</td>
<td>FIRE RATING</td>
<td>COMMENTS</td>
</tr>
<tr>
<td><strong>SOLID DRYWALL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; label gypsum wallbd. faces each side over 1&quot; gypsum coreboard, face layers lamin, joints stag, &amp; fin. Mtll track at fr. 1/2&quot; Mtll trim at wall &amp; CLG.</td>
<td>2 HRS</td>
<td>Width 2&quot; Difficult install outlet boxes</td>
</tr>
<tr>
<td><strong>TRIPLE SOLID DRYWALL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; gyp. wallbd., 3 rows of 1&quot; gyp. corebd. each spaced min. 1 1/8&quot; &amp;1 1/2&quot; apart. 1 1/2&quot; insul. blankets nfl. To back of one outer row, wallbd. lamin &amp; screw attached to outer rows, joints finished</td>
<td>2 HRS</td>
<td>Width 5 1/2&quot; Difficult installation at pipe chases, see section on construction detail page</td>
</tr>
<tr>
<td><strong>SOLID DRYWALL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2&quot; gyp. wallbd. faces each side over 1&quot; gyp. corebd. Face layers lamin, joints, stag &amp; fin. 1&quot; eq. wood runner side.</td>
<td>2 1/2 HRS</td>
<td>Width 2&quot; Difficult to install outlet boxes</td>
</tr>
<tr>
<td><strong>GYPSUM STUD WALL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/8&quot; label gyp. wallbd., 1 5/8&quot; x 6&quot; lamin, gyp. Studs 24&quot; o.c. wallbd. screw attachment both sides 18&quot; o.c.</td>
<td>1 HR</td>
<td>Width 2 7/8&quot; See Section on construction detail page</td>
</tr>
</tbody>
</table>

**MOVABLE TYPE**

<table>
<thead>
<tr>
<th>MOV. PART. - DOUBLE DRYWALL</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specs. 5/8&quot; gypsum board face panels lamin to 5/8&quot; gypsum core strips placed to form panel jts., 2 rows SPA. 2 1/8&quot; apart, 2&quot; insul. Blankets in chase, v-joints unfinished</td>
<td>2 HRS</td>
<td>Width 6&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MOV. PART. - DOUBLE DRYWALL, SOUND WALL</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec. 5/8&quot; gypsum board face panels lamin, to 5/8&quot; gypsum core strips SPA 1 3/8&quot; apart v-joints unfinished</td>
<td>1 HR</td>
<td>Width 5 1/8&quot;, see Section on construction detail</td>
</tr>
</tbody>
</table>

| DESCRIPTION OF PARTITIONS       | FIRE RATING | COMMENTS                          |
|--------------------------------|-------------|                                   |
| **METAL STUD**                 |             |                                   |
| 1/2" label GYP. BD. 3 5/8" studs 24" o.c. single layer BD. E.A. Side appl. vert. & screw att., 1" insul. BLKTS one side, jts. Fin perimeters caulked | 1 HR        | Width 4 5/8" |
| **METAL STUD**                 |             |                                   |
| 5/8" label gypsum board 3 5/8" MTL. Studs 24" o.c. wallbd. Single layer screw att. 12" o.c. joints fin. perimeter caulked | 1 HR        | Width 4 7/8", See Sec Oc construction detail page |
| **METAL STUD**                 |             |                                   |
| 5/8" label gypsum board 1 5/8" mtl studs, 24" o.c. wallbd. Single layer, screw attachment 12" o.c. joints fin. perimeter caulked | 1 HR        | Width 2 7/8" |
### DOUBLE SOLID DRYWALL
1/2" gypsum wallboard, two rows of 1" coreboard spaced 1 1/8" apart, all runners, lamin & screw attach. each face 2 HRS Width 4 1/8" Section on construction detail page

### SOLID DRYWALL VENT SHAFT
5/8" label gypsum wallboard faces each side over 1" gypsum coreboard, face layers lamin & screw att., joints stag. & mfrn. 3/8" x 3/8" l. runner horiz, At fr. CLG. & quarter points. 2 HRS Width 2 1/4"

### SOLID DRYWALL
5/8" label gypsum wallbd. Faces E.A. Side over 1" gypsum coreboard, face layers lamin joints staggered and finished. 2 HRS Width 2 1/2" See Section on construction detail page

### DESCRIPTION OF PARTITIONS

<table>
<thead>
<tr>
<th>DESCRIPTION OF PARTITIONS</th>
<th>FIRE RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOV. DEMOUNTABLE PART. 1/2&quot; vinyl faced label gypsum wallbd. &amp; battens screw att. 2 1/2&quot; MT1 studs 24&quot; c.c., 2&quot; insul. Sound blanketing</td>
<td>1 HR</td>
<td>Width 3 3/4&quot;</td>
</tr>
<tr>
<td>MOV. PART - STANDARD SOLID DRYWALL PARTITION Spec. 5/8&quot; gypsum wallbd. face panels lamin. To spec. 1&quot; gyp. Core wals 24&quot; wide, v-joints unfinished</td>
<td>1 HR</td>
<td>Width 2 1/4&quot; see Sections on construction details page</td>
</tr>
<tr>
<td>MOV. WALL PART Concealed &quot;H&quot; studs 24&quot; o.c. 2&quot; insul. Sound blk'ts 3/4&quot; x 24&quot; bevel edge panels mill lamin, joints unfinished</td>
<td>1 HR</td>
<td>Width 3 5/8&quot; see Sections on construction detail page</td>
</tr>
<tr>
<td>MOV. WALL PART Concealed &quot;H&quot; studs 24&quot; o.c. bridged, 2&quot; insul. Sound atta bkn'ts 3/4&quot; x 24&quot; bevel edge panels mill lamin, jtn. Unfinished</td>
<td>45 MIN</td>
<td>Width 3 5/8&quot;</td>
</tr>
<tr>
<td>MOV. DEMOUNTABLE PART 1/2&quot; vinyl or paper faced label gyp. Wallbd. &amp; battens screw att., 2 1/2&quot; MTR!i studs 24&quot; A.C.</td>
<td>1/2&quot;</td>
<td>Width 3 1/2&quot; See Sec. On construction detail page</td>
</tr>
</tbody>
</table>

### 5. CEILINGS: CONSTRUCTION.

5.1 GENERAL: Pursuant as similar applicable to section 604 FIRE RESISTIVE REGULATION of PD 1096. NBC and PD 1185, provision the criteria or standards are of minimum and may otherwise be subject to more restrictive standard which shall govern.

5.2 FIRE RATING OF DRYWALL/CEILING CONSTRUCTION ASSEMBLY

| RESIL. 1/2" LABEL GYP. BD. CEILING 1" nom. Sub & fin. flr. 2 x 10 joist 16" o.c., resil chan spec. 24" o.c. wallbd. att., with 1" & 1 5/8" types S screw, joints fin. | 1 HR | CLG. WGT. 3 lb/sq. ft. see section on construction detail page |
| RESIL. 1/2" LABEL GYP. BD. CEILING 1 1/2" nom. Wd. Sub & fin. flr. 2 x 10 vd. Joist 16" o.c. resil. Chan spec. 24" o.c., wallbd. Att. With 1" types S screws, joints fin. | 1 HR | CLG. WGT. 3 1/sq. FT. |
6.0 ATTICS

6.1 Access. An attic access openings shall be provided in the ceiling of a floor of buildings with a combustible ceiling or roof construction. The opening shall be located in the corridor or hall way of buildings of three or more storeys in height. An opening shall not be less than 600 millimeters squares or 600 millimeters in diameter. The minimum clear headroom of 800 millimeters shall be provided above the access opening.

6.2 Area Separation. Enclosed attic spaces of combustible construction shall be divide into horizontal areas not exceeding 250 sq. mts. by fire-resistive partitions extending from the ceiling snugly to the undersurface of this roof. Except that where the entire attic is equipped with approved automatic fire-extinguishing system, the attic space may be divided into the areas not to exceed 750 square meters. Openings in the partitions shall be protected by fire resistive self closing doors.

6.3 Draft Stops. Regardless of the type of construction, draft stops shall be installed in trusses roofs, between roof and bottom chords or trusses, in all building exceeding 200 square meters. Draft stops shall be constructed as for attic area separations of at least one hour fire-resistant.
CHAPTER 9
LIGHT AND VENTILATION

SECTION 1. General Requirements on Natural Light and Ventilation

1.1 General. Chapter 8 Sections 801 up to Section 811 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.1.1 Subject to as applicable provisions of the civil code of the Philippines embodied in Title VII Chapter I Easements in General, Chapter II Legal Easements and Chapter 3 Voluntary easements and most particularly articles 6 to 671 Easements on light and view, every building shall be designed and constructed and equipped to provide adequate natural light and ventilation.

1.1.2 All buildings shall face a street or public alley or private street which has been duly approved.

1.1.3 No building shall be altered nor arranged so as to reduce the size of any room as the approved.

1.1.4 No building shall be enlarged so that the dimensions of the required court or yard would be less than that prescribed for such building.

SECTION 2. Measurement of Site Occupancy

2.1 The measurement of site occupancy or maximum lot occupancy - more specifically allowable buildable area within a given lot (see Table I below) shall be measured at ground level and shall be exclusive of courts, yards and light wells.

2.2 Court, yards and light wells shall be measured clear of all projections from the walls enclosing such wells or yards with the exception of roof leaders wall copings sills or canopies. “mediasugas” of not more than 400 mm (16inches) in width.

2.3 Steel-balcony fire escapes may be allowed to project into aforementioned open space but not to exceed 1200mm (4’-0”).

SECTION 3. Percentage of Site Occupancy

3.1 Maximum site occupancy or buildable area shall be governed by the use or type of occupancy, type of construction and the height of the building and the use area, nature, location of the site and adjacent property boundaries is specifically described hereunder.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>REQUIRED PERCENTAGE OF OPEN SPACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE OF LOT</td>
<td>OPEN SPACE</td>
</tr>
<tr>
<td></td>
<td>RESIDENTIAL</td>
</tr>
<tr>
<td>a) Interior Lot (located in the interior of a block accessible only by means of a private alley connecting to a public street or right of away)</td>
<td>50%</td>
</tr>
<tr>
<td>b) Inside lot (bounded on three sides by adjacent lots with only one side fronting a public street or right of away)</td>
<td>20%</td>
</tr>
<tr>
<td>c) Corner lot (bounded on two sides by adjacent lots with only one side fronting a public street or right of away)</td>
<td>10%</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>d) Through lot (bounded on two opposite sides by adjacent lots and open on two opposite sides by a public streets or public open space as a river or park.</td>
<td>10%</td>
</tr>
<tr>
<td>e) Open lots (bounded 3 or more sides by public open spaces such as: streets alleys easement of seashores, rivers esteros, etc.</td>
<td>5%</td>
</tr>
</tbody>
</table>

SECTION 4. Size and Dimensions of Courts

4.1 Minimum size of courts as provided for Section 2 Table 1 type of construction and height of building as provided hereunder:

4.1.1 Courts of "Patios" Defined:

4.1.1.1 Courts are open unoccupied space between building lines and lot lines other than a yard - free, open and unobstructed from the ground upward.

4.1.1.2 Inner Court - an open space bounded on 3-sides by building lines with one side open to a public space - street, alley, river or seashore or park.

4.1.1.3 Through court - an open space bounded on two opposite sides by building lines with the other opposite sides open to a street public or private, a river, seashore or park.

4.1.2 Size and Dimensions of Courts

4.1.2.1 Minimum horizontal dimension of court shall not be less than 2.00 meters.

4.1.2.2 All inner courts shall be connected to a street or yard either by a passageway with a minimum width of 1200 m (4'0"-0") or by a door through a room or rooms.

4.1.3 Yard - The vacant space between the building lines and property. Yards shall be subject to the same basic requirements as in courts.

4.1.4 Types of open Spaces

4.1.4.1 Public - streets, alleys, easements or rivers, creaks, esteros, railroad tracks, salvage zones of seashores, lakes, parks, plazas, playgrounds.

4.1.4.2 Private - Courts, yards, setbacks, side yards, light wells, uncovered driveways, access roads and parking spaces.

SECTION 5. Ceiling Heights:

Habitable rooms provided with artificial ventilation shall have ceiling heights not less than 2.40 meters (8'-0") measured from the finish floor up to the ceiling. Provided that for buildings of more than one story, the minimum height of the first story shall be 2.70 meters (9'-0") and that for the 2nd story 2.40 meters and the succeeding storeys shall have an unobstructed typical head room of clearance of not less than 2.10 meters (7'-0") above the finish floor. Above stated rooms with only 2.70 meters.
Mezzanine floors - Area of mezzanine (a floor between a main floor and its ceiling) shall not exceed 50% of the area above and below it.

Mezzanine floors shall have a minimum clear ceiling height of 1.80 meters above and below it.

Mezzanine when enclosed shall have a minimum opening into its main floor of not less than 65% unless otherwise provided with artificial means of ventilation - as provided for in this code.

Lower clear ceiling heights than specified above shall not be used for habitation except as for storage purposes.

SECTION 6. Size and Dimension of Rooms (for natural ventilation)

Minimum sizes of rooms and their list of dimensions shall be as follows:

Rooms for human habitations shall be of minimum area of 6 sq. mts. (64 sq.ft.) with at least dimension of 2.00 meters (7'-0").

Kitchens 3.00 sq.m. with a least dimensions of 1.50 mts. (5'-0").

Bath and toilet - 1.20 sq.mt. with a least dimension of 0.90 mt. (3'-0").

SECTION 7. Air Space Requirements in Determining the Size of Rooms (Natural Ventilation)

Minimum air space shall be provided as follows:

School Rooms 3.00 cu. Mts. With 1.00 sq.mt. of floor area per person.

Workshops, factories and offices 12 cu. mts. of airspace per person.

Habitable rooms - 14.00 cu.mts. of airspace per person

SECTION 8. Window Openings

Every room for human occupancy or intended for any use, shall be provided with a window or windows with a minimum clear ventilating area of not less than ten percent (10%) of the floor area of the room - such window shall open directly into an open court, yard, public street or alley, public park or open water courses.

Rooms provided with at least five percent (5%) of the floor area of the room.

Exceptions: Required windows may open into a roofed porch where the porch:
abuts a court, yard, public street or alley or open water course and other public spaces.
has a ceiling height of not less than 2.70 mt.
has one of the longer side at least 65% open an obstructed to another space that is properly ventilated.

SECTION 9. Projection over Windows

Eaves or media-aguas projection over windows shall not be less than 750 mm from the sides or rear property lines.

SECTION 10. Vent Shafts
10.1 Whenever or wherever it is not possible to provide direct natural ventilation on any room, such room may be ventilated through vent shafts.

10.2 Vent shafts shall have a minimum horizontal cross sectional area of not less than 0.10 sq.m. and its least dimension is not less than 600 mm or an area of 1.70 m x 0.60 m or 1.00 mt x 1.00m.

SECTION 11. Skylights

11.1 Skylights when provided for atop to cover up vent shafts stated in 10.2 above shall be provided with fixed louvie openings equal to the maximum required clear area of the shaft.

11.2 Ventilation Skylights:

In cases where windows cannot be provided normally thru walls into open spaces as required above such, may be provided through skylights, in which case such skylights shall have a gross ventilating open area of not less than 10% of the room area as specifically required. Openable part in the window shall be equivalent to that are replaced or needed to be provided for.

SECTION 12. Passive Cooling and Ventilation

As far as deem possible all naturally ventilated rooms shall be so arranged as to take full advantage of the phenomenon of convection or air movements due to heat and cross ventilation thru "barandillas" under window sills, transoms - over window or door-heads, fixed louvies, perforated walls or partitions, etc.

SECTION 13. Artificial Ventilation

Rooms or spaces housing industrial or heating equipment shall be provided with artificial means of ventilation to prevent accumulation of hot and or polluted air.

Whenever artificial ventilation is required, equipment shall be designed and constructed to meet the following minimum air changes requirements.

For other rooms or spaces not specifically covered under this section, applicable provisions of the latest edition of the Philippine Mechanical Engineering. Referral code shall governed.

SECTION 14. Natural Lighting

14.1 All enclosed portions occupied by human beings and other rooms and areas for which requirements specified elsewhere in this code, shall be provided with natural light by means of exterior openings with an area equal to 1/40 of the total floor area of such room.

14.2 Natural lighting shall be precisely ascertained with respect to the annual path of the solar angles of the site's approximate latitude or location on the earth's surface.

14.3 Orientation and provision of sun control devices in detail design considerations, objectively to minimize heat gain in the interior spaces, to asceraint energy conservation as in air-conditioning and control objectionable direct penetration of sun's rays.

14.4 Illumination standards depending upon use or occupancy and activities should approximate internationally acceptable standards criteria for artificial illumination for any particular human activity for eyesight conservation of protection, as prescribe under lighting and illumination in the latest referral Electrical Engineering Code (as provided for under PD 1096-NBC).

SECTION 15. Yards for Residential Buildings

15.1 Residential Zone Types Defined:
15.1.1 R-1 means Low Density Residential Zones, characterized by single family, single family detached dwellings with the usual community ancillary uses on a neighborhood scale, such as exclusive subdivisions and relatively exclusive residential communities which are not subdivision.

15.1.2 R-2 means Medium Density Residential Zone, characterized mainly by medium density housing like low and medium-rise, multiple family dwellings on a limited scale and usual community ancillary uses on a barangay scale, such as semi-exclusive subdivisions and semi-exclusive residential communities which are not subdivision.

15.1.3 R-3 means High Density Residential Zone, characterized by a very mixed housing type and high density housing like high rise buildings with more than usual community ancillary uses in increasingly commercial scale.

15.2 TABLE II set backs as to zone

<table>
<thead>
<tr>
<th>YARD</th>
<th>R-1</th>
<th>R-2</th>
<th>R-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>5.00 m</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Side</td>
<td>2.00 m</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Rear</td>
<td>2.00 m</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

15.2.1 *Abutments on the front property line, sides and rear party lines may be allowed provided that the following requirements shall be complied with:

15.2.1.1 Open space as to allowed buildable area prescribed in Table I is not obstructed.

15.2.1.2 Window opening as prescribed in Section 8 above.

15.2.1.3 Fire wall with a minimum of one-hour fire resistive rating extending beyond the finish roof line of not less than 200 mm.

15.2.1.4 The required open space or court shall be located totally in one location or distributed elsewhere within the lot to properly provide maximum light and ventilation into the building.

SECTION 16. Yards for Commercial, Industrial, Institutional and Recreational Buildings

For newly developed thoroughfares open yard requirements.

TABLE III

<table>
<thead>
<tr>
<th>WIDTH OF ROAD RIGHT OF WAY</th>
<th>FRONT</th>
<th>SIDES</th>
<th>REAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 meters and above</td>
<td>10 m</td>
<td>3 m</td>
<td>3 m</td>
</tr>
<tr>
<td>25 to 29 meters</td>
<td>8 m</td>
<td>3 m</td>
<td>3 m</td>
</tr>
<tr>
<td>20 to 24 meters</td>
<td>6 m</td>
<td>3 m</td>
<td>3 m</td>
</tr>
<tr>
<td>10 to 19 meters</td>
<td>4 m</td>
<td>2 m</td>
<td>2 m</td>
</tr>
<tr>
<td>Below 10 meters</td>
<td>2 m</td>
<td>2 m</td>
<td>2 m</td>
</tr>
</tbody>
</table>

For highly urban areas with duly established lines and grades reflected therein proposed road widening and elevation, the requirements in Table III above may not be imposed and the building may abut on the front, side and rear property lines provided that the requirements on open space, window opening, artificial ventilation, if any, and fire wall.

Setback Defined

16.2.1 Setback is the vacant space left between the building and lot lines less than 2.00 meters. Such setback may be considered as open space provided it abuts a permanent public open space.
without any separation between them which obstructs the free flow of light and ventilation. Fences, if any may be of wrought but not higher than 1.00 meter shall be allowed.

16.2.2 Buildings of not more than 3 storeys. A minimum setback of 2.00 meters from any building line to any lot line adjoining another property shall be required if windows are to be provided for overlooking the adjacent property as mandatory easement for light and view as per Philippine Civil Code.
CHAPTER 10
SANITATION

SECTION 1. Title

1.1 General. Chapter 9, Sections 901 up to Section 907 inclusive of the National Building Code—NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Subject to all applicable provisions of the Civil Code of the Philippines embodied in Title VII Chapter I Easements in General; Chapter II Legal Easements and Chapter 3 Voluntary Easements most particularly Section 6 Drainage of Buildings.

1.3 All buildings hereafter erected, altered, remodeled, relocated or repair for human habitation shall be provided with adequate and potable water supply, plumbing installation and suitable soil and waste water treatment and disposal system, storm water drainage, pest and vermin control, noise abatement devices and such other measures required for the protection and promotion of health of persons occupying the building its premises and others living nearby.

1.4 Water supply system.

1.5 Design of system, methods and materials for use in the implementation of said section shall be in complete accord with the latest edition of the referral for Sanitary Engineering Code of the Philippines and The National Plumbing Code of the Philippines and or UBC, internationally accepted standards of practice-systems, methods and procedures, which ever is most restrictive shall apply.

1.6 Provision in NBC under Chapter 9 Section 902 articles as provided thereunder from a to d, provisions under article ‘c’, the word abstraction “should” be reworded as extraction article ‘d’—referring to “Local works authority” shall instead be referred to Local Water and Utilities Authority, LWUA.

1.7 Provision in NBC Chapter 9 Section 903 waist water disposed system articles e, b, c inclusive, additional provision to be added as follows:

1.7.1 Design, specification and construction details and operations of sanitary and industrial facilities for soil and wastes waters treatment and final disposal shall be in accordance with the latest approved referral on Sanitary Engineering and National Plumbing Code of the Philippines and/or UBC of universally accepted practice and standards which ever is most restrictive and appropriate shall apply and approved by the Secretary.

1.8 Provisions in NBC, Chapter 9, Section 904, Storm Drainage System, articles thereunder as ‘a’ and ‘b’

1.8.1 Rain or storm water may discharge directly into public storm sewer mains.

1.8.2 In case of subdivisions, either multi-residential or industrial estates normally provided with storm sewers run-off for such shall not be allowed to finally discharge directly into rivers, creeks or streams, lakes or any canal. Instead, shall discharge into a suitable interceptor purposely designed to capacity and with adequate catch basin for effective retention of silt and solid water organic or inorganic.

1.8.3 Low areas shall be provided with a design with adequate storm water impounding underground reservoir equipped with automatic pumping system. For discharge into natural body of water.
1.9 Provision in NBC, Chapter 9, section 905-Pest and vermin control. Articles under which 'a', 'b', 'c' as-is.

1.9.1 Multi-dwelling buildings of 4 to 5 storeys walk-up with or without elevator shall be provided with separate garbage or refuse chutes as provided in PD 1096-NBC-IRR. One for organic and another for non-organic recyclable refuse. Such shall be equipped with proper mechanical compactor and packing for ease of collection and final disposal.

1.10 PD 1096-NBC Chapter 9, Section 906-Noise Pollution Control, original provision 'as-is'.

1.10.1 Industrial plants, factories, manufacturing and similar establishments discharging pollution in the air, water or land as solid, gaseous, liquid wastes shall show evidence, scientific and technological records of tests of their plant facilities, abatement or control devices, compliance set-up on pollution from all appropriate government agencies concerned with full environmental clearance before issuance of certificate of Occupancy and operations by the O.B.O.

1.11 PD 1096-NBC Chapter 9, section 907-Pipe Materials. Original provisions 'as-is'.

1.11.1 Pipe materials shall be designed as per universally accepted standards, methods, systems, procedures and construction installations, in accord with UBC and/or NBC or latest referral Code in Sanitary Engineering and Plumbing, whichever is most restrictive shall apply.

1.11.2 Records of final certificate of inspection, all appropriate tests as to materials and performance and complete as-built plans, shall be submitted to the OBO as a requisites for issuance of Certificate of Occupancy.
CHAPTER 11

BUILDING PROJECTION INTO PUBLIC PROPERTY

SECTION 1. General Requirements

1.1. General. Chapter 10, original Sections 1001 up to Section 1008 inclusive of the National Building Code – NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2. No part of any building or structure or any of its appendages shall project beyond the property line of the building site, except as provided in this Code.

1.3. The projection of any structure or appendages over a public property shall be the distance measured horizontally from the property line to the outermost point of projection.

SECTION 2. Projection into Alleys or Streets

No part of any structure or its appendage shall project into any alley or street, national road or public highway except as provided in this Code.

Footings located at least 2.40 meters below along national roads or public highway may project not more than 300 millimeters beyond the property.

Foundations may be permitted to encroach into public sidewalk areas to a width not exceeding 500 millimeters; provided, that the top of the said foundation is not less than 600 millimeters below the established grade; and provided further, that said projection does not obstruct any existing utility such as power, communication, gas, water, or sewer lines, unless the owner concerned shall pay the corresponding entitles for the rerouting of the parts of the affected utilities.

SECTION 3. Projection of Balconies and Appendages Over Streets

3.1 The extent of any projection over an alley or street shall be uniform within a block and shall conform to the limitations set forth in PD 1096-NBC Table 1003-A: Projection of Balconies and Appendages (Annex B-2).

3.2 The clearance between the established grade of the street and/or sidewalk and the lowest of under surface of any part of the balcony shall not be less than 3.00 meters.

SECTION 4. Arcades

Whenever required by LGU as existing ordinances on buildings and zoning regulations, arcades shall be constructed on sidewalks of streets. The width of the arcade and its height shall be uniform throughout the street provided, that in no case, shall an arcade be less than 3.00 meters above the established sidewalk grade.

SECTION 5. Canopies (Marquees)

Definition. A canopy or marquee is a permanent roofed structure above a door attached to and supported by the building structure and projecting over a wall or sidewalk. This includes any object or decoration attached thereto.

Projection and Clearance. The horizontal clearance between the outermost edge of the marquee and the curb line shall be not less than 500 millimeters. The vertical clearance between the pavement or ground line and the undersurface of any part the marquee shall not be less than 3.00 meters.
Construction. A marquee shall be constructed of incombustible material or materials of not less than two-hour fire-resistive construction. It shall be provided with necessary drainage facility.

Location. Every marquee shall be located as not to interfere with the operation of any exterior standpipe connection or to obstruct the clear passage from exit stairway from the building or the installation or maintenance of electrolizers.

SECTION 6. Movable Awnings or Hoods

6.1 Definition. An awning is a movable shelter supported entirely from an exterior wall of a building and of a type which can be retracted, folded, or collapsed against the face of a supporting building.

6.2 Clearance. The horizontal clearance between the awning and the curb line shall not be less than 300 millimeters. The vertical clearance between the undermost surface of the awning and the pavement or ground line shall be not less than 2.40 meters. Collapsible awnings shall be so designed that they shall not block a required exit when collapsed or folded.

SECTION 7. Doors, Windows and the Like

Doors, windows, and the like less than 2.40 meters clear above the pavement, sidewalk or ground line shall not, when fully opened or upon opening, project into the said public property beyond the property line except fire exit doors.

SECTION 8. Corner Buildings with Chaflans

Every corner building or solid fence on a public street or alley less than 3.60 meters in width shall be truncated at the corner. The face of the triangle so formed (chaflan) shall be no less than 4.00 meters and at right angles to the bisector of the angle of the intersection of the of the street lines.

If the building is arcaded, no chaflan is required.

SECTION 9. Air Rights
CHAPTER 12

PROTECTION OF PEDESTRIANS AND PROPERTY DURING CONSTRUCTION OR DEMOLITION

SECTION 1. Title

1.1 General. Chapter 11, Sections 1101 to Section 1108 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Any provisions on some of NBC provision as implied in the code is objectively to cope with the advancement in science and occupancy area and maintenance, operations including their purposeful demolition, of the latest internationally accepted standards of practice.

SECTION 2. Temporary Occupancy of Public Property.

2.1 Building Permit issued for construction purposes of any proposed projects shall not be construed as allowing the use of public property for any construction need or reason, and operation therefor, for any time or period unless the owner or the contractor or builder has 'secured' an official temporary permit for such purposes allowing such occupancy and the extent of such use(s) as provided for in Rule III-NBC-IRR Assessment, Imposition and Collection of Fees, articles 17 to 17.26 inclusive and payments for such fees shall be as provided for and promulgated by the Local OBO of the LGU.

2.2 For purposes of this section public property shall mean:

2.2.1 Public alley, roadway or street, arcade, sidewalks, required easements of creeks, streams, or riverbanks; public parks, waiting sheds, and other government property.

2.3 For purposes of this Section NBC-IRR, Rule XV-Protection and Safety Requirements for Construction and Demolition (pursuant to section 1101 to section 1108). Detailed provisions applicable to construction, alteration, repair renovation, removal and removal of buildings and other structures shall apply as part of this Architectural Code as if fully written verbatim hereunder, consisting section 1.0-General up to 5.48 inclusive together with all of the articles under the aforementioned sections, and figures 1 to figures inclusive as illustrated therefor.

2.4 Amplifications to the above Rule XV as part and parcel to this Code which includes:

2.4.1 Protection of Property

2.4.2 The owner, contractor, or builder, particularly in the construction operations of buildings of 2 storeys up to medium and high rise buildings or structures of any type of occupancy or construction shall provide adequate protective canopies or horizontal shed protection from any construction or demolition debris form falling into adjacent private or public property of internationally accepted safety standards of practice of innovative design as approved by the Secretary thru the Building Official of the LGU.

2.4.3 Innovative design of protective canopy or shed as mentioned not covered or beyond the NBC-IRR standards above shall be adeptly designed considering trajectory path of probable debris or any articles or hard tools and their impact load on the protective canopy or shed catch not of any material.

2.4.4 Design of such protective details shall not hinder any vehicular traffic on public right of way nor its normally safe, use or operations of any adjacent public or private property.
2.4.5 Temporary Permit for occupancy of public property shall as permitted on conditions as set forth in this code and the compliance of related requirements as assessment of occupancy installations or provisions as required by the OBO of the LGU.
CHAPTER 13

ELECTRICAL AND MECHANICAL REGULATIONS

SECTION 1. Title

1.1 General. Chapter 13, Section 1301 Electrical Regulations and Section 1302 Mechanical Regulations inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 For precise compliance to the NBC Rule IX Electrical Regulations, Sections 1 to 13.5 inclusive

1.3 For precise compliance to NBC Rule X Mechanical Regulations, Sections 1 to 10.8.7 inclusive.

SECTION 2.

Detailed design of all electrical installations for power and illumination of all types of building occupancy or use, and types of construction shall be in full accord with the latest edition of Referral Electrical Engineering Code as approved by the Secretary and/or in full conformance with the latest advancement in Science and Technology as applied to building design and construction of the latest internationally accepted standards.

SECTION 3.

Detailed design of all mechanical equipment total requirements for all types of building occupancies and type of construction shall be in full accord with the latest edition of Referral Philippine Mechanical Engineering Code of the Philippines as approved by the Secretary and in full compliance with the latest advancements in Science and Technology as applied to total building design and construction of the latest internationally accepted design methods, systems, procedures and operations standards.

SECTION 4. Architects' Responsibility

4.1 Detailed engineering design of electrical installation for building and other structures requires the precise collaboration of professional electrical engineers who should be an active member of the duly accredited professional organization under the PD 223 Professional Regulation Commission.

4.1.1 The responsibility of the Architect in the proper and aesthetic integration of the design, completeness, adequacy and appropriateness of all installations into the building structure: To assign or provide for chases, transformer vaults, electrical room and other auxiliary facilities efficient safety functions of the building or structure.

4.2 Detailed in a manner as such space allotment does not affect the sound, socio-economic, orderly, engineering design of Mechanical.

The responsibility of the Architect lies in the proper and aesthetic integration of all the mechanical installations as complete, adequate and appropriate into the building structure; to assign or provide for all needed and required for proper installations of mechanical equipment as, but not limited to chases chases spaces for all types of mechanical equipment as dumbwaiters, elevators, moving ramps or walks, escalators, fire suppression systems, lifts, cranes and others.

4.3 The proper and adept coordination of all the works pertaining to electrical, mechanical sanitary and plumbing, water supply, storm drainage complete with all its adjunct facilities to complete all their efficient operations, maintenance for the total function of the building and other structure needs and requirements.
CHAPTER 14

PHOTOGRAPHIC AND X-RAY FILMS

SECTION 1. Title

1.1 General. Chapter 14, Sections 1401 up to Section 1403 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Amplifications in any of the NBC provisions. Objectively, to cope with the latest advancements in Science and Technology as to new systems, methods and procedures in design measures, construction and use of new materials particularly of the latest universally accepted standards, which ever is most restrictive and practicable shall apply.
CHAPTER 15

PREFABRICATED CONSTRUCTION

SECTION 1. Title

General. Chapter 15, Section 1501, paragraphs 'a' to 'd' inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 2. Prefabricated Construction Assemblies are as follows

2.1 Pre-engineered extruded, high grade steel structural framing of buildings and other structures
2.2 Pre-engineered cold, rolled structural steel complete envelope for buildings and other structures
2.3 Pre-cast post-tensioned reinforced concrete construction of buildings or structures
2.4 Pre-engineered prefabricated Aluminum structural assemblies
2.5 Laminated wood factory built structural assemblies.

SECTION 3. Pre-Engineered Design, Fabrication, Handling Transportation, Storage and Construction

3.1 Design of all prefabricated structures shall be in precise conformity with the latest advancement in Science and Technology of universally tested, proven and accepted standards of practice as ASTM, ACI, AISC, AWS, etc. as adopted in the latest edition of the referral Structural Engineering Code of the Philippines or UBC Standards, which ever is most rigorous up to date as to design, analysis and fabrication shall govern.

3.1.1 Up to date Structural Analysis and Design Fabrication:

3.1.1.1 Industrial buildings, medium or high-rise buildings, towers elevated tanks, suspension structures of steel.

3.1.2 Design fabrication, handling and construction assemblies of pre-cast, pre-stressed reinforced concrete super structures, including erections and post-tensioning assemblies.

3.1.3 Design, Fabrication, handling and erection of extruded steel sections and built-up structural assemblies.

3.1.4 Design, fabrication, handling and erection of cold formed or rolled mild steel structures.

3.1.5 Design, fabrication, handling and erection of laminated structural timber

3.1.6 Design, fabrication, handling and erection of metal floor structural roof deckings with in-site concrete topping.

3.1.6.1 Design, fabrication, handling and construction details and assemblies of fiberglass reinforced concrete for exterior cladding.

133
CHAPTER 15

PREFABRICATED CONSTRUCTION

SECTION 1. Title

General. Chapter 15, Section 1501, paragraphs 'a' to 'd' inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 2. Prefabricated Construction Assemblies are as follows

2.1 Pre-engineered extruded, high grade steel structural framing of buildings and other structures
2.2 Pre-engineered cold, rolled structural steel complete envelope for buildings and other structures
2.3 Pre-cast post-tensioned reinforced concrete construction of buildings or structures
2.4 Pre-engineered prefabricated Aluminum structural assemblies
2.5 Laminated wood factory built structural assemblies.

SECTION 3. Pre-Engineered Design, Fabrication, Handling Transportation, Storage and Construction

3.1 Design of all prefabricated structures shall be in precise conformity with the latest advancement in Science and Technology of universally tested, proven and accepted standards of practice as ASTM, ACI, AISC, AWS, etc. as adopted in the latest edition of the referral Structural Engineering Code of the Philippines or UBC Standards, which ever is most rigorous up to date as to design, analysis and fabrication shall govern.

3.1.1 Up to date Structural Analysis and Design Fabrication:

3.1.1.1 Industrial buildings, medium or high-rise buildings, towers elevated tanks, suspension structures of steel.

3.1.2 Design fabrication, handling and construction assemblies of pre-cast, pre-stressed reinforced concrete super structures, including erections and post-tensioning assemblies.

3.1.3 Design, Fabrication, handling and erection of extruded steel sections and built-up structural assemblies.

3.1.4 Design, fabrication, handling and erection of cold formed or rolled mild steel structures.

3.1.5 Design, fabrication, handling and erection of laminated structural timber.

3.1.6 Design, fabrication, handling and erection of metal floor structural roof deckings with in-situ concrete topping.

3.1.6.1 Design, fabrication, handling and construction details and assemblies of fiberglass reinforced concrete for exterior cladding.
CHAPTER 16

PLASTICS, SPECIAL MATERIALS, AND ASSEMBLIES

SECTION 1. Title

1.1 General. Chapter 16, Sections 1601 up to Section 609 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

1.2 Amplifications in any of NBC original provisions, objectively, to cope with the latest advancements in Science and Technology as to new systems, methods, and procedures in design manufacture and detailing and construction and use of new materials particularly of the latest universally accepted standards, whichever is most restrictive and practicable shall apply. Use of new materials shall show properly authenticated evidence of scientific laboratory tests of physical characteristics and properties criteria for appropriate design of its assemblies.

1.3 Approved plastic materials: Generic names as listed hereunder are “traditionally” used shall show properly authenticated physical certification as to composition, characteristics and properties of the product supported by laboratory tests as passed and approved by Philippine Government Agencies concerned particularly as to inflammability, fire resistivity, flame spread and toxicity of gases emitted form burning; mechanical properties, as to flexure, impact, compression and tension for structural design considerations, and transparency, translucency, opacity and permanence as to such qualities when exposed to direct sun rays.

1.3.1 Polycarbonate

1.3.2 Fiberglass reinforced

1.3.3 Plastics, Acrylics

13.3.1 Polyvinyl

  Polyurethane

  Urethane

  Others.
CHAPTER 17

SHEET, METAL, PAINT, SPRAY BOOTH

SECTION I. Title

1.1 General. Chapter 17 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.
CHAPTER 18

GLASS AND GLAZING

SECTION 1. General Information

General. Chapter 18, Sections 1801 up to Section 1805 inclusive of the National Building Code - NBC is adapted verbatim in the referral architectural code and shall have mandatory force and effect as fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 2. Glass: Definition

A hard, brittle amorphous substance made by fusing silica (sometimes combined with oxides of boron or phosphorus) with certain basic oxides (notably sodium, potassium, calcium, magnesium and lead) and cooling rapidly to prevent crystallization or devitrification. Most glasses melt at 800 C to 950 C. Heat-resisting glass usually contains a high proportion of boric acid. The brittleness of glass is such that minute surface scratches in manufacturing greatly reduce its strength.

SECTION 3. Basic Types Of Clear Glass

3.1 Window and Sheet Glass

Manufactured by a horizontally flat or vertical draw process, then annealed slowly to produce flat fired, high glass surfaces. Inherent surface waves are noticeable in sizes larger than 4 sq ft. For minimum distortion, larger sizes are installed with the wave running horizontally. The width is listed first when specifying.

3.2 Float Glass

Generally accepted as the successor to polished plate glass, float glass has become the quality standard of the glass industry in architectural, mirror and specialty applications. It is manufactured by floating on a surface of molten tin, then annealing slowly to produce a transparent flat glass, thus eliminating grinding and polishing.

3.3 Plate Glass

Transparent flat glass is ground and polished after rolling. Within limits, cylindrical and conic shapes can be bent to desired curvature.

SECTION 4. Variations of Basic Types of Glass

4.1 Patterned Glass

Known also as rolled or figured glass. It is made by passing molten glass through rollers that are etched to produce the appropriate design. Most often only one side of the glass is imprinted with a pattern although it is possible to imprint both sides.

4.2 Wire Glass

Available as clear polished glass or in various patterns, most commonly with embedded welded square or diamond wire. Some distortion, wire discoloration, and misalignment are inherent. Some 6 mm wired glass products are recognized as certified safety glazing materials for use in hazardous locations.

136
4.3 Cathedral Glass

Known also as art glass, stained glass or opalescent glass. It is produced in many colors, textures and patterns, is usually 3 mm thick and is used primarily in decorating leaded glass windows.

4.4 Obscure Glass

The entire surface on one, or both sides of the glass are sand blasted, acid etched or both to obscure a view or create a design. When a glass surface is altered by any of these methods, glass is weakened and may be difficult to clean.

4.5 Heat Absorbing or Tinted Glass

The glass absorbs a portion of the sun’s energy because of admixture contents and thickness. It then dissipates the heat to both the exterior and interior. The exterior glass surface reflects a portion of energy depending on the sun’s position. Heat-absorbing glass has a higher temperature when exposed to the sun than clear glass does, thus the central area expands more than the cooler edges, causing edges tensile stress.

4.6 Reflected Coated Glass

Reflective glass coatings may be applied to float plate, heat strengthened, tempered, laminated, insulated, or spandrel glass. They can be a.) single glazing with a coating on one surface, b.) laminated glass coated between the glass plies or on the exterior surface, c.) insulating glass units with coating on the exterior surface or on either of the interior surfaces.

4.7 Heat Strengthened and Tempered Glass

Produced by re-heating and rapidly cooling annealed glass.

4.8 Security Glass

Safety glass with a plastic film of 1.5 mm minimum thickness for bullet resistant and burglar resistant glass. Bullet resistant glass consists of three to five plies of glass and in some cases, high performance plastics, with an overall ¾” (20mm) to 3” (75mm) thickness.

SECTION 5. General Requirements

5.1 Glass exterior cladding shall be designed to resist and safely withstand the load due to wind pressures for various height zones above ground acting inward or outward. The area of individual lights shall not be more than the maximum allowable area of glass according to the wind load multiplied by the appropriate adjustment factor.

5.2 Appropriate measures shall be provided to deter persons walking into fixed glass panels where the floor contiguous thereto on to both sides is approximately the same level.

Where differences in level on opposite sides of a glass panel are one-story or more, positive protection shall be provided by a guard rail or horizontal guard complying in strength and height of not less than two-hour fire resistive construction in buildings four-stories or more in height, and shall not be less than one hour fire resistive construction elsewhere.

5.3 Glass panels which are more than 600 mm in width and 180 mm or more in height adjacent to wall openings shall be safety glass unless a bulkhead of opaque material net less than 450 mm, high is provided.

5.4 Glass panels not adjacent to wall openings may be made obvious by horizontal bars at guard-rail height, a 450 mm opaque bulkhead, distinctive glass such as etched or translucent for guard-rail height, fixed flower bins or other appropriate construction arrangement.
5.5 For 7 mm thick glass anchorage to building is critical. Anchors must isolate wall to limit building movement transmittal to glass. For 20 mm thick glass, wall design must limit wall movement transmittal to glass. Mullions should accommodate movement through gaskets, sliding connections and other similar connections.

SECTION 6. Glazing Systems

6.1 Only rubber materials formulated to recognized standards and of proven durability such as neoprene, EPDM, and silicon should be used for gaskets and blocking.

6.2 At least two 7 mm to 10 mm diameter weep holes for the glazing pocket per glass lite or panel are necessary with access to weep holes not prevented by setting blocks or sealants.

6.3 Glazing compound or putty should not be used to glaze laminated or insulating glass in openings.

6.4 Sealants in contact or close proximity to gaskets, rubber blocking, and other sealants must be compatible with the materials to preclude loss of adhesion or lessened durability. Consult with sealant manufacturer.

6.5 Sealants must be compatible with insulating glass edge real and butyral laminate or laminated glass to preclude failure of the edge seal or delamination and discoloration of the laminate.

6.6 The dry glazing method requires careful design and control of tolerances of the frame opening and glazing materials to ensure the development of adequate compression sealing pressure (generally 4 – 10 lb/lin. inch) to achieved weather tightness.

6.7 Closed cell gaskets for dry glazing should have molded or vulcanized corners as the preferred method so as to form continuous, joint-free glazing material around all sides of the opening.

6.8 Glazing materials should not be installed more than one day in advance of glass placement to avoid potential damage to the glazing materials by other trades or contamination of the materials.

6.9 Glazing materials used with high-performance reflective coated glass may require the consideration of additional factors for the glazing materials.

6.10 Glass should always be cushioned in the glazing opening by resilient glazing materials and should also a free to “float in the opening” so there is no direct contact of the glass with the perimeter framing system.

6.11 For glazing of polycarbonate and acrylic plastic sheet particular attention should be given to thermal movement of the sheet and adhesion and capability of the sheet with the glazing materials, as well as proper preparation of the glazing opening. Consult the manufacturer or fabricator for glazing recommendations.

6.12 Insulating, wired and laminated glass must be installed in glazing pockets that are weeped to the exterior to preclude the detrimental effects of moisture.

6.13 For large glass lite the deflection characteristic of the glass should be investigated to preclude detrimental deflection which can cause glazing seal failure and glass breakage by contract of an edge or corner with the framing.

6.14 For setting and edge block requirements for casement, vertically pivoted and horizontally pivoted windows refer to manufacturers manual.

SECTION 7. Impact of Natural Forces
7.1 Water

Most frequent cause of problems is leakage from rain, vapor or condensate. Wind driven moisture can enter very small openings and may move within the wall, appearing far from its point of entry. Water vapor can penetrate microscopic pores will condense on cool surfaces. Such moisture trapped within a wall can result in lessened durability of the wall which can result in serious damage that is difficult to detect. Leaks are usually limited to joints and openings, which must be designed to provide a weathertight enclosure.

7.2 Wind

Structural design development of the wall must take into account both positive and negative pressures caused by wind action, increasing in effect depending on the height and shape of the building. The effect of positive or negative wind pressure can cause stress reversal on framing members and glass and will cause water to travel in any direction across the face of the wall.

7.3 Sunlight

The ultraviolet spectrum of sunlight will cause breakdown of organic materials such as color pigments, various rubber gaskets, plastics and sealants. Fading and failure of these materials will cause problems with the appearance and weathertightness of the curtain wall. Sunlight passing through glass can cause excessive brightness and glare and will cause fading of interior furnishings and finishes.

7.4 Temperature

Change in temperature causes the expansion and contraction of materials. Control of the passage of heat or cold through the wall is required. Thermal expansion and contraction is much greater in metals than in wood or masonry.

7.5 Gravity

Gravity causes deflection in horizontal load-carrying members, particularly under the weight of large sheets of heavy glass, although the structural effect of gravity is small because the weight of the wall is transferred at frequent intervals to the building frame.

7.6 Seismic

Seismic loadings will produce additional static and dynamic loadings to the window wall system. Seismic loading will produce both vertical and horizontal deflection of the wall.

SECTION 8. Consideration for Glazing Assemblies

1. Thermal movement the frame and glass
2. Deflection, vertical-framing members
3. Deflection, horizontal-framing members
4. Clearances, shims, drainage

Expansion and contraction of the glazing material and the resulting movement and stress the glazing system must cope with are determined by:

1. Size of light to be glazed
2. Maximum exposure temperature for glazing materials
3. Sealed insulating units (hotter trapped air) consult manufacturer for load capacities.

Some factors impacting transfer of wind loads to surrounding structure are:

1. Proportion and size of opening, span between supports, and thickness and deflection of glass.
2. Method of support for the glass pane.
3. Movement of the surrounding structure.
4. Setting of blocks placed under the bottom edge of glass.
5. Spaces shims to assure proper clearance between face of glazing material and framing channels.
6. Squareness, flatness tolerances surrounding channel.

SECTION 9. DESIGN CONSIDERATION

9.1 Structural Integrity

The structural integrity of the window wall must be evaluated using two criteria: strength and deflection. Based on numerous windows wall tests, it has been found that the ultimate performance of the system is usually dependent on the elastic and inelastic deflections of the system rather than fast the strength of component parts. Curtain wall fabrication and erection tolerances must carefully be reviewed in conjunction with structural frame tolerances. Many wall failures have been caused by inadequate anchorage details and inadequate consideration of tolerances.

9.2 Weathertightness

Weathertightness ensures protection against penetration of water and an excessive amount of air through the wall. There should be adequate provision for movement.

9.3 Provisions for Movement

Development of the Wall must accommodate relative movements of the wall component and also differential movements between the wall assembly and building structure. The effects of differential movements (deflections, creep, shrinkage, thermal, wind and seismic deformations) must not be transferred from the structure directly to the window wall system.

Provisions are usually provided at the head and jamb anchorage locations between the wall jointery and/or joints between wall and adjacent cladding. Behavior of sealants must be considered. Fabrication and erection tolerances must also be considered when establishing the joint opening width.

9.4 Moisture Control

Control of condensation is essential because metal and glass are not only impermeable to moisture, but have low heat retention capacity. Provision should be made for the escape of water vapor to the outside. The wall should be detailed so that any condensation occurring within it will be collected and drained along via weeps to the exterior.

9.5 Thermal Insulation

Devices to minimize exposure of the framing members by using thermal breaks, employing high-performance glass, and insulating opaque surfaces are recommended.

9.6 Sound Transmission

Use of insulating and laminated glass separately and in combination as well as increasing the mass of the wall will reduce the transmission of sound.

9.7 Fire and Smoke Stops

Prevention of the spread of fire and smoke by continuous firestopping between the curtain wall and the edge of each floor is necessary-through proper detailing.
CHAPTER 19

INFORMATION TECHNOLOGY

SECTION 1. General Provisions

1.1 General. Chapter 19, Section 1901-Verbatim: "The use of computers for all or any part of the design of buildings under this code is permitted, provided that all programs to be used are all properly documented" and filed for the records of the local O.B.O.

1.2 Provision on Information and Automation Systems or Building and other structures follows hereunder.

1.2.1 Automation System as a means to maximize convenience efficiency through precise control of operations and maintenance of the buildings and other structures, its environmental facilities, utilities for safety, sanitation, ventilation, illumination, accessibility, communication to the end of protecting health life, property and general public welfare with significant energy conservation.

1.2.2 The total design and integration of this significant 'high-tech' facility in any building and other structure shall be the responsibility of a registered professional electronic and communications engineer, while the architectonic integration of which into the building and other structures and coordination with other utilities rest upon the architect designer.

1.2.3 Information Systems. Computers, modems, servers, computer data, networking (local area networks, metropolitan area network and other wide area networks), data capture, internet, and other similar devices.

1.2.4 Telecommunication Systems. Intercoms, PABX, microwave links, analog and digital telephone systems, video conferencing; satellite links, structured cabling, fiber optics, and similar devices.

1.2.5 Cable Management Systems. Raised floors, underfloor ducts, flush-mounted trunking/raceways, ceiling raceways, cable trays, and other similar devices.

1.2.6 Security and Alarm Systems. Access control systems, CCTV systems, watchman tour systems, typical guest monitoring system, perimeter intruder detection system, sensors and detectors, (passive infrared/active infrared/microwave/acoustic/volumetric/motion/seismic types), tele-surveillance, and similar devices.

1.2.7 Fire Alarm Systems. Conventional type, analog type, analog-addressable (intelligent type), detectors and sensors, fire suppression systems, and other similar devices.

1.2.8 Automated Irrigation Systems. Landscape type, plantation type, and other similar devices.

1.2.9 Parking Management System. Automated carlift, automated barrier system, automated gate system, vehicle identification, programmable signal lights, roll up down doors, and other similar devices.

1.2.10 Building Management System (BMS) Building Automation System (BAS) Facilities Management System (FMS). Microprocessor-based equipment and devices designed to monitor and control the HVAC (heat, ventilation, and air-conditioning of a building through the use of sensors and actuators). The expanded scope includes the integration with other stand-alone systems such as security and surveillance systems, traffic and car park management, lighting systems, automated landscaping, telecommunication systems, fire alarm and suppression systems, vertical and
horizontal transport systems, maintenance systems, and other similar stand-alone systems and devices.

1.2.11 Conveyance Systems. Elevators, cable cars, horizontal conveyors, and other similar devices (vertical, diagonal, horizontal, and suspended types).

1.2.12 Process Automation. Industrial application particularly for manufacturing/production operations and other similar devices.

1.2.13 Automated Maintenance Systems. Gondola systems, Portable personal lifts, trailer-mounted boom lifts, self-propelled aerial work platforms, and other similar devices.

1.2.14 Lighting Control Systems. Dimming and programmable lighting control systems and other similar devices.

1.2.15 Office Automation Systems. Facsimile machines, multi-media projection systems, modular furniture, multiple language systems, and other similar devices.

1.2.16 Paging Systems. Public address with piped-in/background music and other similar devices.

1.2.17 Automation-Assisted Accessibility Systems. Stairway lifts, spa-lifts (external and internal type), ceiling and portable-mounted lifts, personal lifts, permanent and semi-permanent ramps, and other similar devices.

1.2.18 Home Automation System. Fire, security, monitoring and control systems, sensors/detectors, stand-alone type access control systems, and other similar devices.

SECTION 2. General.

2.1 Detailed engineering design of the complete system as enumerated in Section 1 – up to 1.2.18 in part of any combination thereof as may be required of the building shall or be in conformity with the latest edition of the referral Electronic Engineering and Communication Codes and Standard of Practice, as provided for by the accredited Professional Electronics and Communication Engineering Society of the Philippines and approved by the Secretary.
CHAPTER 20

SIGNS AND SIGNAGES

SECTION 1. General Requirements

1.1 No sign or signboard shall be erected in such a manner as to confuse or obstruct the view or interpretation of any official traffic sign, signal, or device.

1.2 No sign or signboard shall be constructed as to unduly obstruct the natural view of the landscape, distract or obstruct the view of the public as to constitute a traffic hazard, or otherwise defile, debase or offend aesthetic and cultural values and traditions.

SECTION 2. Maintenance

2.1 All signs, together with all of their supports, braces, guys, and anchors, shall be kept in repair and in proper state of preservation. The display of all signs be kept neatly painted and secured at all times.

SECTION 3. Design and Construction

3.1 Sign structures be designed and constructed to resist all forces in accordance with the National Structural Code for Buildings. For signs on buildings, the dead lateral loads shall be transmitted through the structural frame of the building to the ground in such a manner as not to overstress any of the elements of the building. The weight of earth superimposed over footings may be used in determining the dead load resisting moment. Such earth be carefully placed and thorough compacted.

SECTION 4. Supports and Anchorages

General. The supports and anchorages of all signs or sign structures shall be placed in or upon private property and shall be constructed in conformity with the requirements of this Code.

Materials. Materials for construction of signs or sign structures shall be of the quality and grade as specified in this Code.

Restrictions on Combustible Materials. All signs or sign structures erected in highly restrictive Fire Zones shall have structural members of incombustible materials. Ground signs may be constructed of any material meeting the requirements of this Code. Combination designs, roof signs, wall signs, projecting signs, and signs on marquees shall be constructed of incombustible materials. No combustible material other than approved plastics shall be used in the construction of electric signs.

Non-structural Trim. Non-structural trim and portable display surfaces may be of wood, metal, approved plastics, or any combination thereof.

Display Surfaces. Display surfaces in all types of signs may be made of metal, glass, or approved plastics.

SECTION 5. Projections and Clearances

5.1 Clearances from High Voltage Power Lines. Clearances of signs from high voltage power lines shall be in accordance with the Philippine Electrical Code.

5.2 Clearances from Fire Escapes, Exits, or Standpipes. No signs or signs structures shall be erected in such a manner than any portion of its surface or supports will interfere in any way with the free use of any fire escape, exit, or standpipe.
5.3 Obstruction of Openings. No sign shall obstruct any opening to such an extent that light or ventilation is reduced to a point below that required by this Code. Signs erected within 1.50 meters of an exterior wall in which there are openings within the area of the sign shall be constructed of incombustible material or approved plastics.

5.4 Projection Over Alleys. No sign or sign structure shall project into any public alley below a height at 3.00 meters above established sidewalk grade, nor project more than 300 millimeters where the sign structure is located 3.00 meters to 4.5 meters above established sidewalk grade. The sign or sign structure must not project more than 1.00 meter into the public alley where the sign or sign structure is located more than 4.50 meters above established sidewalk grade.

5.5 Installations of all signages or signs for advertisement or otherwise its placement location and erection on the ground or mounted to the building or roof of buildings shall strictly conform with NBC PD 1096 – IRR of the latest edition and all referral codes as applicable and enforceable by the O.B.O.

SECTION 6. Lighting

6.1 Signs shall be illuminated only by electrical means in accordance with the latest referral Philippine Electrical Code.
CHAPTER 21

TRANSITORY AND FINAL PROVISIONS

GENERAL. Chapter 21, Sections 2101 up to Section 2105 inclusive of the National Building Code - NBC is adapted verbatim in this referral architectural code and shall have mandatory force and effect as if fully embodied hereunder. Amplifications in any of its original provisions, objectively to cope-up with the latest advancements in science and technology shall apply.

SECTION 1. Existing Building and Structures

All buildings or structures constructed under R.A. 6541 or existing city or municipal building codes or ordinances, if legally done in accordance therewith, shall be respected subject to such limitations established in this Code.

However, alterations, additions, conversions, and/or repairs to be made in such buildings or structures shall be subject to the provisions of this Code.

SECTION 2. Interim Rules and Regulations

Interim rules and regulations on buildings promulgated by the Secretary of Public Works and Highways before adoption of this Code pursuant to existing laws or decrees shall continue to have binding force and effect, when not in conflict with the provisions of this Code.

SECTION 3. Separability Clause

If any provision of this Code or application thereof is to any person or circumstance declared unconstitutional or invalid for any reason, the same shall not affect the validity of the other provisions.

SECTION 4. Review and Amendments

The provisions of this Code shall be reviewed every three (3) years. All proposed amendments shall be channeled through the Committee tasked to oversee such review and amendments, the members of which shall be appointed by the National President of UAP with the approval of the Board of Architecture (BOA).

SECTION 5. Effectivity

This Code takes effect upon its promulgation by the United Architects of the Philippines. Done in the Cultural Center of the Philippines, City of Pasay, Metro Manila, Development Authority this _____ day of ______ in the year of our nineteen hundred ninety-nine.
ANNEXES

Annex A  Words, Terms and Phrases (Definitions)
Annex B  Building Permit – Architectural Permit
Annex C  Checklist for Building Permit Requirements

REFERENCES

1)  R.A. 545  An Act to Regulate the Practice of Architecture in the Philippines
2)  P.D. 1096  National Building Code of the Philippines and its Implementing Rules and Regulations
4)  P.D. 856  Code of Sanitation of the Philippines
5)  B.P. 344  An Act to Enhance the Mobility of Disabled Persons by Requiring Certain Buildings, Institutions, Establishments, and Public Utilities to Install Facilities and Other Devices
6)  R.A. 7920  Philippine Electrical Code or the Electrical Engineering Law
7)  R.A. 294  Philippine Mechanical Engineering code, or the Mechanical Engineering Law
8)  B.P. 220  Socialized Housing
9)  R.A. 7279  Urban Development and Housing Program
10)  P.D. 957  Regulating the Sale of Subdivision Lots and Condominiums
13)  R.A. 7586  National Integrated Protected Areas System (NIPAS Act)
14)  P.D. 1616  Rules and Regulations Governing the Development of Intramuros – Intramuros Administration
15)  The Illustrated BURRA Charter, Australia Icomos, By Peter Marquis Kyle and Meredith Walker, Australia 1992
16)  Basic Data on the International System of Units for the Philippines
17)  Convention for Modular Coordination
18)  R.A. 1378  National Plumbing Code of the Philippines
19)  P.D. 1185  Fire Code of the Philippines
20)  P.D. 1616  for the purpose of restoring and administering of the development of Intramuros
21)  R.A. 7356  Created the National Commission for Culture and the Arts (NCCA) to develop and promote the Filipino national culture and arts in coordination with affiliated cultural agencies
22)  P.D. 260  Vesting the National Historical Institute (NHI) with the power to declare as historical sites other buildings and monuments for preservation purposes
23)  P.D. 374  Designating the National Museum to supervise, preserve, conserve and restore outstanding structures, buildings, and monuments, towns, cities declared as national cultural treasures and properties
24)  P.D. 1505  Prohibiting the modification, alteration, repair or destruction of the original features of any designation and classified historical edifice without the written permission from the Chairman of the National Historical Institute (NHI)
25)  DTI DAO No. 1 Series of 1997 Revised Rules and Regulations Concerning the Philippine Standard (FS) Quality
28)  Cars in Housing Volume I, Ministry of Housing and Local Government, Her Majesty’s Stationary, London 1966
29)  Cars in Housing Volume II, Department of the Environmental, Her Majesty’s Stationary, 1971
32)  Cultural Aspects and Historical Preservation, Rosario Tan and Augusto Villalon, Manila, 1997
33) Typical Information and Automation System Configurations and Recommendations for Various Project Types, Ramon L. Abiera and Federico A. Gregorio, Manila, 1997
34) “Project Management in Buildings” and “Construction Management”, Romeo B. Santos, 1997
36) Structural Design Handbook – Gaylord and Gaylord
38) Structural Engineering Code of the Philippines
39) Philippine Mechanical Engineering Code
40) Philippine Electrical Engineering Code
41) National Plumbing Code of the Philippines
42) Electronics and Communications Engineering
43) Geological Engineering
44) Code on Sanitation
45) National Standards for Drinking Water
46) Water Code of the Philippines
47) National Pollution Control Commission
48) Civil Code of the Philippines
ANNEX “A”

WORDS, TERMS AND PHRASES
(Definitions)

GENERAL. All definitions of words, terms or phrases used in this Code shall be limited to the meaning hereunder presented.

ACCESSORIA OR ROW HOUSE
A house of not more than two and a half storeys (with mezzanine), composed of a row of dwelling units entirely separated from one another by a party wall or walls and with an independent entrance for each dwelling unit.

ACCESSORY BUILDING
A building subordinated to the main building on the same lot and used for purposes customarily incidental to those of the main building such as servants quarters, garage, pump house, laundry, etc., transformer vault, generator shed.

AGRICULTURAL BUILDING
A building designed and constructed to house farm implements, straw, grain, poultry, livestock or other horticultural products. This structure shall not be a place for human habitation or a place of employment where agricultural products are processed, treated or packaged; nor shall it be used by the public.

ALLEY
Any public space or thoroughfare which has been dedicated or needed for public use as a passageway with a width of not less than four meters if used as a bilateral access way between two rows of building abutting its front property lines.

ALTER OR ALTERATIONS
Any change, addition, or modification in construction of occupancy.

APARTMENT
A room or suite of two or more rooms, designed and intended for, or occupied by one family for living, sleeping, and cooking purposes.

APARTMENT HOUSE
Any building or portion thereof, which is designed, built, rented, leased, let or hired out to be occupied, or which is occupied as the home or residence of three or more families living independently of each other and doing their own cooking in the building, and shall include flats and apartments.

ARCADE
A roofed passageway of a building, covered pedestrian passage or covered sidewalk built as protection for pedestrians against rain or sun.

ASSEMBLY BUILDING OR HALL
A building or a portion of a building used for the gathering of a group of fifty or more persons.

ATTIC STOREY
Any storey situated wholly or partly in a roof, so designed, arranged or built as to be used for any occupancy or habitation.

AWNING
A fixed or moveable protective covering or protection over a window or entrance door.

BACKING
The surface or assembly to which veneer is attached.

BALCONY
A platform projecting from a wall with protective railing around its periphery.
Also, an elevated tier of seats over an assembly hall, the lowest part of which is raised 1.20 meters or more above the level of the main floor.

BALCONY EXTERIOR EXIT
A landing or porch projecting from the outer wall of a building which serves as a means of egress. The open area above the guardrail shall remain open so as to prevent the accumulation of smoke or toxic gas.

BARBECUE
A stationary or moveable hearth or brazier, used either for roasting or broiling.

BASEMENT
A storey of a building below the ground floor level or grade.

BASEMENT OR CELLAR
The portion of a building usually below the ground level or grade cellar when used exclusively for storage as wine cellar floor [and ceiling which is wholly or partly below grade, and so located that the vertical distance from grade to the floor level is equal] measured to one floor height.

BAY OR PANEL
The intervals or spaces between two adjacent pillars, columns, or buttresses into which the building front is divided.

BOARDING HOUSE
A house with five or more [sleeping] rooms where boarders are provided with lodging, and meals for a fixed sum for a month or week's stay [in accordance with previous arrangement].

BOILER ROOM
Any room containing a steam or hotwater boiler.

BUILDABLE AREA
The remaining space in a lot after deducting the required minimum open spaces for light and ventilation.

BUILDING
Any structure built to shelter multifarious human activities such as work, play, eat, etc., or an enclosure of persons, animals, chattels, manufacturing process, or any other kind.

BUILDING FOOTPRINT
The surface pattern bounded by the building's peripheral exterior walls on the ground synonymous to buildable area.

BUILDING HEIGHT
The vertical distance from the established grade elevation to the highest point of the coping of a flat roof, to one third the [average] height of the [highest] gable [or] of a pitch or hip roof, or to the top of the parapet if the roof is provided with a parapet. In case of sloping ground, the average ground level of the buildable area shall be considered the established grade elevation.

BUILDING LENGTH
In general the longest linear dimensions of a building or structure [usually measured in the direction of the bearing wall for girders].

BUILDING WIDTH
In general, the shorter linear dimensions of a building or structure [usually measured in the direction of the floor, beams or joists] transverse to its length.

CANOPY
A suspended covering over a window opening or entrance door.

CARPORT
An open car shelter.
CASING
A wood, metal or plastic covering or trim around the door or window frame.

CHIMNEY CLASSIFICATIONS
a) Residential Appliance Type. A factory-built or masonry chimney suitable for removing products of combustion from residential-type appliance producing combustion gases not in excess of 538 deg. C measured at the appliance flue outlet.

b) Low-Heat Appliance Type. A factory-built masonry or metal chimney suitable for removing the product of combustion from fuel-burning low-heat appliances producing combustion gases not in excess of 538 deg. C under normal operation conditions but capable of producing combustible gases of 760 deg. C during intermittent forced firing for periods up to one hour. All temperatures are measured at the appliance flue outlet.

c) Medium-Heat Appliance Type. A factory-built masonry or metal chimney suitable for removing the products of combustion from fuel-burning medium-heat appliances producing combustion gases not in excess of 1093 deg. C measured at the appliance flue outlet.

CHIMNEY CONNECTOR
The pipe which connects a flue-burning appliance to a chimney.

CHIMNEY LINER
The lining materials of fire clay or other approved incombustible material.

CHIMNEY, MASONRY
A flue for smoke or gases from fire of solid masonry units of fire bricks, stones, or reinforced concrete with incombustible lining in its interior.

CHIMNEY, METAL
A flue made of metal for smoke or gases from fire.

CONCRETE BLOCK
A hollow or solid concrete masonry unit CBM or CMU made from Portland cement and suitable aggregates such as sand, gravel, crushed stone, bituminous or anthracite cylinders, burned clay, pumice, volcanic scoria, air cooled or expanded blast furnace slags] otherwise termed as concrete masonry unit (CMU).

CONDOMINIUM
A cooperative apartment building owned jointly by each occupant built on a common lot.

COPING
The material or units used to form or serve as a cap [of] or finish on top of a wall, pier, parapet or pilaster.

CORROSION [RESISTANT] PROOF
The non-ferrous metal, or any metal having an unbroken surface of non-ferrous metal, or steel] alloyed with steel or iron with not less than ten percent (10%) chromium or with not less than 0.2 percent copper approved as per ASTM standards.

COURSE
A continuous horizontal layer of masonry units.

COURT
An unoccupied space enclosed by buildings and lot lines other than a yard; free, open, and unobstructed clear area of any appendages from the ground upward.

DISPERAL AREA (SAFE)
An area which will accommodate a number of persons equal to the total capacity of [the] stand [and] or building it serves, in such a manner that no person within the area need be closer than 15.00 meters from the stand or building. Dispersal areas shall be based upon an area of not less than 0.28 square meter per person.
DWELLING
[Any building or any portion thereof which is not an "apartment house", "lodging house", or a "hotel" as defined in this Code which contains one or two "dwelling units" or "guest rooms", used, intended or designed to be built, used] A shelter intended for human occupancy or use, rented, leased, let, or hired out to be occupied, [or which are occupied] for living purposes.

DWELLING, INDIGENOUS FAMILY
A dwelling intended for the use and occupancy by the family of the Owner, constructed of [indigenous] native materials such as bamboo, nipa, logs, cogon, or lumber, the total cost of which does not exceed fifteen thousand pesos, usually of native construction found in the countryside.

DWELLING, MULTIPLE
A building [used as a home or residence] of three or more family units living independently from each other, each with sanitary facilities, and each occupying one or more rooms as a single housekeeping unit.

DWELLING, ONE FAMILY
A single-detached [building] house designated for, or occupied exclusively for one family.

DWELLING UNIT
One or more habitable rooms which are occupied or which are intended or designated to be occupied by one family for living, sleeping, cooking, or eating.

EAVES
Edge of roofing overhanging from the exterior wall.

EXIT
A means of egress or going out as a doorway [door swings towards flow].

EXIT, FIRE
A [continuous and] doorway, unobstructed means of emergency egress to a public way, and includes intervening doors, doorways, corridors, exterior exit balconies, ramps, stairways, smokeproof enclosures, [horizontal exits, exit passageways] exit courts, and yards. An exit shall be deemed to be that point which opens directly into a safe dispersal area or public way. All measurements are to be made to that point when determining the permissible distance of travel.

EASEMENTS
Established by laws as not buildable clear strip of at least 3.0 meters wide along banks of rivers or its tributaries, creeks, or "esteros".

EXIT COURTS
A yard or court providing safe egress to a public way for one or more exits.

EXIT [HORIZONTAL] WAY
A means of [passage] horizontal exit, exit passageway within a building or from one building into another building [occupied by the same tenant through a separation wall] or leads to an exit having a minimum fire resistance of one hour.

EXIT PASSAGEWAY
An enclosed means of egress as a tunnel connecting to a required exit or exit court and leads to a public way.

FACING
Any masonry, forming an integral part of a wall used as a finished surface [as contrasted] to veneer or wainscot.

FACADE
Front of or exterior appearance of the building.
FIREBRICK
A refractory brick or incombustible brick used for lining the fireplace or fire chamber of ovens or incinerators.

FIRECLAY
A finely ground clay of high fire resistance used as a plasticizer for masonry mortars; varies widely in physical properties.

FIREPLACE
A hearth and fire chamber or similarly prepared place in which a fire may be made and which is built in conjunction with a chimney.

FIRE SEPARATION (WALL)
Horizontal or vertical separator of rated fire-resistive material to protect floor or wall respectively and to isolate fire hazardous areas from non-fire hazardous areas.

FIRE WALL
An exterior wall abutting the party or property line purposely to enclose such part of the building and protect the building from fire, usually of fire-resistive rating depending upon its occupancy within or the degree of hazardousness that requires protection.
ANNEX "B"

Republic of the Philippines
Department of Public Works and Highways

Office of the City / Municipal Building Official

APPLICATION NO. ____________________________ PERMIT NO. ____________________________

BOX 1 (TO BE ACCOMPLISHED BY THE DESIGNING ARCHITECT IN PRINT)

<table>
<thead>
<tr>
<th>NAME OF OWNER/APPLICANT</th>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>M.I.</th>
<th>TIN</th>
</tr>
</thead>
</table>

FOR CONSTRUCTION OWNED BY AN ENTERPRISE

<table>
<thead>
<tr>
<th>FORM OF OWNERSHIP</th>
<th>TYPE OF CONSTRUCTION PROJECT</th>
</tr>
</thead>
</table>

ADDRESS

<table>
<thead>
<tr>
<th>NO. OF STREET</th>
<th>BARANGAY</th>
<th>CITY/MUNICIPALITY</th>
<th>TELEPHONE NO.</th>
</tr>
</thead>
</table>

LOCATION OF CONSTRUCTION

<table>
<thead>
<tr>
<th>LOT BARANGAY</th>
</tr>
</thead>
</table>

SCOPE OF WORK

<table>
<thead>
<tr>
<th>1. NEW CONSTRUCTION</th>
<th>2. ADDITION OF</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. REPAIR OF</td>
<td>6. ______ OF</td>
</tr>
<tr>
<td>4. RENOVATION OF</td>
<td>7. ______ OF</td>
</tr>
<tr>
<td>5. DEMOLITION OF</td>
<td></td>
</tr>
</tbody>
</table>

REAL ESTATE PROPERTY / TYPE OF LOT

| TCT. NO. | CORNER LOT | RISERD LOT | INTERIOR LOT | THROUGH LOT | CORNER LOT ABUTTING 3 OR MORE STREETS | OTHERS |
|----------|------------|------------|--------------|------------|--------------------------------------|

ZONING CLASSIFICATION (PLEASE CHECK)

<table>
<thead>
<tr>
<th>R-1</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>R-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
<th>R-3</th>
<th>C-1</th>
<th>C-2</th>
<th>MILITARY ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRICULTURAL</td>
<td>AREA</td>
<td>AGRICULTURAL</td>
<td>AREA</td>
<td>AGRICULTURAL</td>
<td>AREA</td>
<td>MILITARY ZONE</td>
<td>REMARKS</td>
<td>SETBACK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>TRU</td>
<td>CONFORMING</td>
<td>CONFORMING</td>
<td>TRU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>TRU</td>
<td>REQUIREMENTS</td>
<td>REQUIREMENTS</td>
<td>TRU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>TRU</td>
<td>FRONT</td>
<td>FRONT</td>
<td>TRU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>TRU</td>
<td>SIDES</td>
<td>SIDES</td>
<td>TRU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRU</td>
<td>TRU</td>
<td>REAR</td>
<td>REAR</td>
<td>TRU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BOX 2 (TO BE ACCOMPLISHED BY RECEIVING/RECORDING SECTION)

ARCHITECTURAL DOCUMENTS (FIVE (5) SETS EACH COMPLETE ARCHITECTURAL PLANS, DETAIL DRAWINGS AND OTHER RELATED DOCUMENTS)

(a) Detailed drawings of bay sections, main stairs, secondary stairs, comfort rooms, egresses, roof gables, flushings, fire exits, accessibility features at scale of not less than 1:20 M.
(b) Ceiling plans at scale 1:100 M.
(c) Schedule and detailed drawings of doors and windows at scale 1:20 M.
(d) Detailed connection of doors and window frames at scale 1:1 M
(e) Schedule of floor and wall finishes
(f) Foundation plan at scale of not less than 1:100 M.
(g) Floor framing plans at scale of not less than 1:100 M.
(h) Roof framing plans at scale of not less than 1:100 M.
(i) Detail of footings/columns at scale not less than 1:100 M.
(j) Detail/schedule of girders and beams at any convenient scale
(k) Complete specifications
(l) Estimated cost of construction

BOX 3 (TO BE ACCOMPLISHED BY THE BUILDING OFFICIAL)

ACTION TAKEN:
1. THAT THE PROPOSED CONSTRUCTION/ADDITION/REPAIR/RENOVATION ETC. SHALL BE IN CONFORMITY WITH THE NATIONAL BUILDING CODE ITS IMPLEMENTING RULES AND REGULATIONS AND THE ARCHITECTURAL CODE.
2. THAT A FULLY LICENSED ARCHITECT HAS BEEN ENGAGED TO PREPARE PLANS & SPECIFICATIONS AND TO UNDERTAKE THE SUPERVISION/INSPECTION OF THE CONSTRUCTION OF THE PROJECT.
4. THAT A CERTIFICATE OF OCCUPANCY SHALL BE SECURED PRIOR TO ACTUAL OCCUPANCY OF THE BUILDING.
5. THAT BEFORE COMMENCING THE EXCAVATION, THE PERSON MAKING OR CAUSING THE EXCAVATION TO BE MADE SHALL NOTIFY IN WRITING THE OWNER OF ADJOINING BUILDING NOT LESS THAN 10 DAYS BEFORE SUCH EXCAVATION IS TO BE MADE AND THAT THE ADJOINING BUILDING SHOULD BE PROTECTED.
6. PROVIDE FEATURES/FACILITIES FOR BP 344 (ACCESSIBILITY LAW)
7. THAT NO ADDITIONAL STRUCTURE EXPANSION SHALL BE DONE WITHOUT THE APPROVAL OF THIS OFFICE.
8. THAT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AN ACTUAL RELOCATION SURVEYS SHALL BE CONDUCTED BY A LICENSED GEOIDETIC ENGINEER.

9. THAT THIS PERMIT SHALL NOT SERVE AS EXEMPTION FROM SECURING
   1. PERMITS/CLEARANCES FROM OTHER GOVERNMENT AGENCIES.
   10. ALL CONDITIONS STIPULATED ON CLEARANCE OBTAINED FROM OTHER GOVERNMENT AGENCIES SHALL BE COMPLIED WITH

RECOMMENDING APPROVAL:

ARCHITECT-IN-CHARGE

ARCHITECTURAL DIVISION/SECTION/UNIT

APPROVED:

CITY MUNICIPAL BUILDING OFFICIAL

DATE

NOTE: THIS PERMIT MAY BE CANCELLED OR REVOKED PURSUANT TO SECTION 305 & 306 OF THE NATIONAL BUILDING CODE

BOX 4 (TO BE ACCOMPLISHED BY THE DESIGNING ARCHITECT IN PRINT) 153
ANNEX "B"
Republic of the Philippines
Department of Public Works and Highways

Office of the City / Municipal Building Official

APPLICATION NO.  

ARCHITECTURAL PERMIT

PERMIT NO.  

BOX 1 (TO BE ACCOMPLISHED BY THE DESIGNING ARCHITECT IN PRINT)

<table>
<thead>
<tr>
<th>NAME</th>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>M.I.</th>
<th>TIN</th>
</tr>
</thead>
</table>

FOR CONSTRUCTION OWNED

<table>
<thead>
<tr>
<th>TYPE OF CONSTRUCTION PROJECT</th>
</tr>
</thead>
</table>

| BY AN Enterprise |

ADDRESS

<table>
<thead>
<tr>
<th>NO. OF STREET</th>
<th>BARANGAY</th>
<th>CITY/MUNICIPALITY</th>
</tr>
</thead>
</table>

LOCATION OF CONSTRUCTION

<table>
<thead>
<tr>
<th>LOT</th>
<th>BLK</th>
<th>NO.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>STREET</th>
<th>BARANGAY</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SCOPE OF WORK</th>
</tr>
</thead>
</table>

1. NEW CONSTRUCTION
2. ADDITION OF
3. REPAIR OF
4. RENOVATION OF
5. DEMOLITION OF
6. OTHERS (SPECIFY)
7. OTHERS (SPECIFY)

REAL ESTATE PROPERTY / TYPE OF LOT

<table>
<thead>
<tr>
<th>TCT. NO.</th>
<th>CORNER LOT</th>
<th>INSIDE LOT</th>
<th>INTERIOR LOT</th>
<th>THROUGHLOT</th>
<th>CORNER LOT ABUTTING 3 OR MORE STREETS</th>
<th>OTHERS</th>
</tr>
</thead>
</table>

ZONING CLASSIFICATION (PLEASE CHECK)

<table>
<thead>
<tr>
<th>R-1</th>
<th>C-1</th>
<th>I-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-2</td>
<td>C-2</td>
<td>I-3</td>
</tr>
<tr>
<td>R-3</td>
<td>C-3</td>
<td>ISTITUTION</td>
</tr>
<tr>
<td>R-4</td>
<td>I-1</td>
<td>PARKS AND RECREATION</td>
</tr>
</tbody>
</table>

AGRICULTURAL | ARDEN | MILITARY ZONE |
| AREA | AC | OTHERS (SPECIFY) |

PLAN |

<table>
<thead>
<tr>
<th>SF</th>
<th>CONFORMING</th>
<th>NON-CONFORMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETBACK</td>
<td>REQUIREMENTS</td>
<td>FRONT</td>
</tr>
<tr>
<td>SIDES</td>
<td>REAR</td>
<td></td>
</tr>
</tbody>
</table>

BOX 2 (TO BE ACCOMPLISHED BY REceiving/RECORDING SECTION)

<table>
<thead>
<tr>
<th>ARCHITECTURAL DOCUMENTS (GIVE 5) SUES EACH COMPLETE ARCHITECTURAL PLANS DETAILED DRAWINGS AND OTHER RELATED DOCUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Location plan within a two-kilometer radius for commercial industrial and institutional complexes, and within a half-kilometer radius for residential buildings, at any convenient scale, showing prominent landmarks or major thoroughfares for easy reference.</td>
</tr>
<tr>
<td>b. Site development and location plan at scale 1:200 m standard or any convenient scale for large-scale development showing position of building in relation to lot. Existing buildings with in and adjoining the lot shall be hatched, and the distances between the proposed and existing building shall be indicated.</td>
</tr>
<tr>
<td>c. Perspective drawings at any convenient scale</td>
</tr>
<tr>
<td>d. Floor plans at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>e. Four (4) elevations at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>f. Two (2) sections at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>g. Detailed drawings of keys sections, main stairs, secondary stairs, comfort rooms, canopies, roof gutter, flashings, free walls, accessibility features at scale of not less than 1:20 M.</td>
</tr>
<tr>
<td>h. Ceiling plans at scale 1:100 M.</td>
</tr>
<tr>
<td>i. Schedule and detailed drawings of doors and windows at scale 1:20 M.</td>
</tr>
<tr>
<td>j. Detailed connection of doors and window frames at scale 1:10 M.</td>
</tr>
<tr>
<td>k. Schedule of floor and wall finishes</td>
</tr>
<tr>
<td>l. Foundation plan at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>m. Floor framing plans at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>n. Roof framing plans at scale of not less than 1:100 M.</td>
</tr>
<tr>
<td>o. Details of footings/columns at scale not less than 1:100 M.</td>
</tr>
<tr>
<td>p. Details of interior details at scale not less than 1:100 M.</td>
</tr>
<tr>
<td>q. Complete specifications</td>
</tr>
<tr>
<td>r. Estimated cost of construction</td>
</tr>
</tbody>
</table>

BOX 3 (TO BE ACCOMPLISHED BY THE BUILDING OFFICIAL)

ACTION TAKEN:

1. THAT THE PROPOSED CONSTRUCTION/ADDITION/REPAIR/RENOVATION ETC. SHALL BE IN CONFORMITY WITH THE NATIONAL BUILDING CODE. ITS IMPLEMENTING RULES AND REGULATIONS AND THE ARCHITECTURAL CODE. |
2. THAT A DILIGENT LICENSED ARCHITECT HAS BEEN ENGAGED TO PREPARE PLANS & SPECIFICATIONS AND TO UNDERTAKE THE SUPERVISION/INSPECTION OF THE CONSTRUCTION OF THE PROJECT. |
4. THAT A CERTIFICATE OF OCCUPANCY SHALL BE SECURED PRIOR TO ACTUAL OCCUPANCY OF THE BUILDING. |
5. THAT BEFORE COMMENCING THE EXCAVATION, THE PERSON MAKING OR CAUSING THE EXCAVATION TO BE MADE SHALL NOTIFY IN WRITING THE OWNER OF ADJOINING BUILDING NOT LESS THAN (10) DAYS BEFORE SUCH EXCAVATION IS TO BE MADE AND THAT THE ADJOINING BUILDING SHOULD BE PROTECTED. |
6. PROVIDE FEATURES/FACILITIES FOR RP 344 (ACCESSIBILITY LAW) |
7. THAT NO ADDITIONAL STRUCTURE/EXPANSION SHALL BE DONE WITHOUT THE APPROVAL OF THIS OFFICE. |
8. THAT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AN ACTUAL RELOCATION SURVEYS SHALL BE CONDUCTED BY A LICENSED GEODETIC ENGINEER. |

9. THAT THIS PERMIT SHALL NOT SERVE AS EXEMPTION FROM SECURING PERMIT/CLEARANCES FROM OTHER GOVERNMENT AGENCIES. |
10. ALL CONDITIONS STIPULATED ON CLEARANCE OBTAINED FROM OTHER GOVERNMENT AGENCIES SHALL BE COMPLIED WITH. |

RECOMMENDING APPROVAL:

ARCHITECT-IN-CHARGE

APPROVED:

CITY / MUNICIPAL BUILDING OFFICIAL

DATE

NOTE: THIS PERMIT MAY BE CANCELLED OR REVOKED PURSUANT TO SECTION 305 & 306 OF THE NATIONAL BUILDING CODE

153
### BOX 4 (TO BE ACCOMPLISHED BY THE DESIGNING ARCHITECT IN PRINT)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Provided</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible Ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserved Parking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signage/Directional Signage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible Comfort Rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible Entrance &amp; Fire Exit Doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to Public Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible Functional Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessible Elevators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio &amp; Automatic Alarm System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Building Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Floor</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
<tr>
<td>Second Floor</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
<tr>
<td>Third Floor</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
<tr>
<td>Fourth Floor</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
<tr>
<td>Open Courtyards/Terraces/Lana/UTC</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
<tr>
<td>Others</td>
<td>Floor Area</td>
<td>Sq. M.</td>
</tr>
</tbody>
</table>

**PROJECTED CONSTRUCTION COST**

### BOX 5

**Architect Designer (Sign and Seal Architectural Plans and Specifications)**

**PRC Reg. No.**

**Print Name**

**Address**

**PTR No.**

**Date**

**Place**

**Signature**

**tin**

### BOX 6

**Signature Over Printed Name**

**Applicant**

**CTC No.**

**Date**

**Place**

**Tin**

### BOX 7 (TO BE ACCOMPLISHED BY LOT OWNER)

**TCT/CCT No.**

**TAX DECLARATION NO.**

**Print Name of Lot Owner**

**Address**

**CTC No.**

**Date:**

**Place:**

**Signature**

**Tin**

### NOTE:

The designing architect must submit a set of certified true copies of current and valid PRC Professional License, Community Tax Certificate and Professional Tax Receipt yearly to the concerned office of the Building Official as additional documentary requirements before processing of the various building permits are vested upon by the Office if the Building Official support staff.

Non-submittal or compliance of these requirements constitutes outright rejection of the application.

The designer or architect on record shall accomplish the completion form and should not be delegated to other professional except those who are directly involved in the construction phase in order to attest the compliance of the design.

### COMPUTATION

**Line and Grade**

**Building Permit**
### Annex C

**CHECKLIST FOR ARCHITECTURAL AND BUILDING PERMIT REQUIREMENTS**

<table>
<thead>
<tr>
<th>Required Submittals</th>
<th>Fencing Permit</th>
<th>Demolition Permit</th>
<th>Repair &amp; Renovation Permit</th>
<th>New Construction</th>
<th>Others</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Locational Clearance</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2. Barangay/Homeowner's Clearance</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HLURB approval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4. Tax Declaration</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5. Current real property for receipt</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6. Certified true copy of TCT</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>7. Contract of lease (if property is leased)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8. Deed of absolute sale (if property is not yet transferred)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Architectural</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plumbing</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mechanical</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Five (5) sets of Specs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>11. Five (5) sets of Structural computations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12. Soil boring tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>13. Demolition Procedure</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. LOG BOOKS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

155