Design Guidelines

Rotary House International Phase III
CP&M Project No. 06-2110
August 27, 2008

Prepared by:
Facilities Management
Capital Planning & Management Services

THE UNIVERSITY OF TEXAS
MD ANDERSON
CANCER CENTER
Making Cancer History®

PART 1 - OVERVIEW

1.01 GENERAL

A. The University of Texas M. D. Anderson Cancer Center Design Guidelines, referenced in the Architect/Engineer Agreement as "Owner's Design Guidelines", defines design expectations and preferred methods and materials of construction to assure uniformity, system and component quality, compatibility, functionality, and ease of maintenance in all M. D. Anderson Cancer Center facilities.

B. Design Guideline Elements, Master Construction Specifications, and Supplemental Resources (AutoCAD Standards, Installation Details, and other referenced Standards) are combined under the heading "Owner's Design Guidelines".

C. The attached **Project Summary, Design Guideline Element 1010**, describes the facility and initial design concepts specific to the proposed Project. The proposed Project will have very unique requirements that are not yet defined. The Owner's Design Guidelines may not provide the necessary criteria to anticipate all of the unique needs of this facility. Therefore, the Architect/Engineer shall be proactive in identification of all design issues that contradict or are not identified within the Owner's Design Guidelines and communicate such concerns to the Owner's Project Manager in writing during the design phase of the Project to allow resolution in sufficient time to meet Contract schedule obligations.

PART 2 - ACCESS TO CURRENT OWNER'S DESIGN GUIDELINES

2.01 GENERAL

A. Current Owner's Design Guidelines are available on the Internet for reference during the Request for Qualifications process. For convenience, three separate addresses (URL's), each pointing to a general Design Guideline category, are provided below:

1. Owner's Design Guideline Elements are available online at http://www2.mdanderson.org/depts/cpm/standards/guides.htm

2. Owner's Master Construction Specifications are available online at http://www2.mdanderson.org/depts/cpm/standards/specs.htm

3. Owner's Supplemental Resources are available online at http://www2.mdanderson.org/depts/cpm/standards/supp.htm

PART 3 - TRANSMITTAL OF OWNER'S DESIGN GUIDELINES FOR THIS PROJECT

3.01 GENERAL

A. In order to establish a baseline of design criteria applicable to initiating Basic Services for the Project, M. D. Anderson will transmit the version of the Owner's Design Guidelines in effect for this Project at the time that the Agreement is transmitted to the Architect/Engineer for execution.

B. The Architect/Engineer and all consultants under contract to the Architect/Engineer shall review and incorporate criteria stated in the Owner's Design Guidelines for preparation of the Contract Documents.

C. Refer also to the Preface Section of the Owner's Design Guidelines for additional information.

END OF INTRODUCTION

1010 Project Summary

CP&M Project No. 06-2110

Table of Contents

Project Description

Rotary House International Phase III

1010 Project Summary

CP&M Project No. 06-2110

INTRODUCTION

1.01 DOCUMENT INTENT

A. This document provides general information and initial design concepts for the proposed building systems and components.

B. Refer to the Owner's Design Guideline Elements A though G and Element Z for technical design criteria related to general building components, requirements for preparation of Project Manuals, and for additional M. D. Anderson standards and other requirements.

1. Owner's Design Guidelines are available online at http://www2.mdanderson.org/depts/cpm/standards/default.html

C. Refer to the Owner's Master Construction Specifications for product and construction execution requirements.

1. Owner's Master Construction Specifications are available online at http://www2.mdanderson.org/depts/cpm/standards/specs.htm

PROJECT OVERVIEW

1.02 DESCRIPTION

A. This Project includes the design and construction of a Phase III expansion to the Rotary House International Hotel (RHI), also referred to as the "Project", located at the corner of Holcombe Boulevard and South Braeswood.

B. This expansion will complete the current Master Plan utilization for this campus parcel.

C. Conceptually, the expansion will increase the number of hotel guest rooms from 322 to 475. The new rooms will be in a new wing adjoining the east end of the existing building, encompassing fourteen (14) floors. In addition, there will be remodeling of Level 1, Mezzanine, and Level 2 for guest amenities and staff support space. All new guest rooms must be accessible to people with disabilities.

D. A third-party hotel operator, Marriott, manages RHI as a non-branded hotel and will participate in the Project design and construction phases. Architect/Engineer must design to Marriott's current Fire Protection / Life Safety Design Standards, which Owner will provide during the design phase.

E. Parking for the Rotary House will be provided in the Braeswood Garage currently under construction and Texas Medical Center (TMC) Garage 17, located immediately south of the Project.

F. The Project will include a new underground electrical service, a new TECO chilled water service, and all other new utilities required to adequately support the facility.

G. Sustainability and conservation of energy will be considered factors in the determination of the design concepts and in the selection of building components for the Project, however, LEED certification is not required.

1.03 PROGRAM

A. Architect/Engineer must reconfirm project requirements described within the current Facility Program.

B. The Project should accommodate building support functions including:

1. Guest rooms in multiple configurations including VIP suites.
2. Relocated vehicle drop-off and hotel entrance.
3. Relocated lobby and registration desk.
4. Relocated meeting rooms and guest amenity spaces.
5. Possible dining room and kitchen modifications.
6. Enlarged hotel staff support spaces and laundry facility.
7. Enlarged dock facility.
8. New emergency generator room and electrical transformer vault.
9. Enlarged mechanical, electrical, telecommunications/security rooms.
10. New elevated pedestrian bridge from Rotary House across South Braeswood to the new Braeswood Garage.
11. Provision for future pedestrian rights-of-way through Level 2 of the hotel to a future pedestrian bridge across Holcombe Boulevard and to future pedestrian pathways connecting existing buildings.

1.04 SITE PLANNING

A. Site Description

1. The Project consists of a site bounded by South Braeswood Boulevard to the east, Holcombe Boulevard to the north, TMC Garage 17 to the South, and the Faculty Center to the west.
2. Building setbacks are 25 feet along South Braeswood Boulevard and Holcombe Boulevard.
3. The site is essentially flat and lies within the 500-year flood plain.

B. Phase III Expansion

1. New construction – approximately 175,408 gross square feet (gsf); which includes shell space and an enclosed air-conditioned pedestrian bridge, 25 feet wide and 200 feet in length located between the hotel and the Braeswood Garage.

2. Remodeled area – approximately 10,388 gsf.

3. Floor levels will match the existing facility.

C. Planning Considerations

1. Relocate hotel entrance and main lobby to the center of the new building footprint.

2. Provide new vehicle entrance and maintain on-site access to TMC Garage 17.

3. Plan for a future pedestrian bridge across Holcombe Boulevard that will connect the Phase III expansion to a future M. D. Anderson building site at M. D. Anderson Boulevard and Holcombe Boulevard. This bridge will be constructed in a separate project.

1.05 RELATED PROJECTS

A. The Owner will initiate a separate project to refurbish existing guest rooms.

B. The Braeswood Garage that will support this Project is currently under construction.

C. Diagnostic/Treatment Building (future building; potential site will be directly north of the Braeswood Garage).

D. City of Houston utility and paving upgrade of Holcombe Boulevard.

1.06 DESIGN AND CONSTRUCTION PHASING

A. In planning the new construction and existing building renovations, consideration must be given to maintaining full hotel operations in accordance with applicable codes.

EXISTING FACILITY CONDITIONS

1.07 OVERVIEW

A. This section provides general background information on the existing Phase I and Phase II construction of RHI.

B. Equipment information provided within this document is for information general purposes only. The Architect/Engineer must field-verify equipment and system information that may be relevant to the Phase III design.

1.08 PHASE I AND II FACILITY DESCRIPTION

A. RHI was built in two phases. Phase I was constructed in 1991, while Phase II was completed in 2000 with a conference room build-out in 2005. The total floor area for Phases I and II is

approximately 250,000 gross square feet within an 11-story structure and includes 322 guest rooms.

1. Phase I includes 198 guest rooms with kitchenettes; Phase II includes 124 guest rooms.

B. Central plant equipment, including air handling units and pumps, and the main electrical switchgear room are located in first floor or mezzanine level equipment rooms.

1.09 UTILITIES

A. Electrical Power

1. The CenterPoint electrical service ductbank that serves the existing facility is routed underground within the Phase III Expansion site and will be in conflict with the new RHI expansion area.

2. This Project includes installation of a new CenterPoint ductbank to serve the entire facility to a new transformer vault located in the Phase III expansion.

B. Thermal Energy Corporation (TECO) Chilled Water and Steam

1. TECO supplies building chilled water service through a 10-inch carbon steel pipe located in a first floor mechanical equipment room.

a. Existing chilled water system parameters and capacities:

1) Differential temperature: 14 degrees F.

2) Design cooling capacity: 9,100,000 Btu/hr.

3) Pipe capacity: 3,000 gpm @ 4 feet head loss / 100 feet of pipe.

4) Actual measured flow rate: 1,147 gpm.

5) Actual cooling capacity: 8,040,000 Btu/hr.

6) Actual supply temperature: 41 degrees F (design minimum is 40 degrees F to maximum 43 degrees F.)

2. TECO supplies high pressure steam to the building for conversion to heating and domestic hot water via a 4-inch carbon steel pipe. Steam condensate is returned to TECO via a 3-inch pipe carbon steel pipe.

a. Steam enters the building in the first floor equipment room at a pressure of 250 psi then passes through three (3) pressure reducing stations to reduce the steam pressure down to 15 psi at a rate of 20,000 lbs/hr transported through an 8-inch pipe.

b. Existing heating hot water system parameters and capacities:

1) Differential temperature: 40 degrees F.

2) Design heating capacity: 8,800,000 Btu/hr.

3) Design capacity: 9200 lb/hr @ 250 psi.

4) Steam velocity: 3,035 fpm maximum allowable 8000 fpm @ 22,000 lb/hr.

5) Differential temperature: 14 degrees F.

6) Actual heating capacity: 4,944,480 Btu/hr.

7) Actual capacity: 4109 lb/hr @ 251 psig.

8) Maximum recorded steam usage for the existing Rotary House facility is 4,041 lb/hr @ 252 psig, and a steam temperature of 428 degrees F.

C. Domestic Water, Fire Protection Water, Sanitary and Storm Sewer services are connected to the City of Houston municipal systems.

D. Natural Gas service is currently provided by CenterPoint Energy.

1.10 PLUMBING SYSTEMS

A. Domestic Water System

1. The water service enters the building within a ground level mechanical room and discharges into a combination domestic/fire protection water break-tank. A skid-mounted pumping system boosts and maintains pressure within the distribution system.

2. Domestic hot water is generated by semi-instantaneous steam-to-water heaters.

3. A water softener system serves water heating equipment and kitchen equipment.

B. Sanitary Waste and Vent System

1. The sanitary waste and vent system serves various equipment and plumbing fixtures throughout the facility.

2. Kitchen waste discharges through an exterior grease interceptor prior to connecting to the municipal sewer.

C. Storm Drainage

1. The building roof is drained via primary and secondary roof drains and interior downspouts.

D. Natural Gas

1. Natural gas serves kitchen equipment and the laundry dryers. The pool and spa are heated via steam heat exchangers.

1.11 HVAC EQUIPMENT

A. Chilled Water Pumps

1. Three (3) centrifugal, split-case pumps with variable frequency drives are installed to serve Phase I and II; only two pumps operate during the peak cooling season.

2. Flow capacity of each pump is 650 gpm; 95 feet of head, 25 hp.

3. One chilled water pump is on emergency power.

B. Hot Water Pumps

1. Typically two of three installed hot water pumps operate during the peak heating season.

2. Flow capacity of each pump is 200 gpm; 85 feet of head, 10 hp.

C. Building Hot Water Converters

1. Three (3) steam to hot water converters are installed at a steam rate of 4065 lb/hr and heat rate of 4,400,000 Btu/hr.

2. A smaller converter has a 420 lb/hr steam rate and heat rate of 400,000 Btu/hr.

D. Steam Condensate Return Units

1. Two (2) units are installed; each rated at 37.5 gpm capacity and 138.6 feet of head.

E. Outside Air Pretreatment

1. Three (3) outside air pretreatment units located in the first floor mechanical room serve Phase I.

a. One unit rated at 17,000 CFM capacity provides outside air to air handling units that serve public and administrative areas.

b. The other two units, rated at 14,000 CFM each, provide outside to guest room floors 3 through 11. Outside air is typically ducted via a sidewall grille to each guest room above the door.

2. Two (2) outside air pretreatment units located in the mezzanine level serve Phase II.

F. Air Handling Units

1. Phase I and II public areas are served by dual duct air handling units with dual duct VAV terminal units located in the first floor mechanical room.

2. Separate single zone air handling units located in the first floor mechanical room serve the indoor swimming pool area (5,000 CFM) and kitchen (10,000 CFM).

3. A dual duct air handling unit located in the second floor mechanical room serves the dining area (8,250 CFM).

4. Existing cooling coils are a maximum of 6 rows, 8 fins per inch, copper tube, copper fin material. Heating coils are a minimum of 2 rows, 10 fins per inch, copper tube, and aluminum fin material. Maximum coil differential pressure on the water side is 15 ft-wc and on the air side is 0.75 in-wc.

5. Generally, air handling units that serve occupied areas such as dining, office, and meeting rooms have variable frequency drives.

G. Exhaust

1. Toilet and general exhaust fans are located on the roof.

2. The existing kitchen is exhausted through the south wall of the building; however, Owner prefers roof-mounted kitchen exhaust fans for the new expanded kitchen. Evaluate options for discharging kitchen exhaust at a lower roof level for a shorter exhaust discharge route.

H. Stairwell Pressurization Fans

1. Each existing stairwell is pressurized by two (2) roof-mounted, vane axial fan, direct drive fans, 20,000 CFM capacity, 7.5 hp.

2. Consider a single supply fan to pressurize each Phase III stairwell instead of two fans.

I. Smoke Evacuation System

1. This system removes air from the guest room corridors for smoke evacuation.

1.12 AUTOMATIC FIRE PROTECTION SYSTEMS

A. The facility is provided with wet combination standpipe and sprinkler systems with sprinkler heads to be semi recessed.

B. The water service enters the building within a ground level mechanical room and discharges into a combination domestic/fire protection water break-tank. A fire pump and a jockey pump boosts and maintain pressure within the piping systems.

1.13 ELECTRICAL EQUIPMENT

A. An existing 350 kW emergency generator with 600 gallon day tank is installed outdoors.

1. Emergency power is currently supplied to outside air pretreatment units, building automation system, front desk, fire alarm/life safety systems, coolers for refrigeration systems, and chilled water pump No. 1.

CONSTRUCTION SYSTEMS AND ASSEMBLIES

1.14 GENERAL

A. The Architect/Engineer must clearly define construction and infrastructure systems to be provided for Phase III design and construction, and also the renovation and remodel of the existing structure.

1. Indicate routing of utilities, termination and connection points, such as electrical equipment, electrical power distribution, air distribution ductwork, air handling supply, exhaust equipment, mechanical equipment chilled water, hot water, steam, condensate, plumbing equipment domestic hot, cold water piping, fire protection equipment, and sprinkler piping etc. on the Drawings.

1.15 ELEMENT A – SUBSTRUCTURE

A. No additional requirements; refer to Owner's Design Guideline Element A.

1.16 ELEMENT B – SHELL

A. This Element B section contains supplemental design criteria unique to this Project. For additional criteria not listed in this section, refer to Owner's Design Guideline Elements B.

B. B1010 Floor Construction

1. Match flat slab concrete system of existing hotel. Consider post-tension elevated decks in lieu of reinforced concrete for cost savings.

2. Floor design live load criteria:

Offices, Hotel Guest Rooms	50 psf
Assembly Spaces, Lobbies, Corridors, Stairways	100 psf live load plus partition loads at columns, girders, floor slabs and beams. 2000 lbs. concentrated load at any 6.25 psf within a structural bay with increased capacity as required for specific equipment.
Mechanical Rooms/ Penthouse and selected Electrical and Telecommunications Rooms, Mezzanine, Laundry, Kitchen	150 psf
High Density Storage	150 psf
Loading Dock, Driveways	250 psf
Light Storage	125 psf

3. Proposed floor to floor heights (may vary based on structural system):

Level 1 to Mezzanine	14'-9" (Match Existing)
Mezzanine to Level 2	15'-3" (Match Existing)
Level 2 to Level 3	15'-2" (Match Existing)

Level 3 to Level 11	9'-4" per floor (Match Existing)
Level 11 to Roof	12'-0" (Match Existing)
Penthouse	Determined by elevator and mechanical equipment

4. Bridges shall be a combination of structural steel trusses and beam systems spanning between concrete columns and foundations.

C. B2010 Exterior Walls

1. Ratio of precast panels and windows shall be the same as existing hotel.

2. Penthouse structures shall be prefinished architectural metal panels.

3. Provide an analysis to determine need for vapor retarder.

4. Louvers shall be storm proof type with actual sizes determined by the required free area, including reductions for screens, to avoid introducing rain into the building.

5. Provide prefinished architectural metal bridge soffit panels.

6. Provide stucco building soffits.

7. Bridges shall be painted aluminum and glass curtain wall with a combination of vision and spandrel glass.

8. Exterior walls shall be a combination of precast concrete panels and painted aluminum and glass curtain wall and windows. Submit reflectance data for exterior materials under consideration for review and approval by Owner.

1.17 ELEMENT C – INTERIORS

A. This Element C section contains supplemental design criteria unique to this Project. For additional criteria not listed in this section, refer to Owner's Design Guideline Elements C.

B. During the Project's Design Phase, M. D. Anderson will furnish the Architect/Engineer interior finishes standards appropriate for the Project.

C. C1020 Interior Doors

1. Typical door frames shall be hollow metal.

2. Provide cylindrical locksets with lever handles, brushed chrome finish and Best lock cores. Guestroom locksets to match existing.

D. C1030 Fittings

1. Hotel guestroom baths to be fitted similar to existing hotel.

E. C3010 Wall Finishes

1. The following table indicates wall finishes for identified room types within this Project. This table supersedes the table in Owner's Design Guideline Element C:

Room Type	Wall Finish
Entry Vestibule	Textured Finish
Promenade, Elevator Lobby	Textured Finish, Wall Covering
Bedroom, Employee Lounge, Offices	Paint
Corridors, Concierge Room, Living Rooms, Kitchenettes	Vinyl Wall Covering
Kitchen	Tile, Semi-Gloss Paint
Dining	Vinyl Wall Covering, Painted Wood Chair Rail
Locker Rooms, Restrooms, Mechanical/Service, Storage	Semi-Gloss Paint
Bathrooms	Vinyl Wall Covering, Ceramic Tile

F. C3020 Floor Finishes

1. The following table indicates floor finishes for identified room types within this Project. This table supersedes the table in Owner's Design Guideline Element C:

Room Type	Floor Finish
Entry Vestibule, Promenade, Elevator Lobby	Stone
Corridor, Office, Bedroom, Living Room, Concierge Room	Carpet
Storage, Locker Rooms, Employee Lounge	VCT
Restrooms, Bathroom, Kitchenette	Ceramic Tile
Kitchen	Quarry Tile
Dining	Carpet, Quarry Tile
Mechanical/Service Areas	Sealed Concrete

G. C3025 Base Finishes

1. The following table indicates base finishes for identified room types within this Project. This table supersedes the table in Owner's Design Guideline Element C:

Room Type	Base Finish
Entry Vestibule	12" Stone
Promenade, Elevator Lobby	12-inch Stone, Painted Wood
Dining	Stained Wood
Kitchen	Quarry Tile
Storage, Locker Rooms, Employee Lounge	4-inch Coved Vulcanized Rubber
Concierge Room, Corridors	6-inch Painted Wood
Restrooms, Bathrooms	Ceramic Tile
Kitchenettes	6-inch Painted or Wood Base
Offices	Straight (No Cove) 4-inch

Room Type	Base Finish
	Vulcanized Rubber Base
Mechanical/Service Areas, Bedrooms, Living Rooms	Carpet Base

H. C3030 Ceiling Finishes

1. The following table indicates ceiling finishes for identified room types within this Project. This table supersedes the table in Owner's Design Guideline Element C:

Room Type	Ceiling Finish
Employee Lounge, Kitchen, Office	Acoustical Tile
Elevator Lobby	Textured Finish/Acoustical Tile
Storage, Corridor, Concierge Room	Painted Gypsum Wallboard
Bedroom, Living Room, Kitchenette	Textured Finish on Concrete Deck
Bathroom	Painted Concrete Deck
Dining, Locker Room, Public Restroom	Painted Gypsum Wallboard/Acoustical Tile
Promenade	Painted Plaster
Mechanical/Service Areas	None

1.18 ELEMENT D – SERVICES

A. Conveying

1. No additional requirements; refer to Owner's Design Guideline Element D.

B. Plumbing

1. Provide a redundant domestic water service from Holcombe Boulevard for this Project.

2. Refer to Owner's Design Guideline Element D.

C. Heating, Ventilating, and Air Conditioning

1. TECO Service / Plant Equipment:

a. This Project must allow for installation of chilled water supply and return piping from TECO to serve the future M. D. Anderson facility to be constructed north of the Braeswood Garage.

1) To accomplish this, the Architect/Engineer must coordinate with TECO to add a new chilled water piping connection to the top of existing TECO lines located between RHI and the Faculty Center building.

2) Conceptually, the new piping will be routed vertically within an accessible "column" to the RHI within a new pedestrian access pathway along the south side of the building.

3) Preliminary estimates require an insulated 18-inch chilled water supply and return line size. The 18-inch chilled water service will be installed along the bottom structure of the new pedestrian bridge that will connect the Phase III expansion to the Braeswood Garage.

4) TECO steam and condensate service is not planned for the future M. D. Anderson facility.

b. The existing RHI is supplied chilled water directly from TECO with no heat exchanger to isolate the building piping from TECO. This Project must include a new equipment room to be located in the Phase III expansion that will accommodate new chilled water pumps and two (2) redundant, 100 percent capacity plate and frame heat exchangers to isolate from TECO.

1) To serve this Project, new 10-inch chilled water supply and return piping will tie into the proposed new 18-inch service piping and connect to the new heat exchangers.

2) A TECO chilled water meter must be installed in the new equipment room for the RHI load.

3) A maintainable duplex basket strainer properly sized for the full capacity shall be located upstream of the plate and frame chilled water heat exchangers.

4) Redundant chilled water pumps shall be sized to distribute chilled water to all cooling coils in the new Phase III expansion and to back feed the existing Phase I and II equipment.

c. Add flanged isolation valves to the chilled water supply and return piping upstream of the frame plate heat exchangers to serve as an emergency hook up to a portable trailer mounted generator, chiller, and pump.

d. Plan for the steam and hot water equipment to be located in the new Phase III equipment room to provide additional space in the existing facility. The existing TECO steam service connection, however, into the original equipment room can remain to serve the entire facility, including Phase III expansion. Install a new steam pressure reducing valve, instantaneous steam to hot water converters, and redundant hot water pumps.

e. The building chilled water system and hot water system equipment shall be connected to both normal and emergency power.

2. Supply Air Distribution Systems:

a. Air handling units zoned to serve similar public areas shall provide conditioned air to meeting rooms, kitchen, dining, administration, and other support space. While existing systems are dual duct, Owner prefers single-duct VAV systems for all new design.

b. Air distribution shall include constant volume fan powered terminal units with ECM fan motors for all occupied zones, both exterior and interior. Terminal units used for supplying conditioned air to zones with an exterior exposure at the building perimeter and at zones that have exposure to transmission losses through the roof also require supplemental heating coils.

1) Variable air volume terminal units without supplemental heat may be used to serve non-occupied zones areas such as mechanical and electrical equipment rooms.

2) Determine zone heating needs and capacities based on minimum air quantities required to maintain outside air requirements. In general, zones that are exhausted such as public toilet rooms must be provided with zone heating.

3. Guest Rooms:

a. Guest rooms will be served by vertically stacked 4-pipe fan coil units purposely designed for hotel room applications.

b. Each fan coil unit must be remotely controlled on/off through the building automation system from the main check-in desk reservation system. This will allow for better energy management since the guest rooms can be programmed to cool down just prior to guest check-in.

c. The fans are to be direct drive, and the control valves to the cooling coils and heating coils are to be pressure independent and equipped with electric actuators.

4. Outside Air Systems:

a. Energy recovery units located in a penthouse will provide pretreated outside air to the hotel dining area, meeting rooms, corridors, lobbies, and guest rooms. The energy recovery units will reclaim energy from the building's ventilation relief air and toilet exhaust based on meeting the requirements of ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality.

b. Pretreated outside air will be distributed via a supply air duct directly to the stacked fan coil unit in each guest room. The quantity of ventilation air will be controlled with constant air volume terminal units to positively pressurize each guest room with respect to the corridor and also to provide ventilation make-up air for guest room bathroom exhaust.

c. For meeting rooms, the quantity of ventilation air will be controlled with variable air volume terminal units to maintain the concentration level of carbon dioxide less the 900 ppm. Ventilation relief air paths shall be incorporated in the HVAC system design.

d. Dehumidification to meet minimum relative humidity requirements shall not be accomplished by means of reheating cold air or mixing of hot and cold air streams or other simultaneous heating and cooling. Dehumidification shall be accomplished by means of a desiccant wheel of liquid desiccant recirculation system.

5. Exhaust and Relief Air Systems:

   a. Ventilation relief air paths shall be incorporated in the hotel corridors, meeting rooms, lobbies, and dining area. Elevator shafts shall have vent relief air paths per international building code requirements.

   b. Individual kitchen exhaust hoods larger then 5000 CFM shall be provided with make-up air sized for at least 50 percent of exhaust air volume that is unheated or heated to no more then 60 degrees F. Hoods that are exempt from this requirement are those that require a face velocity no greater then of 60 fpm.

   c. Provide a smoke evacuation system that is consistent with the existing Phase I and Phase II system.

D. Plumbing

1. Collect condensed water from cooling coils and rain water from the roof into an underground storage tank for irrigation purposes.

E. Fire Protection

1. Design two (2) fire protection risers to distribute water to the sprinklers on each floor of the Phase III guest room expansion. The risers must be cross connected to main horizontal distribution piping located above the ceiling in each corridor between the guest rooms.

2. .

F. Electrical

1. The power distribution system for the RHI expansion shall be designed such that it can sub-feed the existing power distribution system for the existing RHI.

2. The emergency power needs for the RHI expansion and existing RHI will be determined based on the Facility Program document, that will specify the functions RHI must meet during an emergency situation.

G. Telecommunications

1. A new underground telecommunications duct bank is required to the edge of the site for interconnection with other M. D. Anderson buildings. The duct bank will be used for voice, local area network, and cable television needs.

2. Existing main telecommunications equipment will be back-fed from a new main telecommunications room (MDF room). Proposed individual telecommunication rooms (IDF rooms) on each floor of the new Phase III expansion will be fed from the new MDF room.

1.19 ELEMENT E – EQUIPMENT AND FURNISHINGS

A. No additional requirements; refer to Owner's Design Guideline Element E.

1.20 ELEMENT F – SPECIAL CONSTRUCTION

A. No additional requirements; refer to Owner's Design Guideline Element F.

1.21 ELEMENT G – BUILDING SITEWORK

A. Refer to Owner's Design Guideline Element G.

1.22 ELEMENT Z – GENERAL DESIGN REQUIREMENTS

A. Cabling for this Project shall be Category 6A with appropriate cable tray to support this product.

B. Refer to Element Z2045 for network and telecommunications requirements.

SPECIAL ISSUES AND CONSIDERATIONS

1.23 TECHNICAL EVALUATIONS

A. In addition to technical evaluations that are described within the Design Guideline Elements, Elements A through G, the Architect/Engineer shall perform the following written technical evaluations with recommendations in a "Ben Franklin" format for M. D. Anderson review and approval. The Ben Franklin shall identify reasons for and against (pros and cons) a particular design alternative or issue to aid in the decision-making process.

B. Technical evaluations must be prepared early in the Design Phase so that progress during the Design Development phase will not be impacted.

1. Codes and standards analysis for the entire facility including Phases I, II, and III.

a. Analysis must include compliance with ANSI/ASHRAE/IESNA Standard 90.1-2004 and Texas Department of Licensing and Regulation (TDLR) requirements.

b. Refer to Design Guideline Element Z2005 for additional requirements.

2. Elevator study to confirm quantity, size, and speed of elevators to support the new expansion. An additional service elevator will be required for the Project.

3. Evaluate and compare the material, construction, and utility cost of using a single direct expansion heat pump unit or a two-pipe chilled water system serving fan-coil units equipped with an electric heater in lieu of a four-pipe fan-coil unit system.

PRODUCTS

1.24 GENERAL

A. This section is intended to clarify certain specification requirements and to identify deviations from the M. D. Anderson Master Construction Specifications to assist the Architect/Engineer

with specification editing. Refer to Owner's Design Guideline Element 2010 "Instructions for the Preparation of Project Manuals" for additional information.

B. In general, the Architect/Engineer shall develop and furnish Contract Specification sections for Divisions 02-13, written to meet specific project requirements. Specification sections developed by the Architect/Engineer must follow the same formatting conventions as the Owner's Master Construction Specifications. Applicable sections of the Owner's Master Construction Specifications Divisions 14 and 20 through 28 must be used as template documents for this Project.

C. The Architect/Engineer shall consider obtaining unit pricing under the Core/Shell bid package for products such as fan-coil units, air devices, and lighting fixtures that will also be specified under the Interior Build-out packages to maintain consistent products throughout the facility.

1.25 DIVISION 00 AND 01

A. This Project falls under the Owner Controlled Insurance Program (OCIP). Project Insurance Specification 00 73 16 with supporting documentation and forms will be provided to the Contractor separate from this Design Guideline document.

1.26 DIVISION 08

A. The Architect/Engineer shall specify door hardware and full interface between specified door hardware, life safety / fire alarm, security (electronic and mechanical), and Texas Department of Licensing and Regulation (TDLR) connections for proper operation under normal and emergency operation.

B. Entrance vestibule arrangement with automatic sliding doors.

1.27 DIVISION 20

A. No additional requirements.

1.28 DIVISION 21

A. Specify Schedule 40 minimum thickness for all unburied fire protection piping (including standpipes) with the following exception:

1. Non-threaded fire sprinkler branch piping sizes 2-½ inches and larger may be Schedule 10.

B. Specify semi-recessed sprinkler heads in lieu of concealed type.

C. All pre-action and dry-type sprinkler system piping shall be Schedule 40 galvanized steel.

1.29 DIVISION 22

A. No bypass is required on variable frequency drives. Furnish one spare drive for each horsepower rating provided.

1.30 DIVISION 23

A. No bypass is required on variable frequency drives. Furnish one spare drive for each horsepower rating provided.

Duct insulation inside mechanical equipment rooms may be flexible glass fiber in lieu of rigid glass fiber at duct elevations higher than six (6) feet above finished floor..

1.31 DIVISION 25

A. Owner has two (2) different versions of DDC building automation system (BAS) specifications. For this Project, edit the Owner's BAS Retrofit master construction specifications. The BAS Retrofit specifications describe product and installation requirements for a Siemens Apogee system, to match the existing system.

B. In addition, edit M. D. Anderson Control Standard Drawings for this Project. Create control drawings as necessary using the same format as the M. D. Anderson Control Standard Drawings. For additional information visit the following Internet URL: http://www2.mdanderson.org/depts/cpm/standards/bas.htm

C. Specify two-way independent pressure control valves on all new fan-coil units and air handlers.

1.32 DIVISION 26

A. Do not specify HID lamps for interior spaces since HID lamps come on slowly if restarted from loss of normal power.

B. Guest rooms, corridors, and front of the house areas shall remain 3500K lamp color where fluorescent lamps are used.

C. Decorative table lamps, particularly in public areas, shall have integral compact fluorescent lamps and electronic ballasts.

D. Guest room bathroom heat lamps to be clear lamp with spring timer.

E. Per ASHRAE 90.1 – 2004, provide master control at entry door per 9.4.1.4 (c) Hotel and Motel Guest Room Lighting.

F. Stairway lighting to be four (4) foot fixtures with one lamp on occupancy control.

G. All wall and ceiling mounted light fixtures to have electronic ballasts for linear and compact fluorescent lamps.

H. Specify occupancy sensors in all office spaces.

I. Commercial (non-hospital) specification grade wiring devices are acceptable.

J. No more than six (6) duplex receptacles per electrical circuit for typical office and conference areas.

K. Flexible conduit may be installed in guest rooms partitions instead of rigid conduit.

1.33 DIVISION 28

A. The new fire alarm system must be integrated with the existing system as one system for the entire facility.

1. Provide system type photoelectric smoke detectors in each guestroom with a sounder base rather than single station smoke detectors. The system detectors are powered and monitored by the fire alarm system.

2. The alarms shall sound only within an individual guestroom or similar area and shall not actuate the building fire alarm system, unless otherwise permitted by the authority having jurisdiction. Remote annunciator shall be provided.

B. Specify plenum-rated cable in bridle rings for fire alarm distribution in lieu of conduit.

C. Security and CATV systems are to be provided.

END OF ELEMENT 1010