PART 1 - GENERAL

1.01 OVERVIEW

A. As part of each Design Phase deliverable for all new building construction, building expansions and additions, and major renovation projects, the A/E shall furnish a document titled “Design Intent Document” that describes the complete architectural and engineering design intent for the Project including design guiding principles, assumptions, issues, recommendations, and narrative assessment of the architectural and infrastructure systems.

B. Develop the Design Intent Document on a system-by-system basis, preferably in order by UNIFORMAT II classification, using a consistent style for each system.

PART 2 - DESCRIPTION

2.01 DOCUMENT PURPOSE

A. The purpose of the Design Intent Document is to establish early agreement between the A/E and Owner as to overall design approach and detailed design assumptions. This document shall address in written, narrative form, all assumptions and reasoning behind decisions made during the Design phases and provide a final assessment of all architectural and infrastructure systems. The A/E shall address site and building components relevant to the Project.

B. The Design Intent Document shall identify and justify all proposed exceptions to materials, equipment, products and methods listed within Owner’s Master Construction Specifications and the Owner’s Design Guideline Elements.

C. In developing the Design Intent Document, the A/E with Owner’s input, must thoroughly consider all design criteria and operational parameters during each Design Phase and document the agreed-upon results. Deviations from design criteria and operational parameters accepted during the Bidding Phase must be recorded at the end of Bidding and incorporated into the Design Intent Document.

D. The Design Intent Document will be used as a permanent reference regarding the operating sequences and design parameters for the facility, will be used during the commissioning process, and will be used as a reference for future renovation work throughout the life of the facility.

E. When renovating building areas and/or tying into existing systems:
   1. Verify and demonstrate that the existing systems/structures have sufficient capacity to serve/support the new work.
   2. List all existing major building components, materials, equipment and systems proposed to be reused or salvaged.
2.02 DOCUMENT PREPARATION

A. The Design Intent Document shall be created and submitted as a “stand alone” document along with the other Design Phase Deliverables and shall not be incorporated as part of the Project Manual. The final approved Design Intent Document shall be provided to the Owner in electronic format at completion of services.

B. The Design Intent Document shall be updated as the project goals and requirements are expanded and defined, and submitted at the end of Schematic Design, Design Development, and Construction Document phases. Each update shall incorporate new and revised information resulting from:

1. Changes in Project Scope
2. Code interpretations
3. Owner input
4. Utility provider input
5. Municipality input
6. Owner’s Underwriter input
7. Design coordination meetings
8. Test reports on existing conditions
9. Design calculations
10. Equipment selections
11. Soils, sound, effluent, vibration, structural, wind tunnel, and other studies
12. Project budget adjustments
13. Project schedule/phasing
14. Constructability issues

C. To facilitate the production of an “as-built” Design Intent Document, the Project Team shall identify changes during construction that impact the Construction Document Phase Design Intent Document and notify the Owner’s Project Manager accordingly. When revisions to construction documents are issued, their authors shall include a communication labeled “Impact on Design Intent”. At the conclusion of the project, the Owner may elect to have the Construction Document Phase Design Intent Document updated with as-built information. The means and methods for this as-built update shall be negotiated by the Owner on a project-by-project basis.
PART 3 - CONTENT

3.01 OVERVIEW

A. The Design Intent Document must address the following areas of design as a minimum and as applicable to the Project. Include additional descriptive information that the A/E deems pertinent or helpful for the Owner to understand, operate and maintain the installed systems.

3.02 ARCHITECTURAL AND GENERAL CONSTRUCTION

A. Occupancy classification, fire resistance rating, and construction type.
B. Describe materials for all major items of construction and all interior and exterior finishes.
C. Describe any special construction features incorporated into the facility.
D. Floor load assumptions.
E. Compliance with acoustical and vibration requirements. List areas of high noise and vibration and acoustic design principles applied. State if an acoustical consultant is required for the Project. Provide noise criteria and acoustic assumptions and calculations.
F. Fire and life safety considerations and fire zoning rationale.
G. Assurance that equipment of more than one manufacturer can be accommodated in designated equipment rooms and that adequate space for access, maintenance, repair, and removal of equipment is planned.
H. Statement of coordination verifying that all ductwork, piping, conduit, lighting, raceways, and other above-ceiling items will fit at the stated height above the finished floor and that these building systems have been coordinated with the architectural and structural design documents.

3.03 STRUCTURAL SYSTEMS

A. Describe proposed foundation design and structural framing system and alternatives considered. Provide a summary of why the selected system was chosen over the alternatives. Provide a preliminary cost estimate of each alternative structural system considered and identify time of construction for each alternative. This will allow Owner to make structural system selections based on engineering and economic factors.

B. Brief description of structure:
   1. Building functions.
   2. Number of floors, floor-to-floor height.
   4. Exterior walls, interior partitions.
5. Overall building dimensions and frequency of expansion joints including those at exposed exterior building components.

6. Unusual design features.

C. Structural System Selected:
   1. Describe the floor and roof structural systems.
   2. Discuss reasons for selection of systems. This should include comments on system economics as opposed to other types, unusual spans and loads, fireproofing and any other factors governing selection of structural system.

D. Stress Distribution in Frame:
   1. Give a brief statement of method of distributing loads and moments throughout frame.
   2. Discuss method of distributing wind loads. Wind loads must be taken to the integral parts of the structure.

E. Structural Analysis and Proportioning Members:
   1. State method of stress analysis (i.e. working stress, ultimate strength).
   2. List codes, standards and pertinent references to be used as criteria for sizing members.
   3. Give class and strength of structural materials to be used per Design Guideline Element Z2015 – Structural Criteria.
   4. Major analysis and design assumptions shall be briefly described in the “Structural Notes” on the Drawings.

F. Design Loads:
   1. If the A/E believes that the Project is of a nature where there could be changes in function and therefore changes in stiffeners criteria or increases in future applied loads, then the A/E should inform Owner. A live load schedule can then be determined to fit the specific requirements of the structure.
   2. Floor design live loads; uniform and concentrated.
   3. List roof loads.
   4. List wind loads.

G. Foundation Design:
   1. Description of foundation conditions, type of foundation to be used, method by which the allowable bearing values are to be determined, and maximum allowable bearing capacity for the foundation.
2. As soon as soils investigations have been completed, provide detailed descriptions of foundation type and soils capacities actually used in sizing foundation members. State anticipated settlements if known.

3. Discuss waterproofing below grade if required, and method of removing water at exterior walls and under ground level slab.

4. Discuss lateral load assumptions at below grade locations.

5. Discuss unusual foundation and shoring problems due to nature of soils, proximity of adjacent structures, etc.

H. Upon request by Owner, provide one (1) copy of sample design calculations of representative floor, roof, column and wall elements and any other structural member requested. Sample calculations and design assumptions shall be presented in a manner that can readily be followed. Members shall be cross-referenced to plans and details with number system that permits easy identification of the member and its location in the structure.

I. Furnish sample structural design calculations for a typical interior and exterior bay from roof through foundation. Sample calculations shall show:

1. Unit dead loads with partitions load assumptions.
2. Unit live loads with sustained load assumptions and reduction factors.
3. Deflections. Show justification for long and slender members.
4. Ponding.
5. Vibration considerations where applicable.

J. Furnish additional calculations showing any unusual problems encountered involving cantilevers, torsions, foundation walls, shoring, etc.

K. Review the possibility of loads due to specialized equipment with the A/E team and Owner.

3.04 FIRE SUPPRESSION SYSTEMS

A. Describe type(s) of standpipe, sprinkler and gaseous extinguishing systems to be used and note locations to be protected by each type of system. Qualify all demands proposed for redundancy, safety factor and/or future expansion.

B. Identify hazard classifications of occupancy and applicable code references.

C. Describe location and capacity of source for each system.

D. When tying into existing systems:

1. Verify and demonstrate that the existing systems have sufficient capacity to support the new work.
2. List all existing major equipment or systems to be reused or salvaged.

E. Water supply available at point of connection (static pressure and residual pressure at design flow). This data must be based on flow tests taken at or near the point of connection.

F. Describe fire pump operating parameters.

G. Approximate water demand for wet systems.

H. Statement of adequacy / inadequacy of water supply and planned upgrades by local utility, if any.

I. Identify and justify all proposed exceptions to materials, equipment, products and methods, listed within Owner’s Master Construction Specifications.

J. Identify and justify all proposed exceptions to the Owner’s Design Guidelines.

K. Calculated design loads for all systems. Provide calculations used for sizing equipment and piping. Identify and include values for estimated diversity, safety factor, future demands and redundancy.

L. Include additional descriptive information that the A/E deems pertinent or helpful for the Owner to understand, operate and maintain the installed systems.

3.05 PLUMBING SYSTEMS

A. Description of all proposed systems and components summarizing design intent and functioning. Include all performance criteria and parameters. Qualify all demands proposed for redundancy, safety factor and/or future expansion.

B. Describe location and capacity of source for each system.

C. When tying into existing building systems:

1. Verify and demonstrate that the existing systems have sufficient capacity to support the new work.

2. List all existing major equipment or systems to be reused or salvaged.

D. Estimated maximum and minimum water pressure at the building service entrance and indication if booster pumping will be required.

E. Type, size, and design of all domestic water heating equipment and distribution system.

F. Design temperature of domestic hot water distribution system and method of recirculation within the building. Clarify how prevention of scalding and Legionella is incorporated.

G. Describe all water and energy conservation aspects incorporated into the design of the various systems.
H. Identify and justify all proposed exceptions to materials, equipment, products and methods, listed within Owner’s Master Construction Specifications.

I. Identify and justify all proposed exceptions to the Owner’s Design Guidelines.

J. Calculated peak design loads for all systems. Provide calculations used for sizing equipment and piping. Identify and include values for estimated diversity, safety factor, future demands and redundancy.

K. Include additional descriptive information that the A/E deems pertinent or helpful for the Owner to understand, operate and maintain the installed systems.

3.06 HVAC AND INTEGRATED AUTOMATION SYSTEMS

A. State Energy Code Compliance; ANSI/ASHRAE/IESNA 90.1.

B. Indoor and outdoor design conditions, all seasons.

C. Interior design conditions, temperature and humidity, by room type.

D. Identify special humidification or de-humidification requirements.

E. Description of systems and components and why selected system is preferred over other types considered.

F. Air distribution zoning rationale.

G. Ventilation strategies, requirements and calculations. Indicate outside air quantity per person and per square foot, in all areas. Indicate type of filtration, including any special filtration requirements to meet air quality criteria.

H. Heating and cooling load calculations with assumptions, diversity, spare capacity and that include building envelope and supply and return air quantities (CFM); steam, hot and chilled water flows and line sizes. Include minimum air change rates per room type. Include equipment loads (Watts per square foot) and diversities assumed for HVAC system sizing.

I. Describe any features being incorporated in the HVAC system for energy conservation; provide relevant technical analysis for basis of selection.

J. Occupancy, usage, and schedule assumptions, all seasons.

K. Life safety operating modes.

L. System sequences of operation (normal start, run, re-start on emergency power), setpoints, and dead-bands. Address system redundancy.

M. Sequences of operation for interactive systems.

N. Equipment sizing criteria and calculations.
O. U-value calculations on various building exposures.

P. Information that the A/E deems pertinent or helpful for the Owner to understand the evolution of design, and to operate and maintain the installed systems.

Q. For building additions and renovations, describe new equipment to be added, including new auxiliary equipment and identify source of normal and emergency power for their operation.

R. Identify systems that require emergency power.

3.07 ELECTRICAL SYSTEMS

A. State Energy Code Compliance; ANSI/ASHRAE/IESNA 90.1.

B. Lighting requirements and calculations.

C. Fire and life safety considerations.

D. Equipment load assumptions and calculations; include estimate of total and estimate for specific concentrated loads, such as special equipment and equipment that requires emergency power.

E. Description of systems, components, and methods for achieving Owner’s objectives.

F. Fire alarm input/output matrix recommended by NFPA 72 pertaining to fire alarm sequence of operations and to document the actual sequence of operations.

G. Sequences of operation for interactive systems.

H. Equipment sizing criteria and calculations.

I. Determination of short-circuit duty required for all service entrance protective devices and switchgear.

J. Protective device coordination analysis.

K. Statement relative to the adequacy of primary power source. If primary source is inadequate, state measures proposed to correct the deficiency.

L. Electrical characteristics of power supply to the Project Site and within the Project, including circuit interrupting requirements, voltage regulation, and power quality criteria where appropriate.

M. Emergency generator and associated paralleling and switching system.

N. Arc flash hazard assessment, noting requirements for maximum allowable arc flash hazard Class.


O. Ensure adequate space for all electrical apparatus meets code requirements for working space and dedicated electrical space. Allow ample room for access and servicing, removal and replacement of parts, etc., as required. Resolve space discrepancies with the Architect.

P. Lightning protection system.

3.08 COMMUNICATION SYSTEMS

A. Type and arrangement of telecommunications, closed circuit television systems (CCTV), nurse call, and security systems.

B. Space required for telecommunications and security equipment, point of connection to utility, size of incoming duct/conduit and size of equipment mounting backboard to be provided. Ensure adequate space for system equipment on a per floor basis. Allow ample wall space for termination of equipment and cable runs from all device locations on floors. Resolve space discrepancies with the A/E.

C. Identify wiring and cabling requirements plus terminations.

D. Identify interference and clearance requirements.

E. Statement relative to interface provision for multi-use systems.

F. Verify that all security equipment is to be on dedicated UPS circuits.

G. Verify that all security access controllers will communicate via the MD Anderson network.

3.09 EXTERIOR IMPROVEMENTS AND LANDSCAPING

A. Describe existing site improvements to remain, to be altered, and to be demolished.

B. Describe proposed pedestrian and vehicular access, roads, sidewalks, and parking, including accessibility for the disabled.

C. Describe the type and volume of traffic at the Project Site.

D. Describe proposed site improvements.

E. Describe proposed landscape development, both hardscape and softscape, including proposed special features such as fountains, sculpture, etc.

3.10 CIVIL / SITE UTILITIES

A. Describe existing site utilities, including, but not limited to, type, capacity, condition, present usage, and any unsatisfactory elements. Describe proposed locations of all utility connections required to serve the Project.

B. State materials to be used for water, storm, sewer, gas and other site utility piping.
C. Describe measures to be taken and/or features or structures required to comply with storm water collection, detention, and disposal.
### PART 4 - DOCUMENT REVISION HISTORY

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<th>Issue</th>
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<th>Revision Description</th>
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<td>03-02-10</td>
<td>Initial Adoption of Element. Renumbered and renamed Element from Z2010 Design Submittal Requirements.</td>
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