هيئة كفاءة الإنفاق والمشروعات الحكومية
Expenditure Efficiency & Projects Authority

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Definitions and References

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1.0 GENERAL

The purpose of this chapter is to define general definitions and references to be used by the on Entity in the preparation of the Engineering documents for its projects. In order to ensure uniformity throughout the project and for compatibility within the Entity's jurisdiction limits, these definitions and references shall provide the framework within which A/E shall perform their works.

General definitions and references provide a reference basis, highlighting certain specific requirements of the Entity and shall emphasize the utilization of Saudi Arabian goods and services. Specific definitions and references are included in the Building Codes, Specifications and Standard Drawings. In addition, the relevant chapters of this White Book include other definitions and references that shall be adhered to by the A/E.

2.0 DEFINITIONS AND REFERENCES

2.1 Definitions

Entity shall refer to the NIST Guide for the use of the international systems of Units for all applicable definitions. The following are the definition of terms used throughout this volume. In addition to the definitions listed here, there are discipline specific definitions covered in discipline guidelines in Chapter 7 of this volume.

2.1.1 Architectural

- "Axis" - a linear progression of space connecting two or more dominant features
- "Code" - legally binding rules enacted by an Authority that provide minimum requirements for materials, design, and detailing of systems, equipment, and components, to ensure acceptable performance levels and protect public safety and health.
- "Commissioning" - the process of ensuring that all systems, subsystems, and components of new/rehabilitated facilities and systems are designed, installed, inspected, tested, and operated according to the design, installation, inspection, testing, and operational requirements of the project, as specified by the Entity and as designed by the A/E.
- "Form" **-** the size and shape of mass. Individual forms shall be designed to complement one another and the environment
- "Function" - the use of a space or area. Function is gauged by the degree to which the space works for its intended purpose
- "Regulations" - are Authority imposed requirements, which specifies product, process or service characteristics, including the applicable administrative provision, with which compliance is mandatory, such as building codes."Standards" - document established by consensus and approved by a recognized body of experts that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at achievement of the optimum degree of order in a given context (economy, safety, quality, etc.). Standards referenced by codes (incorporated by reference) become part of the code and thus are legally enforceable.
- "Terminus" - end of an axis and is typically defined by a dominant feature such as a building

2.1.2 Zoning

- "Form Based Code" - a land development regulation that fosters predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. A form-based code is a regulation, not a mere guideline, adopted by a city.
- "Smart Code" - Planning and zoning document based on environmental analysis. It addresses all scales of planning, from the region to the community to the block and building.

2.1.3 Accessibility

- “Universal Design” - A broad-spectrum of ideas meant to produce buildings, products and environments that are inherently accessible to older people, people without disabilities, and people with disabilities.
- “Accessibility” - The degree to which a product, device, service, or environment is available to as many people as possible.
- “Visitability” - Similar to Universal Design in general intent, but more focused in scope. Visitability features make buildings easier for people who develop a mobility impairment to visit friends and extended family rather than having to turn down invitations, or not be invited at all.

2.1.4 Sustainability

- “Building Commissioning” - A quality assurance processand during and after building construction to ensure that appropriate systems and components are installed, tested and maintained according to design requirements.
- “Carbon Footprint” - The total set of greenhouse gas emissions caused by an organization, event or product.
- “Chain-of-Custody Certificates” - Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by a Forest Stewardship Council (FSC)-accredited body to comply with FSC STD-01-001, “FSC Principles and Criteria for Forest Stewardship.” Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
- “Ecosystem” - The complex of a community of organisms and its environment functioning as an ecological unit.
- “Ecological Footprint” - Measure of human demand on the Earth’s ecosystems.
- “Greenhouse Gas” - An atmospheric gas that absorbs and emits radiation within the thermal infrared range, a process that elevates the average surface temperature of the Earth. The primary greenhouse gases in the Earth’s atmosphere are water vapor, carbon dioxide, methane, nitrous oxide and ozone.
- “Greywater” - Wastewater generated from domestic activities such as laundry, dishwashing and bathing, which may be recycled on-site for uses such as landscape irrigation and flushing toilets.
- “Life-Cycle Cost Analysis (LCCA)” Method for assessing the total cost of facility ownership, taking in to account first costs as well as operations and maintenance expenses.
- “Low-VOC” - Materials with Volatile Organic Compound emissions that comply with established limits, thus supporting indoor air quality.
- “Recycled Content” - The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.
- “Post-consumer” - material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their roles as end users of the product, which may no longer be used for its intended purpose.
- “Pre-consumer” - material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.
- “Regional Materials” - Materials that have been extracted, harvested, or recovered, as well as manufactured, within 800 km of project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.
- “Peak Shaving”- The process of shifting electrical demand from peak times to times with lower demand

- "Construction Waste Management"- Developing and implementing a construction waste management program shall be part of the standard scope for all projects. At a minimum, the plan shall identify the non-hazardous materials to be diverted from the waste stream through salvage or recycling activities and state whether materials will be sorted on-site or comingled.

2.2 References

The directives contained herein have been compiled for the purpose of establishing and defining each discipline's code, Standards and design guideline references to be used for the Entity's Projects prepared by Architecture/Engineering (A/E). The references outlined here are to be utilized, followed and adhered on Entity's projects.

The Entity shall define the requirements for the use of Specifications/Standard Installation drawings/ Procedures/Templates/Check lists/etc. on its infrastructure projects. Following is an indicative list of codes and standards applicable on Infrastructure Projects. Entity shall identify for its projects the applicable codes & standards, Basis of Design/Criteria. Refer to Volume 6, Chapter 5 (Document No EPM-KE0-RG-000006) for the order of precedence for the technical conflicts between codes/specifications/etc. and the application of building codes and additional standards applicable on Infrastructure projects.

2.2.1 Codes

2.2.2 General

- ADA : Americans with Disabilities Act
- IBC : International Building Code
- ICC A117.1 : International Code Council: Accessible and Usable Buildings and Facilities
- IECC : International Energy Conservation Code
- IFC : International Fire Code
- SBC : Saudi Building Code

2.2.3 Structural

- ACI : American Concrete Institute

2.2.4 Mechanical

- IMC : International Mechanical Code
- IPC : International Plumbing Code

2.2.5 Electrical

- NEC : National Electrical Code

2.2.6 Third Party

The utility companies each have their own design Standards which shall be applied and reviewed by the Entity prior to detail design.

2.2.7 Standards

2.2.8 General

- AAMA : Architectural Aluminum Manufacturers Association
- ANSI : American National Standards Institute
- ASTM : American Society for Testing and Materials
- BHMA : Builders Hardware Manufacturers Association
- BS : British Standards
- DIN : Deutsche Industrie Norm (German Industrial Standards)
- EN : European Standards
- ISO : International Organization for Standardization
- NAAMM : National Association of Architectural Metal Manufacturers
- NCS : National CAD Standards
- NFPA : National Fire Protection Association
- NIST : National Institute of Standards and Technology
- NRCA : National Roofing Contractors Association
- OSHA : Occupational Safety and Health Standards
- SASO : Saudi Arabian Standards Organization
- TCA : Tile Council of America
- UL : Underwriters Laboratories Inc.
- WDMA : Window and Door Manufacturers Association

2.2.9 Civil

- AASHTO : American Association of State Highway and Transportation Officials
- ACI : American Concrete Institute
- ACPA : American Concrete Pipe Association
- AIMS : Asphalt Institute Manual Series
- ASCE : American Society of Civil Engineers
- ASSE : American Society of Sanitary Engineering
- AWWA : American Water Works Association
- EPA : Environmental Protection Agency
- FHWA : Federal Highway Administration
- FTA : Federal Transit Administration
- HI : Hydraulic Institute
- IFCA : International Erosion Control Association
- ITE : Institute of Transportation Engineers
- MOT : Ministry of Transportation, Saudi Arabia
- MPWH : Ministry of Public Works and Housing, Saudi Arabia

- PPI : Plastic Pipe Institute
- SCS : Soil Conservation Services
- SSPC : Society for Protective Coatings
- TRR : Transportation Research Record
- USDA/NRDS: United States Department of Agriculture / National Resources Conservation Services
- USDOT : United States Department of Transportation

2.2.10 Structural

- AISC : American Institute of Steel Construction
- AISI : American Iron and Steel Institute
- API : American Petroleum Institute
- ASCE : American Society of Civil Engineers
- AWS : American Welding Society
- AWWA : American Water Works Association
- CRSI : Concrete Reinforcing Steel Institute
- NDS : National Design Standards (wood)
- PCA : Portland Cement Association
- PCI : Precast/ Pre-stressed Concrete Association
- PTI : Post Tensioning Institute
- SDI : Steel Deck Institute
- SJI : Steel Joist Institute
- SSPC : Society of Protective Coatings

2.2.11 Mechanical

- ASHE : American Society for Healthcare Engineering
- ASHRAE : American Society of Heating, Refrigerating and Air-Conditioning Engineers
- ASME : American Society of Mechanical Engineers
- ASPE : American Society of Plumbing Engineers
- ASSE : American Society of Sanitary Engineering
- AWWA : American Water Works Association
- MSS : Manufacturers Standardization Society
- NADCA : National Air Duct Cleaning Association
- SMACNA : Sheet Metal and Air Conditioning National Contractors Association

2.2.12 Electrical

- ICEA : Insulated Cable Engineers Association
- IEC : International Electro-Technical Commission

- IEEE : Institute of Electrical and Electronic Engineers
- IESNA : Illuminating Engineering Society of North America
- ISA : Instrumentation, Systems and Automation Society
- NEMA : National Electrical Manufacturers Association

2.2.13 Geotechnical

- AASHTO : American Association of State Highway and Transportation Officials

2.2.14 Sustainability

- CEEQUAL : Sustainable Assessment and Awards for Civil Engineering
- LEED : Leadership in Energy and Environmental Design

2.2.15 Third Party

- SEC : Saudi Electricity Company

3.0 ABBREVIATIONS

This section contains general abbreviations used across chapters of Volume 6. Additional abbreviations specific to design disciplines not listed below are covered in respective chapters of Volume 6.

The following abbreviations is a list that apply to the White Book:

- AC : Alternating Current
- A/E : Organization that undertakes studies and/ or design of projects
- ADAG : Americans with Disabilities Act Guidelines
- ANSI : American National Standards Institute
- ASTM : American Society for Testing and Materials
- BEDD : Basic Engineering Design Data
- BLDG : Building
- BOQ : Bill of Quantities
- CAPEX : Capital Expenditure Project
- CB : Circuit Breaker
- CCTV : Closed Circuit Television
- CSI : Construction Specification Institute
- DBR : Design Basis Report
- DC : Direct Current
- DCN : Drawing Change Notice
- DRM : Design Review Meeting
- EGL : Elevation Grade Level
- ECMS : Electronic Content Management System

- EE : Electrical Engineering
- EIA : Environmental Impact Assessment
- EIS : Environmental Impact Studies
- EM : Engineering Manager
- Entity : A Saudi Government organization which is responsible for the delivery of government funded infrastructure construction projects
- EPC : Engineer, Procure and Construct
- EPMO : Entity Project Management Organization
- EV : Earned Value
- FDAS : Fire Detection Alarm System
- FFE : Furniture Fixtures & Equipment
- FGL : Finish Grade Level
- FOC : Fiber Optic Cable
- GACA : General Authority for Civil Aviation
- GBCI : Green Building Certification Institute
- GFA : Gross Floor Area (m2)
- HDD : Horizontal Directional Drilling
- HV : High Voltage
- HVAC : Heating Ventilation and Air-Conditioning
- IBC : International Building Code
- ICC/ANSI : International Code Council/ American National Standards Institute
- IFC : Issued for Construction
- IECC : International Energy Conservation Code
- IESNA : Illuminating Engineering Society of North America
- IMC : International Mechanical Code
- IPC : International Plumbing Code
- IRR : Irrigation
- ITP : Inspection Test Plan
- IWMF : Industrial Waste Management Facility
- KPI : Key Performance Index
- LAN : Local Area Network
- LCC : Life Cycle Cost
- L&I : Landscaping and Irrigation
- LRB : Link Road Bridge
- LUP : Land Utilization Permit
- LUR : Land Utilization Request
- LV : Low Voltage
- MR : Material Requisition

- MTO : Material Take Off
- MV : Medium Voltage
- NFPA : National Fire Protection Association
- NTP : Notice to Proceed
- O&M : Operations & Maintenance
- OoM : Order of Magnitude
- P&C : Procurement & Construction
- PEP : Project Execution Plan
- Pdf : Portable Document File (Adobe)
- PPT : Power Point Presentation
- QA/QC : Quality Assurance/Quality Control
- RFI : Request for Inspection
- RFP : Request for Proposal
- SAR : Saudi Arabia Railroad or Site Allocation Request
- SBC : Saudi Building Code
- SDDR : Supplier Document and Data Register
- SEC : Saudi Electricity Company
- SOW : Scope of Work
- SQS : Supplier Quality Surveillance
- SR : Service Requisition
- SWCC : Saline Water Conversion Corporation
- SWW : Sanitary Waste Water
- TCDD : Typical Construction Details Drawings
- TIA : Traffic Impact Assessment
- TQ : Technical Query
- TS : Technical Submittals
- TSE : Treated Sanitary Effluent
- TV : Television
- NWC : National Water Company
- MT : Material submittal
- SD : Shop drawing
- SI : Site Instruction
- NCR : Non Conformance Report
- AB : As Built drawing
- OM : Operation and Maintenance Manual
- MIR : Material Inspection Request
- NCO : Notification Change Order