



Cherokee Nation WW Hastings East Hospital
Schematic Design Quality Profile
21 March 2014

RedFern Group 

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Codes and Ordinances (Current state adopted Codes)

Landscape	Cherokee Nation Guideline	
Building	International Building Code	2009
Fire	International Fire Code	2009
Mechanical	International Mechanical Code	2009
Electrical	National Electrical Code	2011
Plumbing	International Plumbing Code	2009
Fuel Gas	International Mechanical Code	2009
Energy	International Building Code, Chapter 13	2009

Hospital Design

It is our understanding that the WW Hastings Hospital receives Medicare and Medicaid reimbursement. As a result, the hospital is required to be accredited through DNV Hospital Accreditation which is an approved accreditation service for Centers for Medicare and Medicaid Services (CMS). DNV Accreditation requires that the construction of a new hospital to adhere to the following:

- Current 2010 Facility Guidelines Institute (FGI) Guidelines for Design and Construction of Hospitals and Outpatient Facilities
- NFPA 101 Life Safety Code
- State and local building and fire codes.

Site Preparation

Site Clearing:

General site clearing and grubbing within the project area including removal of trees, pond, vegetation, fences, pavement, utilities, utility poles and other improvements. Fill all depressions left from clearing and grubbing. Installation of temporary erosion control.

Earthwork:

General site grading including excavations, trenching, fill, structural fill, and backfill materials, rough grading and final grading, site layout, and building pad preparation.

Site Improvements

Pavements:

Asphalt Paving:
Asphalt paving will be used for parking and drive areas.

Concrete Paving:
Concrete will be used for sidewalks and plaza areas, transformer pads, dumpster pads, loading dock, and drive aprons. Work will consist of formwork, concrete placement and finishing, and sawcut joints. Pavement will be sloped to drain to the storm water system.

Pavement Joint Sealants:
All expansion and contraction joints and joints between paving and building slabs will be sealed with self-leveling silicone sealants and appropriate backer materials.

Utilities:

Water Distribution:

Includes domestic water and fire service piping mains. Piping will include ductile iron fittings where required. Typical piping will be AWWA C900 for lines 4 inches and larger and Schedule 40 PVC for smaller lines. Accessory items include meters, valves, backflow preventers, fire hydrant, and fire department connections. A public water main extension will be from the 8" line to the west and head east along the south side of the cemetery around the north side of the new building and connect to the 12" line just south of the new building.

Sanitary Sewerage:

The sanitary sewer system will be a gravity-flow system including PVC piping, manholes, and fittings with cleanouts to a proposed public main line extension. The public main line extension will be gravity-flow and come from the north along the east side of the cemetery.

Natural Gas Distribution:

The natural gas distribution system includes PE piping and fittings, shut off valves, service regulators, and meters. Gas piping will be rated for 100 psig minimum.

Electrical Distribution:

Overhead power is available west of the building running north and south through the property. Primary service will be underground from this location to a new pad mounted transformer near the building.

Stormwater Pollution Prevention Plan:

Wallace Engineering will prepare a SPPP for the project including descriptions, maps, details, DEQ forms, and Certification forms.

Storm Drainage:

The gravity flow storm drainage system includes curb inlets, catch basins, Area drains, precast concrete manholes and covers, headwalls and riprap. Piping will be HDPE, with a 0.5% minimum slope. Water will be collected around the new building and drain to a new dry detention pond located south of the new building.

Landscaping:

Irrigation: Automatic sprinkler with electronic controller

Lawns and grasses: Sod installation

Trees, plants, and ground cover will be selected from the Cherokee Nation plant list supplemented as needed for missing plant types: A variety of deciduous trees, flowering trees, evergreens, shrubs, and ground covers.

Foundations

Pier and grade beams:

The building exterior wall will be supported by a grade beam. The grade beam will be supported by concrete drilled piers. Individual concrete drilled piers will support the interior building columns. It is anticipated that the

drilled piers may have to be cased to penetrate through the subsurface layers with gravel and cobble. The design parameters are still to be determined pending the final geotechnical engineering report. Grade beams will extend a minimum of 24" below exterior grade.

Slabs-on-grade:

Interior building slabs will be 5" thick reinforced with standard rebar. Slabs will be placed over a 4 inch layer of free draining granular material over a 15 mil polyethylene vapor barrier over properly prepared subgrade. Any required low plasticity subgrade material is pending the final geotechnical report. The low plasticity material may either be imported material or chemically stabilized on site soils. The concrete slab will have control joints or doweled construction joints spaced at a maximum of 15 feet on center for shrinkage crack control. The concrete strength used for floor slabs on grade will be 3,000 pounds per square inch at 28 days.

Superstructure

Floor framing:

The building floors are a 3" composite deck with 4 ½" normal weight concrete supported by composite steel beams. Steel wide flange columns support the beams. The typical floors will be designed for a superimposed live load of 80 pounds per square foot, which will meet or exceed the code minimum requirements for the proposed uses. Impact and cyclic loading will be considered for vibration control. The mechanical floor will be designed for a superimposed live load of 100 pounds per square foot with additional concentrated loads at all equipment locations.

Roof framing:

The multistory building roof is 1 ½" steel deck (Type B) supported by steel beams that cantilever beyond the exterior building walls to support the roof overhang. Steel wide flange columns support the beams. The single story building roof is 1 1/2" steel deck (Type B) supported by steel joists and beams. Steel pipe or tube columns support the beams. The main lobby and canopy roof is steel deck supported by steel wide flange beams. Double wide flange columns support the steel beams.

Lateral bracing:

The lateral bracing for the structure will be accomplished using the steel roof deck as a diaphragm. The deck will transfer the lateral loads to steel braces that will transfer the loads to the foundations.

Area of Refuge:

Location to be determined.

Architectural

Exterior Closure:

The exterior finishes are comprised of stone veneer, metal wall panels, exterior insulation and finish system (EIFS) and metal louvered panels.

The base of the structure is stone veneer to different heights on 6" metal stud with a weather resistant membrane over gypsum wall sheathing, R19 batt insulation and an interior finish. Above the stone is a precast stone cap. The top portion of the walls at the patient towers are comprised of

EIFS with metal wall panels above. The EIFS walls consist of 1-1/2" EIFS on 6" metal stud with R19 batt insulation and an interior finish. The metal panels are on 6" metal stud with ice and water shield over 3/4" fire-retardant exterior grade plywood sheathing, R19 batt insulation and an interior finish. The portion of the walls above the stone at all other locations is 1-1/2" EIFS on 6" metal stud with R19 batt insulation and an interior finish. The accent wall at the Healing Garden is comprised of flush metal wall panels with vertical metal louvers on 6" metal stud with ice and water shield over 3/4" fire-retardant exterior grade plywood sheathing, R19 batt insulation and an interior finish. The mechanical pent house above the patient towers consists of horizontal aluminum louvers to allow airflow to the equipment. Exposed steel is painted with high-performance paint.

Exterior Windows & Doors:

The exterior glazing system consists of both insulated aluminum curtainwall and storefront systems. Entrances are comprised of insulated aluminum door systems and automatic sliding doors. Automatic entrance systems will be located at the Lobby and ED Ambulance Entry. Public access exterior doors will be push button automatic medium stile aluminum entrance doors. The glazing is a tinted, insulated, low-e glass to control solar heat gain. Service doors are insulated, painted hollow metal doors and frames. There will also be random accent panels with organic designs in between pressed glass. The overhead doors at service areas are manual coiling doors that are painted with insulated slats.

Roof System:

The roof system is comprised of both standing seam metal roof (SSMR) and a built-up roof system.

The SSMR is located at the patient towers and above the main lobby and canopies. The roof slope is 2-1/2" per 12'-0" with the portion to the interior at the upper roofs being 10" per 12'-0". The SSMR at the patient towers and canopies consists of metal roof panels over metal deck. The metal deck is exposed on the underside at the patient towers. The undersides of the canopies are a stained tongue-and-groove western red cedar. At the main lobby, the SSMR consists of metal roof panels over ice and water shield with 7-1/2" of rigid insulation and nailer board (to maintain a R30 LTTR) over metal deck. Snow guards are located over all entries, walkways and drives. Roof drainage consists of gutters with downspouts connected to underground storm sewer system.

The built-up roof is a modified bituminous membrane roofing system. The assembly consists of an unsurfaced lightweight fibrous glass mat impregnated and coated with SBS modified bitumen over rigid insulation and a substrate. The cap sheet of the assembly is a lightweight fibrous glass mat impregnated and coated with SBS modified bitumen that is surfaced with white ceramic granules. A protective walkway is provided to all roof-mounted equipment. The structure is sloped to allow drainage to occur at the exterior of the building. Roof drainage consists of scuppers with downspouts connected to underground storm sewer system and overflow scuppers.

Refer to Appendix for Exterior Materials Schedule and Exterior Color and Finishes Schedule.

Exterior Signage:

Facility signage is located on the stone wall at the Healing Garden. It is comprised of a cast aluminum seal and cast aluminum lettering.

Directional signage is located throughout the site and adheres to current Cherokee Nation Signage Standards.

Interior Construction:

Interior partitions will be constructed of metal studs of various depths with 5/8" gypsum board surface. Wet walls will be sheathed in cement board with tile finish. Interior windows will be aluminum or aluminum storefront with clear vision glass. Ceilings will be suspended acoustic ceiling systems, suspended acoustic ceiling systems with painted gypsum board soffit accents and monolithic painted gypsum board. Automatic entrance systems will be located at the Lobby and ED Ambulance Entry. Public access exterior doors will be push button automatic medium stile aluminum entrance doors. Doors to service areas will be hollow metal doors in welded hollow metal frames and will be insulated when located on an exterior wall. Insulated overhead coiling doors will be used at the loading dock. Typical interior doors and frames will be solid core wood doors with plastic veneer finish and welded hollow metal frames. Double egress doors will be push button automatic operating with the exception of smoke compartment doors which will have magnetic hold opens. Doors at ICU will be 2-panel breakaway type sliding glass doors. Interior floor finishes will include carpet, porcelain tile, quarry tile, terrazzo, sheet vinyl, solid vinyl tile and bio-based tile. Wall finishes will include paint, vinyl wall covering, porcelain tile, FRP panel, wood panel wall system and glass wall tile accents. Fabric wrapped panels will be used in areas with hard surface flooring. A minor use of exterior materials will be utilized in the Lobby only.

Refer to Appendix for Interior Design Narrative and Architectural Narrative Checklist.

Elevators:

Public Elevators: Kone EcoSpace MRL Low-Rise Elevator: 3,500lb capacity
Patient Elevators: Kone MonoSpace MRL Mid-Rise Elevator 5,000lb capacity

Furniture:

General and private office space will consist of freestanding furniture from a component based contract furniture line. Storage and filing units will be integral with freestanding furniture line. Plastic laminate and painted metal finishes in both private and open office areas. Integral fabric wrapped tackable panels where applicable. Task chairs with appropriate ergonomic adjustments at all workstations.

Multiple seating, patient seating and bariatric seating will be of solid construction and intended to be used in high traffic areas with close attention to cleanability and wearability.

Interior Signage:

Will follow current Cherokee Nation guidelines.

Medical Equipment

Medical equipment will be selected and documented; this includes developing and documenting a medical equipment list, medical equipment cost opinions, medical equipment specifications (ASE Book), GBA medical equipment drawings and vendor site-specific drawings.

GBA will participate in a site visit of the existing WW Hastings Hospital. The list; combined with discussions/evaluations during the site visit will be used to develop a Preliminary Medical Equipment List. The medical equipment from the existing WW Hastings Hospital will be evaluated and relocated if equipment is in good operating order. The Preliminary Medical Equipment List will be reviewed with clinical staff and adjustments will be made based on the needs of the end user. The Preliminary Medical Equipment List will be revised and form the Final Medical Equipment List and will be the basis for the final deliverables.

Refer to Appendix for Preliminary Medical Equipment Cost Estimate By Department and for Medical Equipment Utility Report.

Mechanical, Electrical, Plumbing and Technology

General

The following schematic design narrative is for the new Cherokee Nation WW Hastings East Hospital to be constructed in Tahlequah, Oklahoma. Construction of the main hospital is targeted to have a gross building area of approximately 156,486 square feet and having space allocated as described in the architectural program. The intent of the proposed design of the mechanical, electrical, plumbing, fire protection and low voltage systems described in this document is to comply with the performance goals listed below.

Energy Conservation

In addition to compliance with the requirements of ASHRAE Standard 90.1-2007, the project design will incorporate systems and sequences of operation to balance operating costs, initial cost and maintenance costs.

Applicable Codes and Standards

2009 International Plumbing Code	2009 International Building Code
2009 International Mechanical Code	2009 International Fuel Gas Code
2009 International Energy Conservation Code	2000 NFPA 101: Life Safety Code
NFPA 99: Health Care Facilities Code	2011 National Electrical Code

2010 FGI Guidelines for Design and Construction of Health Care Facilities
ASHRAE Standard 170: Ventilation of Health Care Facilities
2006 AAMI Standard 79: Comprehensive Guide to Steam Sterilization and Sterility Assurance in Health Care Facilities

Mechanical Systems

The preliminary HVAC design for the proposed project has been based upon the following design conditions.

Outdoor: Summer conditions of 100°F drybulb, 76°F wetbulb
Winter conditions of 10°F drybulb

Indoor: General spaces and patient care areas:
Temperature: 70°F to 75°F
Relative Humidity: 30% to 60%
OR and procedure rooms:
Temperature: 65°F to 75°F
Relative Humidity: 30% to 60%

Design conditions for spaces will be in accordance with ASHRAE Standard 170-2008 Ventilation of Health Care Facilities.

Chilled Water System:

The chilled water system will be composed of three, 300-ton, water-cooled chillers to serve a total estimated load of 600 tons. Each chiller will be capable of providing 50% of the total load. To comply with ASHRAE Standard 170, the third chiller is required as redundancy due to the central cooling system being greater than 400 tons peak cooling load. The chilled water supply and return temperature differential shall be 12°F. The chillers shall be magnetic bearing with variable frequency drives to improve energy efficiency and reduce the annual maintenance cost. The pumping scheme for the chilled water system will be variable speed primary with three base

mounted end suction pumps installed with variable frequency drives. One of these pumps will serve as a standby. The chilled water pumps will be 25 HP to displace 600 GPM at 75 ft. hd. The chiller room may need to be classified as a refrigeration machine room due to the volume of refrigerant in the chillers; to be evaluated once chillers are selected and room size is confirmed. A refrigerant leak detection and alarm system would be required if classified as a refrigeration machine room. Exhaust and makeup air would also be provided at the required ventilation rates for both normal and emergency purge mode.

Three single cell galvanized, cross flow cooling towers with stainless steel basins shall be provided, equal to Marley NC; the towers will match the capacity of the chillers. Tower design will be based on the 0.4% ASHRAE design condition for wet bulb of 79°F and a dry bulb temperature of 100°F. The condenser water supply and return temperature differential shall be 10°F. The cooling towers will be located in the outdoor mechanical yard adjacent to the central plant. The cooling towers shall be elevated to maintain suction head on the condenser water pumps. Three end suction condenser water pumps will be provided with variable frequency drives in the central plant. The condenser water pumps will be 30 HP to displace 900 GPM at 60 ft. hd. Ten-inch condenser water mains will be routed between the chillers and cooling towers. Electric heat tracing will be used to protect above grade condenser water piping and the cooling tower basins from freezing. All air handling units will have outside air economizers such that the chilled water plant will not be required to operate when the outside air temperature is below 53 degrees.

Eight-inch chilled water mains will serve the hospital. Chilled water piping will be routed to all rooftop units (RTU's) located on the roof of 1st floor along with two chilled water piping risers, one on each half of the tower to the air handling units (AHU's) located above 3rd floor, beneath the sloped metal roof. An expansion tank for the chilled water system will be installed in the central plant as well as a bypass chemical pot feeder and an air separator.

Chilled water piping will be schedule 40 black steel. Fittings for 2" and smaller piping will be screwed and fittings for 2-1/2" and larger will be welded. Chilled water piping, fittings, and equipment will be insulated to meet or exceed the requirements of IECC 2009. Insulation will be furnished with an all-service jacket (ASJ). Shut-off valves shall be butterfly type for 2-1/2" piping and larger and full port ball valves for 2" and smaller piping.

Heating System:

Condensing water boilers will be used to meet the building heating water load, estimated at 7,500 MBH. Four 3,000 MBH, condensing water boilers will be used, one of the boilers installed will be used to provide the required stand-by capacity. The boilers will require combustion air and ventilation from the roof or a sidewall louver. The boilers will provide 110°F entering water temperature and 140°F leaving water temperature. A heating water temperature reset schedule will be implemented for energy conservation and better temperature control during warmer months.

Four base mounted end suction heating water pumps controlled with variable frequency drives will supply the hospital with heating water serving unit heaters, reheat terminal boxes, duct mounted reheat coils and air handling unit preheat coils. The heating water pumps will be 10 HP to displace 200 GPM at 90 ft. hd. Coils will have 2-way control valves except

where 3-way control valves are required to maintain minimum system flow rates. The heating water system will contain 30% glycol for freeze protection. An air separator and bladder type compression tank for the heating water system will be installed in the central plant. A bypass chemical pot feeder will be provided across one pump.

A single, instantaneous steam boiler, with 2,250 lb/hr capacity, will provide 60 PSI steam needed for sterilizers and washers and reduced to 15 PSI for building humidification purposes with a PRV. The 15 PSI steam will serve air handling unit humidifiers as well as duct mounted humidifiers.

Both the condensing water boilers and instantaneous steam boilers will utilize natural gas as its main fuel source. On site storage of #2 fuel oil will be by above grade dual wall concrete encased storage tank(s) to provide 96 hours of reserve fuel to be used during emergency situations only.

Heating water piping will be Schedule 40 black steel. Fittings for 2" and smaller pipe will be screwed and fittings for 2-1/2" and larger will be welded. Heating water piping and equipment will be insulated to meet or exceed the requirements of the IECC 2009. Insulation will be furnished with an all-service jacket (ASJ). All equipment will be provided with shut-off valves, unions or flanges for removal and automatic balancing valves. Shut-off valves shall be butterfly type for 2-1/2" piping and larger and full port ball valves for 2" and smaller piping.

Steam piping will be Schedule 40 black steel and condensate return piping will be Schedule 80 black steel with extra heavy fittings. Fittings for 2" and smaller pipe will be screwed and fittings for 2-1/2" and larger pipe will be welded. All equipment will be provided with shut-off valves and unions or flanges for removal. Steam piping and equipment will be insulated to meet or exceed the requirements of the IECC 2009. Insulation will be furnished with an ASJ.

Air Handling Systems:

Air handling units and rooftop units will be variable volume with hot water reheat terminal boxes. All units are expected to operate 24 hours per day, seven days a week. The hospital will be served by five RTU's and four AHU's. Refer to the table on the following page for the area served, approximate size and location of the units.

ID	Area Served	CFM Capacity	Approx Size (LxWxH)	AHU Location
RTU-1	Surgery/Central Sterile	26,000	52' x 12' x 9'	1st Floor Roof
RTU-2	Lab	7,000	48' x 7' x 7'	1st Floor Roof
RTU-3	Recovery/Endo/Prep	12,000	50' x 10' x 8'	1st Floor Roof
RTU-4	Material Mgt/Plant	8,000	40' x 6' x 6'	1st Floor Roof
RTU-5	Kitchen/Surg Clinic	24,000	50' x 12' x 8'	1st Floor Roof
AHU-6	Emergency Dept.	22,500	50' x 12' x 8'	Below Tower Sloped Roof
AHU-7	2nd & 3rd Floor South Tower (Med Surg/Womens)	48,000	50' x 14' x 10'	Below Tower Sloped Roof
AHU-8	Lobby/Imaging	32,000	50' x 12' x 9'	Below Tower Sloped Roof

AHU-9	2nd & 3rd Floor North Tower (ICU/Pharmacy/Nursery/Admin)	49,000	50' x 14' x 10'	Below Tower Sloped Roof
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AHU's/RTU's 2, 3, 5, 6, 7, 8, and 9 will be commercial grade, modular, 2" insulated double wall construction units, with the following components: return/relief fan section, 100% outside air/mixing section, air blender, 30% EFF prefilter section (MERV 7), hot water preheat coil, 18" access section, chilled water cooling coil section with UV light, 18" access section, supply fan section, diffuser plate, 90% front loading final filter section (MERV 14), 18" access section, humidifier section, and discharge section. The supply fan will be internally isolated on an internal base frame with spring isolators. Each access and fan section shall have a view window and light.

RTU-1 serving the operating rooms will be similar to RTU-2 except it will be of semi-custom construction include redundant fan technologies to ensure the system can stay in operation in the event of a motor fan failure. RTU-1 will also have an additional DX cooling coil and access section along with its associated air cooled condensing unit to further dehumidify the supply air and provide cooler supply air to the OR's. RTU-1 final filters will be 99.97% efficient (HEPA) with a front loading gel seal filter frame. This unit will include 3" wall insulation due to the lower discharge air temperature requirements.

RTU-4 will be commercial grade, modular, double wall units, with the following components: return/relief fan section, 100% outside air/mixing section, air blender, 30% EFF prefilter section, hot water preheat coil, 18" access section, chilled water cooling coil section with UV light, access section, and supply fan section. The supply fan will be internally isolated on an internal base frame with spring isolators. Each access and fan section shall have a view window and light.

Airflow monitors will be installed in the return air, outside air, and supply air to maintain proper airflow quantities and building pressurization. The units will utilize an outside air economizer mode when ambient conditions are favorable. All fans shall be controlled with variable frequency drives with full bypass capability. The outside air intake of each unit will be located a minimum of 25' away from plumbing vents and exhaust fans and a minimum of 3' above the roof.

Each operating room and procedure room served by RTU-1 will have temperature capability of 65°F to 75°F normal operation at 30% to 60% relative humidity. Each room will have individual supply air and return air control valves, humidification, and reheat control using duct-mounted steam humidifiers downstream of duct mounted hot water reheat coils. A night/unoccupied setback mode will be provided for energy conservation.

The data center (ITS) shall have dedicated CRAC units on emergency power and with redundancy. Quantity and size of units to be evaluated based on the data equipment selected. Intermediate IT closets throughout the hospital will be cooled by a dedicated terminal unit fed by the AHU/RTU serving that area.

Recessed fan coil units or unit heaters will serve vestibules and stairwells.

Exhaust Air System:

The general exhaust air systems will be divided into zones of similar function. Isolation rooms will be provided with dedicated welded stainless steel exhaust systems with roof mounted, belted vent type fans and exhaust stacks extending a minimum of 10' above the roof level.

The laboratory will be served by dedicated exhaust systems for the hoods and general exhaust of the area. Variable airflow exhaust systems will be evaluated based on the lab hoods/equipment selected.

The pharmacy will have a dedicated exhaust system for hoods designed to meet the requirements of USP 797 for pharmaceutical compounding. Supply and return air control valves will be used to maintain the required differential pressures between spaces.

The kitchen will have dedicated exhaust and make-up air system(s) for the grease hood(s). The make-up air system(s) will be tempered by a natural gas heating coil and a dedicated DX cooling coil with its associated roof mounted condensing unit.

An emergency smoke exhaust system shall be interfaced with RTU-1 capable of purging and controlling smoke as required by NFPA for anesthetizing locations. The dedicated exhaust system shall be rated for smoke evacuation and located on the roof of 1st floor. Each operating room will have ceiling exhaust grilles connected to the emergency smoke exhaust system.

Air Distribution System:

Supply ductwork will generally be galvanized steel. Primary duct will be rated for 6" pressure class and sized for less than 2500 FPM or 0.2" pressure drop per 100 feet. Secondary duct will be rated for 2" pressure class and sized for 1200 FPM or 0.08" pressure drop per 100 feet. Ductwork will be externally insulated with 2" fiberglass insulation.

Return and exhaust ductwork will generally be galvanized steel rated for 2" pressure class and sized for less than 1200 FPM or 0.08" pressure drop per 100 feet. Return airflow will be ducted from each space back to the air handling unit. Return ductwork will not be insulated unless it is below a roof, in which case it will be insulated similar to the supply ductwork.

All ductwork within the MRI room will be aluminum. Exhaust ductwork in the decontam/clean work areas will be stainless steel. Grease exhaust ductwork will be carbon steel or stainless steel.

Terminal units will be double wall type with reheat coils. Terminal units shall be sized for a maximum inlet velocity of 2000 FPM and will have DDC controls. In general, the location of the terminal units serving the patient rooms will be located outside of the patient rooms in corridors with good maintenance access provided for the terminal unit controller as well as the reheat coil control valve. Terminal units will serve no more than four rooms grouped by function and exposure. Each patient room, operating and procedure room, conference room, imagining suite, and spaces larger than 400 square feet will have its own dedicated terminal unit and temperature sensor.

Supply air diffusers will be 2'x2' steel square louvered face diffusers and return/exhaust grilles will be 2'x2' aluminum 1/2" egg crate type. In the operating rooms, 2'x4' perforated face plenum type laminar flow ceiling diffusers will be provided with two low sidewall return air grilles at opposite corners of the room. 2'x4' perforated face plenum type laminar flow ceiling diffusers and low sidewall return air grilles will be included for protective environment rooms and trauma rooms. HEPA filtered laminar flow diffusers will be used for the pharmacy sterile compounding room(s).

Building Automation System:

A Direct Digital Control system will be used for control and monitoring of the heating, ventilation, and air conditioning system. The hospital does prefer the same controls (Schneider FMS) be used in the new hospital and to tie the two building management systems together. There will be a computer workstation located in or near the main mechanical room in the Engineering Department. Operation of all pumps, fans, dampers, valves, VAV boxes, boilers and chillers shall be through the BAS. Monitoring of all controlled temperatures and humidity, air flow rates and pressures, VFD's and equipment control panels shall be provided. Monitoring of plumbing equipment and selective electrical equipment will also be provided. Graphic display will be provided of all mechanical, electrical, and plumbing systems as well as all other monitored points.

Smoke exhaust operation for anesthetizing locations will be controlled through the BAS and fire alarm systems. Operating rooms, isolation rooms, pharmacy, labs, and similar spaces will be provided with electronic differential pressure monitoring and room condition displays, equal to CRC-RM.

Chilled water temperature reset, heating water temperature reset, AHU outside air economizer control, and AHU static pressure reset sequences will be incorporated to optimize the energy efficiency of the mechanical systems.

Imaging Equipment:

Any additional mechanical equipment required for imaging equipment or control room shall be coordinated with the imaging equipment vendor.

Testing and Balancing:

An independent balancing company will inspect the mechanical systems and test and balance the systems in accordance with NEBB or AABC national testing standards.

HVAC System Commissioning:

The HVAC systems will be commissioned to confirm they are installed and operating correctly.

Electrical Systems

Utility Service:

Based on the hospital building summary provided, the connected load is projected to be 2611kVA (3140A at 480V served from a 4000A service entrance). The estimated demand (typically 70% of the connected load) for the Hospital building is 1830kVA (2200A at 480V). Utility service will be provided at 480V. The refurbished 2500kVA transformer will be reviewed to determine if it is acceptable.

The Hospital building will have its respective service entrance transformers and main-tie-main configuration and distribution switchboards rated 480 volts.

Hospital switchgear will be located in the main electrical room of the Central Plant. Feeder breakers in this gear will provide power to 480/277V distribution boards and the normal side of automatic transfer switches for the critical, life safety and equipment branch system.

The main breaker sections will have metering, equivalent to the Cutler-Hammer IQ Data Plus II, to display, as a minimum, voltage, current, real, reactive and apparent power, frequency, and power factor as well as perform diagnostic functions in an integrated digital display. All trip units will be solid state, programmable, multifunction with time and instantaneous phase and ground overcurrent trip as a minimum, with Ethernet and Modbus protocol connectivity.

Electrical Distribution:

Distribution boards (1200A rated and below, 480/277V) will serve mechanical equipment provided with integral starters or variable speed drive systems. Distribution boards will serve the remainder of the building loads, including: mechanical equipment, branch circuit panelboards, elevators, kitchen, imaging equipment and data center equipment.

Service for the normal feed to the building fire pump will be provided directly from the utility transformer. The emergency switchgear will provide a 480V circuit breaker which will feed the emergency side of the fire pump controller.

All panelboards and switchboards will be provided with 20% spare capacity, for both available ampacity and circuit breaker spaces.

Minimum branch circuit conduit size to be ¾".

Electrical distribution equipment will be Siemens, Square D, or Cutler-Hammer. Square D is the preferred manufacturer and the basis of design.

Emergency Power Generation:

Emergency power for hospital will be provided by two (2) paralleled diesel generators at 480/277V. Two new 750kW CAT generators will be used. These units will allow for an ultimate essential system capacity of approximately 1500KVA. Each generator shall be provided with sub-base fuel tank that will provide a minimum of 96 hour run time when fully loaded. Generators will be provided with weather and sound attenuated enclosure. Paralleling switchgear will be 2000A, 480/277V, with electrically operated breakers and draw-out construction. Generator circuit breakers and

paralleling controls will be provided for two (2) generators and a generator tap box/load bank compartment. The paralleling switchgear will be provided with feeder breakers for the automatic transfer switches in the Central Plant.

Generator basis of design will be Caterpillar with load sharing modules and will comply with EPA Tier 2 requirements. Other approved manufacturers are Onan/Cummins.

Paralleling switchgear will be ASCO, Cutler-Hammer, G.E, Russelectric or Square D.

Automatic transfer switches will be ASCO, Cutler-Hammer, Russellelectric or Zenith.

Electrical Distribution – Essential System:

Essential power for the hospital will originate from the paralleling gear outlined above. It will be located in a room separate from the normal service distribution. The secondary distribution breakers in the paralleling gear will be provided with ground fault alarms. They will feed the emergency side of the equipment branch automatic transfer switches, imaging branch automatic transfer switch, the critical branch automatic transfer switches, the life safety branch automatic transfer switch, chillers and a data center automatic transfer switch. The medical branch will serve loads that cannot be shed: medical air compressors, medical-surgical vacuum pumps, fuel pump, jockey pump, and generator accessories. The transfer switches will be 4-pole, bypass isolation type, except the chillers.

Preliminary Hospital ATS switches will be per the following:

- (2) 600A – Equipment
- (2) 600A – Critical
- (1) 260A – Life Safety
- (1) 400A – Data Center
- (1) 600A – Radiology
- (2) 600A – Chillers
- (1) 800A – Roll-up Equipment

4-pole – No bypass isolation.

Loads served from the Critical branch will include:

- Task lighting
- Selected receptacles and fixed equipment in areas utilizing anesthetizing gases
- Isolated power systems
- Task illumination and selected receptacles in Medication Prep areas, Pharmacy Dispensing areas, Acute Nursing areas and Nurse Stations
- Nurse Call System
- Telephone/Communications equipment rooms
- Specimen and lab refrigeration equipment
- Selected receptacles and power circuits for general care patient bedroom and all patient care areas, Emergency Room Treatment Areas, Intensive Care Unit, PACU and Post Operative Recovery Rooms.
- Data Servers and IDF closets
- Security Systems
- Receptacles for Electrical Rooms and Elevator Equipment Rooms

- Sterilizers

Loads served from the Life Safety branch will include:

- Egress and exit lighting
- Receptacles at the generator set location
- Automatic doors
- Fire alarm system
- Medical gas alarm system

Loads served from the Equipment branch will include:

- Selected elevators
- Kitchen hoods
- Smoke exhaust fans
- Smoke control system auxiliaries
- Domestic booster pumps
- Exhaust fans
- Air handling equipment
- Water treatment equipment
- Energy Control System
- Pneumatic tube system
- Kitchen fire suppression system
- Fire suppression jockey pump
- Generator auxiliaries
- Generator fuel oil pumps
- Electrically-driven fire pump
- Selected Kitchen refrigeration
- Medical air compressors
- Medical vacuum pumps
- Electrically-driven chiller
- Boiler control system

UPS:

UPS will be provided locally as required by the owner. A centralized system will be utilized serving the data center, IT rooms and OR boom lights. The approximate size for the centralized UPS shall be 250kVA. The UPS equipment will be coordinated with the IT equipment to determine the final equipment layout.

Isolated Power System (IPS):

Isolated power panelboards will be provided in Operating Rooms and other locations which are deemed "wet location" and interruption of power due to ground fault cannot be tolerated. Two (2) isolated power panelboards will be provided for each OR and procedure room, each rated at 10kVA. Each will include an isolation transformer, line isolation monitor, two Hampden ground receptacles and two 15' Hampden grounding conductors with male jack on one end and insulated alligator clip on the other end. Each isolation panelboard will include twelve circuits.

Acceptable manufacturers are Square D, Isotrol, or Post Glover. A separate 25 KVA, 3-phase isolated power panel shall feed laser outlets in the operating rooms.

Grounding System:

The main switchboard grounds will be bonded to the incoming main water line, a tri-pod ground rod system, any building steel components as well as two 500 kcmil bare copper conductors in the footing under one wall of the

Main Electrical Room. Two 500 kcmil bare copper conductors will be routed from the main switchboard ground bus to each Electrical and Telephone/Data Room. The bare conductors will terminate at two 4" x 1/4" x 24" long copper ground bars with two 500 kcmil lugs. Additional holes will be provided in the ground bars to terminate eight (8) #2 lugs. The eight lugs will be available to ground transformer secondaries and telephone backboard grounding conductors.

Transient Voltage Surge Suppression (TVSS):

Transient voltage surge suppression equipment will be provided at the main service switchgear, the emergency switchboard, each distribution panel, each motor control center and at each panelboard serving Radiology, Laboratory and Data Processing equipment.

Lightning Protection System:

The building shall be provided with a lightning protection system, which shall conform to the requirements of Underwriter's Laboratories for a Master Label. The lightning protection system will include roof-mounted air terminals, down conductors and grounds. All metal items on roofs, such as exhaust fans, pipes, gutters, downspouts, and ladders will be connected to the lightning protection system. Conductors, terminals and fittings at the roof line will be aluminum. Components below the roof line will be copper. Down conductors will be installed in PVC conduit.

Medical Gas Wiring System:

Power wiring will be provided to medical gas alarm panels, bulk gas supplies, and manifolds. Signal wiring will be provided between alarm panels, manifolds, bulk gas supplies, sensors, pressure and vacuum switches.

Fire Alarm System:

The buildings will be provided with automatic, multiplexed, addressable, microprocessor based fire alarm system. The fire alarm control panel will be located in the Fire Command Center near the front entrance to the building with an annunciator panel at the designated 24-hour staffed station. Supplementary power supply and terminal cabinets will be required in different areas and floors of the building. Fire alarm system to be Simplex, Notifier or Honeywell.

Manual pull stations will be provided at egress stair entries, building exits and nurse stations. Automatic, ceiling mounted smoke detectors will be located 30 feet on center in all corridors, in all patient bedrooms, at all elevator lobbies, at top of stairways, in Electrical Rooms, Telephone Rooms, Mechanical Rooms, Storage Rooms and Elevator Equipment Rooms. Duct-mounted smoke detectors will be provided in the supply and return ducts of every air handling unit. The fire protection systems (wet pipe, dry pipe, and pre-action) will be supervised with flow and tamper switches.

Occupant notification of an alarm will be achieved with ADA-compliant audio/visual and visual only appliances.

Interlocks will be provided for smoke dampers, air handling unit controllers, and smoke evacuation control as well as all smoke door hold open devices, with elevator control panels (for elevator recall), with air handling unit controllers (for shutdown) and with smoke removal systems. The fire alarm

system will be capable of being connected, through a telephone line, to a remote monitoring station utilizing a built-in modem.

Illumination Levels, General:

The Illuminating Engineering Society's Illuminance Selection Procedure will be used for establishing target maintained illumination levels throughout all areas. Specific influences of glare, task complexity, surface reflectance characteristics, veiling brightness and user age are addressed with this procedure.

Local codes will take precedence when they dictate the use of alternative procedures or require minimum lighting levels for specific areas.

Illumination Levels:

Nominal Illumination

Level in Lux (footcandles)

1) Office Spaces:

Normal work station space, open or closed offices	550	(50)
ADP Areas	550	(50)
Conference Rooms	300	(30)
Training Rooms	550	(50)
Internal Corridors	200	(20)

2) Site:

Helipad (Re: Civil)	10	(1)
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3) Public Areas:

Entrance Lobbies	200	(20)
Elevator Lobbies	300	(30)
Public Corridors	200	(20)

4) Support Spaces:

Break Areas	300	(30)
Toilets	300	(30)
Staff Locker Rooms	300	(30)
Storage Rooms, Janitors' Closets	200	(20)
Electrical Rooms, Generator Rooms	300	(30)
Mechanical Rooms	300	(30)
Communications Rooms	550	(50)
Maintenance Shops	550	(50)
Loading Docks	200	(20)
Trash Rooms	200	(20)

5) Specialty Areas:

Dining Areas	300	(30)
Kitchens	750	(70)
Laboratories	550-	(50-
	1000	100)
Exam/Treatment (Critical)	1000	(100)
Exam/Treatment (General)	550	(50)
Nurse Stations	550	(50)
Showers	250	(25)
Work Rooms	400	(40)
Patient Rooms: General/Charting	200/300	(20/30)

Interior lighting for the hospital will generally be provided at 277V as well as be determined by the Owner's and Architect's fixture selections.

Lighting levels in Exam/Treatment Rooms and Patient rooms will have a minimum of dual level switching.

Lighting for the corridors shall be by ceiling recessed 2' x 2' indirect-direct fixtures. The fixtures will utilize T8 lamps and electronic ballasts. Patient corridors will have the capability to reduce lighting levels at night. Radiology rooms shall utilize dimmable fluorescent fixtures. 1% dimming ballasts will be required in Radiology rooms using patient positioning lasers. Waiting rooms, lobbies, and conference rooms will have a combination of indirect fluorescent lighting and recessed compact LED downlights. Wall washer downlights will be utilized for illumination of artwork as required by Architect. Recessed 2' x 2' direct-indirect fluorescent lighting fixtures will be the building standard for the public areas and offices. The fixtures will utilize T8 lamps and electronic ballasts to provide optimum energy efficiency. Where lower light levels are required, LED or compact fluorescent fixtures will be used.

Recessed 2x4 fluorescent lighting fixtures with 32 Watt T-8 lamps and .125 acrylic lenses, and electronic ballasts will be used for storage rooms, laboratories, and other work areas.

Fluorescent lamps shall have a CRI of 80, minimum.

Fluorescent ballasts will be Class P, UL labeled, high power factor type equal to or exceeding 95% power factor with a sound rated 'A' or better. Ballasts for T8 lamps will be electronic, programmed rapid start, series circuited, 10% total harmonic distortion and rated for a minimum start temperature of 0 degrees Fahrenheit. Ballasts for compact fluorescent lamps will be electronic and shall have built-in EOL (end of life) protection.

Exit signs will have red letters and LED light sources with Chevron indicators, and with universal mounting.

In high profile areas, the lighting may consist of a combination of fluorescent, LED, and incandescent sources. Lamps and fixtures types will be selected dependent upon interior decoration and finish schemes within the various areas.

Operating Rooms will be provided with 6-lamp fluorescent fixtures with asymmetrical lenses. Selected fixtures will require battery back-up to allow uninterrupted lighting. LED boom lighting will be served with UPS power from a centralized UPS. Patient rooms will be provided with general lighting, a 2' x 4' fluorescent exam light, a 4' wall mounted fluorescent reading light, and a wall recessed night light mounted 18" above finished floor, which will be switched at the door. Recessed down lighting will be provided in the Family area.

Lighting will be provided at each exit to the building in the form of recessed wet location rated, lensed downlights where canopies are present. Where canopies are not present wall sconces will be provided. Building mounted wall-packs will only be used on the backside of the building for security and to illuminate exterior equipment locations. Select fixtures located at egress exits will be powered from the life safety branch to meet the code

requirement of illuminating the egress pathway. Exterior fixtures will be controlled by time clock/photocell or from the Energy Management System (EMS) from within the building to turn on at dusk and off at a programmed time.

Plumbing Systems

Domestic water:

(2) New 6" domestic water service lines shall be extended to the new hospital. Each line shall be feed the hospital from different directions to allow for continuous water service should one of the mains rupture or be damaged. An emergency water service connection shall be located at the domestic water service entrance and connected to the main service. Shut-off valves and checks shall be installed as to allow for the switching of service.

The (2) 6" domestic water lines shall pass through (2) 6" RPZ backflow preventers, prior to being connected and extended to a VFD domestic water booster pump. The booster pump shall be a triplex unit with each pump capable of 50% of the total load. Only two pumps shall be capable of running at once with the third pump on stand-by. The system shall be controlled as lead/lag to insure equal use of all the pumps. Each pump shall be capable of 125 gpm at 50 psi boost. (3) semi-instantaneous gas fired water heaters shall be used to provide domestic hot water for the facility. One heater shall be stand-by at 50% redundancy.

A 4" domestic cold water line shall extend from the RPZ's to provide domestic cold water to the facility. A softened 2 1/2" cold water line shall be extended to the new water heaters.

Required backflow prevention devices and other required valves and devices will be installed in the cold water piping to control supply to fixtures and equipment throughout the facility as needed. Multiple backflow prevention devices may be required in the food preparation areas as required by the hospital. Backflow preventers or check valves will be installed at all janitor mop sinks and other mixing valves.

All domestic cold water piping will be Type 'L' copper with wrought copper pipe fittings. All domestic cold water piping will be provided with 1/2" fiberglass insulation.

Water Softener:

The Triplex water softening system will be located in the mechanical room and shall be fully automatic. The softeners will be located downstream of the domestic water RPZ's and connected to the 2 1/2" water service prior to connecting to the water heaters. Each softener shall be able to handle the hot water load while the other is regenerating. The duplex softeners and brine tank shall be as manufactured by Marlo and be capable of 100 gpm at a 20 psi drop. The softener shall be pre-piped with copper fittings.

An RO/DI water system shall be installed in the Central Plant for the laboratory and sterile processing. The system shall be capable of delivering 50 gpm of 1 MGO water at 25 psi. The system shall be a looped system with no dead ends. Piping material shall be virgin unpigmented polypropylene.

Domestic Hot Water:

The domestic hot water supply from the softeners will be routed to, (3) three semi-instantaneous gas fired water heaters located in the Central Plant. The domestic hot water will be generated via AERCO Innovation 1350 Gas water heaters with buffer tank, pumps and controls as recommended by

manufacturer. Hot water shall be produced and stored at 140 deg. 140 deg hot water shall be extended to the kitchen pot wash sink and washers and returned back to the heaters and mixing valve. A RADA Brain mixing valve shall be utilized to mix the domestic hot water to 120 deg. for distributing though out the entire facility. Piping shall distribute water by means of looped system whenever possible next to the domestic cold water supply piping. Each of the hot water heaters will be sized for 50% of the total hot water demand to allow for backup capabilities.

Two sets of two redundant domestic hot water recirculation pumps will be provided at the water heater location. Two pumps shall be for the 140 deg water return and two for the 120 deg return. The pumps will be all bronze construction. One pump is intended to backup the other and is not designed to run simultaneously.

Domestic hot water supply and return piping will be Type 'L' copper with wrought copper pipe fittings. Domestic hot water supply and recirculating piping 2" and less will have 1" fiberglass insulation with ASJ. Piping loops will be installed with balancing valves to provide uniform flow through the system.

A thermostatic mixing valve shall be provided at all lavatories and hand washing sinks to reduce hot water temperature to a maximum of 110F.

Grease Interceptor:

An underground grease interceptor shall be installed near the kitchen. The kitchen waste shall pass through the interceptor prior to connecting to the site sanitary system. Garbage disposers and all devices where solid waste will enter the system shall be routed separately through a solids interceptor, located next to the grease interceptor, prior to passing through the interceptor. A sample well shall be located at the discharge side of the grease interceptor for city monitoring. The grease interceptor is expected to be 3000 gallon.

Sanitary Drainage:

The building will be provided with a series of 4" sanitary drains lines, below the slab, that will be collected and extended out of the building via an 8" sanitary building sewer.

Sanitary sewer and vent piping located below slab on grade will be standard weight cast iron with bell and spigot fittings. Sanitary sewer and vent piping located above slab on grade will be standard weight cast iron with no-hub joints.

Cleanouts shall be provided in the sanitary sewer system every fifty (50) feet of horizontal and vertical runs as well as changes in piping direction.

A Perimeter drainage and sub-soil drainage, below grade vertical wall, is expected in this construction. Piping shall be extended from the sub-soil drainage systems to the site storm water system. Prior to connecting to the storm water system, a backflow valve shall be installed in an accessible pit.

Alternate No.1: Additional Subsoil Drainage:

If the Soils Report confirms the need for sub-soil drainage below the slab on grade, a drainage grid will be installed not less than 12" below the finished slab elevation or at elevations and intervals indicated in the report.

Storm Water Drainage:

The storm water shall be collected at the 3rd floor and extended down to below the slab at several locations. The storm water shall be combined below the slab and exit the building at one point indicated by the Civil Engineer. The overflow system shall be collected, pipe separately and discharged at several locations, 18" a.f.g.

Storm water piping located below slab on grade will be standard weight cast iron with bell and spigot fittings. Storm water and overflow piping located above slab on grade will be standard weight cast iron with no-hub joints.

Cleanouts shall be provided in the storm water and overflow systems every fifty (50) feet of horizontal and vertical runs as well as changes in piping direction. All horizontal runs of storm water piping, above the slab shall be insulated.

Drip Trough:

Drip troughs will be installed beneath all sanitary and storm piping above the surgery and critical care patient care areas, kitchen, server, electrical rooms and additional areas as indicated by the State of Oklahoma building codes.

Natural Gas:

New natural gas piping shall be extended to the facility. Gas meter and regulator shall be installed and located by the utilities company. Gas line size and pressure shall be determined once all mechanical and plumbing equipment and kitchen equipment has been selected.

An emergency natural gas connection shall be installed at the entrance of the city gas service. This line shall be full size to match the city line. A regulator shall be located on the exterior of the building next to the main regulator to provide proper gas pressure should the city gas be unavailable. Shut-off valves and checks will be located within the building to allow switch of service.

Natural gas piping shall be black steel with screwed or welded fittings depending on the location of the pipe.

Medical Gases:

New medical gas source equipment, including: medical air compressors, vacuum pumps and manifolds shall be provided within the facility. Other systems or gases such as waste anesthetic gas disposal, CO₂, N₂O, breathable nitrogen, etc will be discussed during design meetings to see if there is a need for them to be provided as well. Oxygen will be piped from a bulk and reserve tank. The pad and tank sizes shall be sized by the owner's medical gas supplier and shall be located at or near the mechanical room.

Medical air system shall be 7.5 HP AMICO Scroll Triplex System single point connection stack mounted with Variable speed Drives capable of 50 scfm at 50 psi, with 1 pump on stand-by and a 200 gallon tank.

Vacuum Pump system shall be 10 HP AMICO O2 Assured Triplex Claw Medical Vacuum single point connection, stack mounted with Variable speed Drives capable of delivering 129 scfm at 19 hg, with 1 pump on stand-by and a 200 gallon tank.

Manifold systems will vary in sizes, depending on the medical gas and usage of such gas. A 10x10 high pressure manifold is expected for the nitrogen system, 6x6 high pressure manifold is expected for the N2O system and a 4x4 high pressure manifold is expected for the CO2.

All medical gas piping shall be type L, rated for oxygen use. All valves shall be rated for oxygen use and bagged when delivered to the site. Medical gas outlets shall be latch type as manufactured by Chemetron.

Fire Protection:

A 6" fire service shall be extended to the facility where it will pass through a 6" double check valve assembly prior to being distributed. An electric drive fire pump shall be installed to provide 100 psi at the top of the standpipe. The fire pump shall be rated for 750 gpm at 100 psi. A jockey pump shall be installed rated for 5 gpm at 110 psi. A room shall be provided next to the devices for the installation of the fire and jockey pump controllers. An electric bell shall be installed on the exterior of the build to sound when water is flowing through the system.

The building will be provided with a 100% hydraulically calculated automatic standpipe sprinkler system. Fire department connections shall be installed at intermediate landings with the floor control assemblies. All devices in the stairwells shall be monitored. A 3" drain line shall be located as each egress stair for standpipe drainage. There will be one automatic sprinkler zone per smoke compartment. Sprinkler head types located throughout the facility will be quick response, fully recessed/concealed type heads with white cover plates. The sprinkler heads will be centered in the ceiling tiles.

A pre-action type sprinkler system will be provided for the main normal and emergency power electrical rooms. Pre-action, dry pipe or dry sprinkler heads shall be used in areas where freezing is possible.

A FM 200 chemical fire protection systems shall be utilized for the data center and selected imaging rooms.

A fire department connection will be provided at location coordinated with the Local fire department at an exterior wall where fire department access is determined.

All fire protection components will be U.L. listed and F.M. approved. Fire protection piping will be Schedule 40 electric-resistance welded or threaded steel pipe 2" and smaller. Schedule 10 welded or threaded steel pipe fittings for 2-1/2" and larger. All piping and fittings for pre-action and dry pipe systems will be Schedule 40 galvanized steel. Hanger types for all pipe sizes shall be clevis type.

Technology Systems

Assumptions:

The main hospital data center will be located in the new hospital construction will have a main server room to serve the new hospital. Pathways will be provided for network connectivity to the MDF and Data Center.

Composition of Narrative:

IT Systems:

- Data/Voice Network: Campus Area Network (CAN)/Local Area Network (LAN)
- Structured Cabling Voice, Data, Video, and Networked Clinical Devices
- Network Equipment Rooms/Low Voltage Equipment Rooms
- PBX/ VoIP
- WLAN/Wireless Voice/Wireless Data

Clinical Systems:

- Nurse Call/Code Blue
- Tracking, RTLS/RFID
- Clinical Video

Facility Systems:

- Public Address (Overhead Paging)
- Intercom
- CATV System
- Security (Access Control/ CCTV/ Infant Protection System)
- Audio-Visual & Teleconferencing
- Patient Entertainment/Interactive TV
- Time Clocks
- Pocket Page
- EMS Radio

IT Systems:

Data/ voice network: campus area network (can)/ local area network (lan)/ structured cabling system.

Description: The WW Hastings Data/Voice Network shall consist of a Campus Area Network (CAN) and Local Area Network (LAN).

CAN – The CAN shall consist of each facility (interbuilding) located within the parameters of the WW Hastings Hospital campus. The CAN infrastructure and connections for data/voice shall consist of a combination of single mode (9-micron) and multi-mode (50-micron) OM3 optical fiber and high-pair count telecommunications copper passing through a series of 4” conduits. Redundant CAN connections will be designed where appropriate at Owners discretion. CAN communications hardware specifications shall be provided by Owner. All riser conduit pathways will be furnished and installed by the GC/EC.

LAN – The LAN includes IP-voice and data topologies, infrastructure, and connections within each facility (intrabuilding). LAN infrastructures include riser and horizontal media (copper and fiber) installations and supporting hardware (conduit, racks, equipment). All IP-based devices shall share the

common physical LAN infrastructure and may include voice and data services, wireless network/s, security, building automation, overhead paging, intercom, employee timekeeping, and some elements of nurse call and medical telemetry. Virtual LANs (VLANS) may be created at the discretion of the Owner. If new facility requires a redundant backbone topology, locations of rooms, pathways, and equipment will need to be determined. LAN communications hardware (routers, switches, access points) specifications shall be provided by the Owner. All rough-in for the LAN including conduit, core drilling, sleeves, power, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Structured Cabling System: Voice, data and networked video requirements will be supported using Category 6 Unshielded Twisted Pair (UTP) cables extending from each Communications Equipment Room (CER) to each Work Area Outlet (WAO). Each WAO will contain two (2) CAT 6 cables terminated in a 4-port faceplate with 1 blank. Each cable shall be considered Universal (not dedicated to a specific technology). This configuration shall be considered a Standard Outlet. Certain exceptions to the Standard Outlet include single CAT 6 cables located for but not limited to employee timekeeping systems, wall mounted telephone sets, refrigerator alarms, and remote medicine cabinets. In the CER, all horizontal station cables will be terminated on rack or wall mounted 110 style modular patch panels. Optical Fiber enclosures shall be rack mounted fiber termination distribution units. Enclosures shall not be mounted past the half-way point in the center of the rack. Network hardware (routers, switches, etc.) will be mounted in the racks starting at the bottom of the rack, working up to but not exceeding the center point of the rack/s to facilitate connection to the hospital data network. At the workstation, the cables will be terminated on Category 6 hardware housed in a common face plate.

Cabling for above networks shall be supported within each CER by cable ladder rack, ladder rack supports, 'waterfalls', and Velcro (no cable ties). No infrastructure attachment will be permitted to attach directly to the CER wall – all attachments must be placed on ¾ AC grade plywood painted white. Cabling shall be placed in two-tiered ladder rack mounted slack-loop supported by Velcro straps after entering room and prior to terminating on equipment racks. Cabling for above outside of the CER shall be supported in a primary cable tray and J-hooks, or saddle straps, as required. It is recommended that a 1" conduit is installed from each WAO (double-gang with single gang plaster ring unless otherwise indicated) to the nearest accessible ceiling space or corridor primary pathway for hard ceilings or areas not accessible. This is specifically recommend for areas such as patient rooms where future above ceiling moves, adds and changes would be disruptive to patient care.

The data system backbone distribution cable shall consist of two physically separated redundant optical fiber riser runs to each CER (star topology), if applicable.

The voice system backbone shall consist of Category 3 cable originating in the 1st floor Point of Entry room (POE) and extending into each new MDF on level 3, terminating on rack or wall mounted 110 style modular patch panels. Copper riser counts will be determined by type of telephone system installed and need for analog lines.

All rough-in for the structured cabling system including conduit, core drilling, sleeves, power, back boxes, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Phasing Issues: Detailed scheduling is required for the deployment of the CAN and LAN. It is expected that the framework will be operational months prior to initial occupancy of the new hospital. Scheduling of installation, termination and testing strategies will need to be reviewed and approved well in advance of planned opening for OSP connections. LAN cable installation shall not commence in any area that is not safe from the weather and/or conditioned within specified temperature and humidity ranges of the final installation. Coordination with other above ceiling/ in wall wiring is required to ensure most efficient pathways. Where specific pathways are designated as primary, no alternate route may be used unless approved by the IT infrastructure design team.

Communications Equipment Spaces/Communications Equipment Spaces Security:

Description: Communications rooms shall consist of Main Distribution Frame Rooms (MDF) and Communications Equipment Rooms (CERs). A MDF will be considered the CORE and DISTRIBUTION layer of the LAN topology. A CER will be considered the ACCESS layer of the same.

MDF – WW Hastings Hospital will contain one MDF – located on the 3rd level. The MDF shall be no less than 1500 square foot in a rectangular shape. The larger Data Center (ITS) will be located on the 3rd level and shall be no less than 3000 square foot in a rectangular shape. The MDF and ITS will have a 4 ft. door which swings out. The MDF will have dual optical fiber inter-connections as well as a low-pair count telecommunications copper cable (# of pairs dependent upon type of telephone system selected). The MDF shall receive CAN optical fiber connections from disparate pathways. The MDF and ITS will contain both building and emergency power as well as separate UPS unit/s to manage any transition (loss of service) to emergency power. WW Hastings Hospital IT has requested the use of a building UPS to serve all MDF and ITS. The CER's will receive stackable rack mounted UPS's units to manage any transition (loss of service) to emergency power. This request shall be considered by the design team. The number, type and location of emergency power outlets shall be confirmed with WW Hastings Hospital IT before installation. HVAC design for the MDF, ITS, and CER's shall be designed to maintain continuous and dedicated environmental control (24 hours per day, 365 days per year). Cooling size requirements shall be designed by the project's mechanical engineer with help from SSR Telecom and WW Hastings Hospital IT to determine each room's BTU requirements. MDF & ITS HVAC shall maintain positive pressure with a minimum of one air change per hour. MDF shall maintain a temperature and humidity level at 18 °C to 24 °C (64 °F to 75 °F). The humidity range shall be 30% to 55% relative humidity. The Data Center on the 3rd Level shall house head-end equipment such as Nurse Call, CATV, security, GPS clock system, patient entertainment and education networks, file servers, and CAN/LAN communications hardware, unless otherwise noted by owner. All MDF, ITS, and CER's shall have accounted door card reader access and an IP addressable camera system located within the room with temperature and humidity trending capabilities. All walls within the MDF and CER's shall be covered with four by eight foot ¾ AC grade plywood, mounted vertically from six inches above the finished floor, with fire retardant paint, painted white. The plywood shall be installed with grade C surface facing the wall. No

infrastructure of element shall be mounted directly to any wall without plywood. Each MDF and CER shall be equipped with grounding bar connected to the building ground system. The MDF and CER's do not require a drop ceiling. The floor shall be treated with 3 coats of an epoxy sealant. All build out equipment and rough-in for the MDF, ITS, and CER's including conduit, core drilling, sleeves, power, ground bus bars, ladder rack, equipment racks and plywood shall be furnished and installed by the GC/EC.

CER – A CER is a dedicated room for network, wireless, and voice systems that serves as a floor head-end and termination concentration point. A CER shall be no less than 10'-0" W x 14'-0" L in a rectangular shape. Placement is where-by any data Work Area Outlet (WAO) is within 90 meters (295 feet) of any one CER and no more than 576 horizontal voice/data cables terminate in each CER. As a rule, horizontal WAO connections shall start and finish (CER to WAO) on the same floor (no cross-floor connections). Occasionally, in areas where critical redundancy to the WAO is defined/established by the Owner, cross-floor connections will be employed. CER's will be fed via optical fiber connections from the MDF as well as a low-pair count telecommunications copper cable. All CER's shall be vertically stacked if at all possible. Low Voltage Rooms (LVR) shall constitute the termination point of for CATV, Nurse Call, Access Control, Distributed Antenna System (DAS), Public Address, Tracking, A/V elements, and other low voltage technologies that feed their respective floor (no cross-floor ties except backbone connectivity). All LVR's shall be vertically stacked if at all possible. CER and LV rooms shall contain both building and emergency power. The number, type and location of emergency power outlets shall be confirmed with WW Hastings Hospital IT before installation. HVAC design for the CER shall be designed to maintain continuous and dedicated environmental control (24 hours per day, 365 days per year). Cooling size requirements shall be designed by the project's mechanical engineer with help from SSR and WW Hastings Hospital IT to determine each room's BTU requirements. CER HVAC shall maintain positive pressure with a minimum of one air change per hour. CERs shall maintain a temperature and humidity level at 18 °C to 24 °C (64 °F to 75 °F). The humidity range shall be 30% to 55% relative humidity. CER's and LVR's shall not contain file servers of any type. All file servers shall be maintained within the MDF or Data Center. All CER's and LVR's shall have accounted door card reader access. If the owner desires, an IP addressable camera system located within the room with temperature and humidity trending capabilities will be added and an option. All walls within the CER shall be covered with four by eight foot ¾" AC grade plywood, mounted vertically, six inches above the finished floor, with fire retardant paint, painted white. The plywood shall be installed with grade C surface facing the wall. No infrastructure or element shall be mounted directly to any wall without plywood. Each CER shall be equipped with grounding bus bar connected to the building ground system. The BER's, CER's, and LVR's do not require a drop ceiling. The floor shall be treated with 3 coats of an epoxy sealant. All build out equipment and rough-in for the CER's/LVR's including conduit, core drilling, sleeves, power, ground bus bars, ladder rack, equipment racks and plywood shall be furnished and installed by the GC/EC.

Communications Room Security: A series of networkable devices that may include card readers, cameras (NetBotz), environmental sensors, etc. that can be used to restrict and monitor the activity within the BER/CER. Each BER and CER will be secured by a dedicated or building access

control system. The access control system will contain a database of all cards or access number to provide real-time reporting of access into these spaces. This system will also have the capability to notify a designated person or persons upon unauthorized entry attempts.

Phasing Issues: Early finish of the BERs and CER's including drywall, plywood, sleeves, core drill sleeves, shall be required to accommodate structured cabling installation to meet overall construction scheduling parameters.

PBX/VoIP

Description: This is the system over which all voice communications will travel and be routed. The system will include wired and wireless Voice over IP (VoIP) and a limited PBX presence to service those functions that are not appropriate for the proposed IT network.

WLAN/ Wireless Voice/Distributed Antenna System

Description: A building wireless system will accommodate real-time point of care/activity information retrieval (802.11) as well as radio frequency identification (staff locating, patient tracking, asset management). Early design assumptions include a Distributed Antenna System as well as discrete access points and will evolve as the Owner considers available options. Wireless access points will be considered "dumb" and will be controlled via a backend engine (such as Cisco WISM or Other controller). Wireless networks will be designed to carry wireless traffic for voice and data systems including but not limited to CPOE, RFID, RTLS, Infant Protection, Nurse Call, Physician Portal, Patient Monitoring, Alarm/Alert Notification and Management, and future capabilities for PACS, Patient Registration, Patient Location, PCS Cellular Communications, and other Personal Area Network (PAN) capabilities. The locations of the wireless antennas devices will be dependent upon several factors including structural makeup of the new facility, desired coverage areas, signal strength of accessing device, and frequencies required. Wireless access points will be connected to the hospital's network via horizontal data cabling and will be powered via Power over Ethernet technology.

Wireless antenna placement is in accordance with established site survey connectivity techniques for "best range", "best throughput" and "negligible interference" from neighboring access points. Access point antennas will be distributed at 30 to 40 foot intervals for maximum coverage, elimination of dead spots and increased densities for a higher number of client loads. Two Ethernet Cat 6 cables will be connected to a dual port biscuit is to be provided and a patch cord from the biscuit to each access point to be installed above the drop ceiling tile. The Cat 6 patch cord shall provide slack for future adjustments.

Wireless data access shall be accessible in all elevator cars and stairwells for continuity of service, if required by owner. There will be a single Ethernet wire (Cat 6) terminated from the CER run to all elevator cars. Access points will be mounted on the top of each elevator car. The data cable shall be designed to be installed utilizing the same travel cable as the Elevator Emergency Phone.

802.11 wireless telephones shall be planned for the hospital.

All rough-in for the WLAN, wireless voice, distributed antenna system including conduit, core drilling, sleeves, power, back boxes, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Phasing Issues: RF model studies are the only reliable method of projecting coverage zones for planned equipment deployments. It is recommended that WW Hastings IT conduct baseline RF studies at the proposed site as well as ongoing updates utilizing the developing CAD files to predict coverage and availability of WLAN in the new facility. Continued deployments at the existing facility will add to the knowledge base and assist in the selection process for WLAN devices and access transceivers.

Tracking, Rtls And Rfid (*If Required*):

Description: Typical system includes several different kinds of “tag” readers, also known as sensors. These are radio frequency devices designed to detect and read tags to obtain the information stored thereon. The reader powers an antenna to generate an RF field. When a tag passes through the field, the information stored on the chip in the tag is decoded by the reader and sent to the server which, in turn, communicates with the automated system when the RFID system is interfaced with it. Each tag’s information is stored on a relational database server-based system that is used to identify multiple fields of specific with regards to equipment, personnel, usage, etc.

System(s) to perform the following primary functions for real time location and radio frequency identification (RFID):

- Asset tracking with comprehensive asset management system.
- Nurse locator function integrated with nurse call.
- Patient tracking, including electronic patient white board and workflow management integration.
- Positive patient identification for physician orders and pharmacy.
- Integration with third party systems for theft prevention, child protection, and other future applications.
- Infection control applications ie: hand washing documentation, exposure to disease, etc.
- Scalability to encompass the Cherokee Nation medical campus.

Middleware:

Description: *(It is assumed that the owner plans to purchase middleware in conjunction with one of the low voltage systems)* A middleware system consists of a software package, alarm processing rules, server, and user or site licenses that facilitate communications between disparate systems (IT-HL7). For example, the status of the patient physiological monitoring network could be displayed to the nurse's VoIP phone when the nurse call button is pushed. Other examples include feeding clinical information into the EMR, verification and acknowledgement of critical lab results by the assigned care provider, bed management, and building automation interconnections to mobile devices. Plant Operations could be notified of building systems alarms, alerts, and degrading conditions via the middleware and Building Automation Systems (BAS). Each point of connection must be configured into the middleware.

Phasing Issues: Often these integration points are not decided by the Owner until substantial construction is completed. SSR will work with the Owner to identify these points of integration early.

Clinical Systems:

Nurse Call/ Code Blue:

Description: A new nurse call/code blue system will be required. The new system will be comprised of nurse master stations, patient stations, staff stations, emergency call stations, dome lights, zone lights, and tracking sensors. Individual systems will be required for each floor and will be networked together to facilitate centralized management functions. The new system will provide a means of communication between patients and clinical staff and utilization of the tracking feature allows direct communication between patients and staff regardless of the staff's location. The new system will interface with the Voice over IP (VoIP) telephony system and will offer such integration of lab results and physiological monitoring to the handset. The code blue feature will provide the capability of alerting the staff of life threatening code conditions that need immediate response. The system can be interfaced with hard-wired or wireless telephone service and pocket pager systems. It also interfaces with other HL-7 compliant systems, i.e. ADT and electronic medical record systems, providing patient information in a fashion that enhances efficient delivery of patient care and improves patient satisfaction. With the exception of staff toilets, all restrooms shall contain Emergency Pull Cord elements.

All rough-in for the nurse call/ code blue system including conduit, core drilling, sleeves, power, back boxes, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC

Phasing Issues: Required system that must be tested and approved by governing authorities prior to occupancy of hospital.

Medical Telemetry:

Description: Medical telemetry runs on a separate network; however, the industry is pushing to have telemetry run on existing 802.11 networks. The wireless Telemetry system employs a technology called Spread Spectrum Frequency Hopping, making future integrations of wireless Voice over Internet Protocol a difficult proposition without the implementation of Wireless Control appliances and software. It is recommended that medical telemetry remain a separate network and not part of the IT wireless network.

Clinical Video:

Description: System of fixed cameras monitored by clinical staff in a central location to observe activity and/or status of various clinical spaces, including operating suites, patient rooms, trauma rooms. Also used for staff education for procedures. Enhanced efficiency and staff ability to monitor activity over a large clinical area.

All rough-in for the clinical video system including conduit, core drilling, sleeves, power, back boxes, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Phasing Issues: None - included with initial construction. Required system that must be tested and approved by governing authorities prior to occupancy of hospital.

Facility Systems:

Public Address (Over Head Paging)/ Intercom:

Description: One to one, one to group, one to all paging and two-way voice communications. System performs in alarm and non-alarm conditions. Overhead paging will be provided through a series of paging amplifiers and overhead speakers, some of which may be controlled through individual volume controls. This system provides a means of public broadcast for life-safety announcements or any other desired public announcements. The system will provide "zoned" and "all call" paging as required. Amplifiers will be centrally located or distributed throughout the CERs, as specified by the owner. This system allows for pre-programmed messages, integration into the Building Automation System, National Weather Service, Emergency Management Systems, Infant Abduction System and Building Security System. The new hospital shall plan for 2x2 "drop-in" paging speakers.

All rough-in for the public address system including conduit, core drilling, sleeves, power, back boxes (excluding special back boxes), ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Phasing Issues: None - included with initial construction. Required system that must be tested and approved by governing authorities prior to occupancy of hospital.

CATV:

Description: Systems providing patient information and entertainment information in patient rooms, waiting areas, treatment areas, etc. Cable television will feed the new facility via external connections from the local provider to the new POE room. Cable television service will be distributed from POE room to each CER from the 3rd floor MDF over RG-11 coaxial

cable. RG- 6 coaxial cable and Category 6 cable will provide connectivity from the CER to each individual television set outlet faceplate. At the television set, these cables will be terminated with an "F" connector housed in a face plate that may contain data and nurse call connections for televisions in patient rooms. In the CER, these cables will be terminated on taps and/or splitters which will provide connectivity to amplifiers and/or direct connection to the CATV distribution system. In addition, via the Category 6 cable, live feeds from in-house seminars, Chapel Services, telemedicine and pre-recorded feeds to such services as patient and staff education and training and movie servers will be available to each television set and computer (see Patient Education and Entertainment). Television sets will be hospital-grade where required.

All rough-in for the CATV/MATV system including conduit, core drilling, sleeves, power, back boxes, in wall blocking, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Security (Access Control/ CCTV/ Infant Protection Systems):

Description: Systems allowing authenticated access to restricted areas, and general public access control. Various devices and methodologies exist to allow authenticated, monitored physical access. Card readers/keypads are utilized for internal and external access control. CCTV cameras and network video servers are used for security surveillance. Both of these systems are "networkable" and allow system access as needed to provide real time monitoring and archival and retrieval of stored data. System components will be installed as specified by the owner. Parking lot and site emergency phones shall be required and will announce to the Security Control room. Security will also contain an Infant Abduction System interfaced with building security (door and elevator control where applicable) and the overhead paging system. Due to seismic code regulations, additional security measures such as Area of Refuge communications systems will be installed in any area deemed Area of Refuge by the project Architect.

In access control systems, control units that support many control points within a specific area of a building provide the control point function. These control units are to be located within the CERs. The controller units are to utilize UPS power available in the CERs provided by the building. Communication between multiple control units and distributed management/alarming systems is to utilize the IP based communication network within the building and campus. The control units and management stations must have the ability to be integrated with other systems throughout the campus and a high level of integration can be expected between IT systems providing information security and access control. The system shall have the capability of providing intrusion and panic alarms in areas such as the pharmacy, cashier, central plant operations, air intakes, cash handling areas, etc. Typical areas of control are pharmacy, cashier locations, supply rooms, medical records, staff and physician lounges, OR areas, CER/MDF/Data Center, storage areas, central services, HR, mechanical rooms, etc. All exterior points of entry are to be subject to access control and several areas, yet to be determined, will require interactive video between the control point and the control center to affect entry control.

The access control device to be carried by employees is to be utilized by several different systems providing different function throughout the campus

and hospital. A single device is preferred that can provide access control minimally based upon two factor authentication security protocol with a three factor protocol being required in most cases. The device must be capable of providing access to traffic control, building security, staff tracking and information systems throughout the campus. The additional function of time and attendance reporting integrated with the timekeeping system is required and the use of the device for employee payment deductions for vending, cafeteria, and gift shop is a possibility. It is envisioned that the card access device will utilize smartcard technology with a biometric component to establish a base security environment that will facilitate credentialed access to clinical systems and information. A combination access card device may have to be used that provides barcode, proximity, magnetic stripe, and smartcard functions.

The security system will require the ability to effect and report alarm conditions with other systems throughout the campus and hospital. This integration is of paramount importance to security requirements related to lock down events, information system security access, and offsite monitoring and alarming.

The entrance to the Emergency Department will require a walk through metal detector, if requested by owner.

The security system must also include video based services. These video services are to be provided via the Cherokee Nation based communication network with automated recording of pre/post event video simultaneously with the real-time viewing of the alarmed area. Network based cameras that have the ability to monitor an area and initiate the recording process are needed and these devices shall respond to external signals to activate the delivery of video. A subset of the cameras will be required to provide pan/tilt/zoom functions from remote locations. Some specific areas requiring real-time video capture with alert based recording are known at this time, these include: OB, elevator cabs, supply cabinets, pharmacy/mid-care, ambulance entrances, loading docks, all waiting areas, parking areas and walking paths.

Secured remote access to the security system shall be made available to the security staff from anywhere within the campus

All rough-in for the security systems including conduit, core drilling, sleeves, power, back boxes, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC. All locking hardware to be furnished and installed by the GC/EC.

Design team to determine if all electric strikes, electromagnetic locks and electric locksets will be powered centrally in the CERs by the security systems power supplies.

Phasing Issues: None - included with initial construction. Required system that must be tested and approved by governing authorities prior to occupancy of hospital.

Audio-Visual & Teleconferencing Systems:

Description: Systems providing audio visual services and teleconferencing services internal to the hospital, as well as remote dial-in access to self-produced events hosted by Cherokee Nation. The new hospital will contain

several conference, training and education rooms, patient entertainment spaces (clinical and non-clinical), and employee lounges that may be used for presentations. A/V requirements will be as diverse as the spaces that house them, depending on use, room size, and ancillary requirements. As such, design consideration for each space will be defined during the Design Development user group meeting process. Current measurement for budget considerations is based on room size at SD level, industry trends, and the experience of the design team. Early design considerations show training rooms interconnected to a central A/V control room which will facilitate the recording/playback of presentations as well as distribution of such material to the patient entertainment/educational network via the LAN for immediate retrieval and playback. Budget considerations have been made for such elements as overhead document readers, 'smart panels', video conference capabilities, and sound reinforcement.

All rough-in for the audio-visual system including conduit, core drilling, sleeves, power, back boxes, in wall blocking, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Patient Education And Entertainment:

Description: Systems providing patient information and entertainment information in patient rooms, waiting areas, treatment areas, etc. Television, telephone, and computer access are elements that create the in-room patient experience. The television system shall consist of Cherokee Nation-approved cable television channels (satellite or terrestrial based broadband system), in-house production channels (live and pre-recorded), meal, movie, and game selection, as well as educational and patient specific clinical media. TV connections shall consist of both traditional coaxial cables with F-type connectors (CATV) as one input source as well as CAT-6 cable for IP interface. On-demand services, computer access to the Internet, Intranet, and E-mail shall converge through this single set.

All rough-in for the patient entertainment/educational system including conduit, core drilling, sleeves, power, back boxes, in wall blocking, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC.

Time Clocks:

Description: System consisting of clocks, transmitters, and receivers using global positioning system (GPS) wireless technology to synchronize time without the need to re-set clocks for time changes or power outages.

All rough-in for the time clock system including conduit, core drilling, sleeves, power, back boxes, in wall blocking, ground bus bars and primary cable raceway shall be furnished and installed by the GC/EC

Definitions:

A/E – Architect and Engineers

A/V – Audio-Visual: Pertaining to the use and/or creation of recordings, videos, slides, and other media for presentation.

ANSI – American National Standards Institute: ANSI is a private, non-profit organization that administers and coordinates the US voluntary standardization and conformity assessment system.

CAN – Campus Area Network: A computer network made up of an interconnection of local area networks (LANs) within a limited geographical area, such as a university campus.

CAT6 – Category level 6 cable: A cable standard for Gigabit Ethernet and other interconnect that is backward compatible with Category 5 cable, Cat-5e and Cat-3.

CATV – Community Access Television: A broadband communications system capable of delivering multiple channels of programming from a set of centralized satellite and off-air antennae, generally by coaxial cable, to a community. Many cable-television designs integrate fiber-optic and microwave links.

CD – Construction Documents: The written and drawn materials, which are the result of a design team's efforts. They include working drawings, specifications, and other construction documents. They detail all information needed to construct the project and all legal requirements of the project.

CER – Communications Equipment Room: An enclosed space for housing telecommunications equipment, cable terminations, and cross-connects. The room is the recognized cross-connect between the backbone and horizontal cabling (a.k.a. Comm).

CCTV – Closed Circuit Television: Usually a security system using cameras that transmits visual information over a closed circuit through electrically conducting cable or wireless transmitter and receiver. Used in Building Security.

DD – Design Development: The preparation of more detailed drawings and final design plans, showing correct sizes and shapes for rooms. Also included is an outline of the construction specifications, listing the major materials to be used.

GPS – Global Positioning Satellite/System: A worldwide radio-navigation system that was developed by the U.S. Department of Defense. In addition to military purposes it is widely used in marine, terrestrial navigation and location based services.

HL-7 – Defines standards for transmitting billing, hospital census, order entries, and other health-related information.

IP – Internet Protocol: A packet-based protocol for delivering data across networks.

IPTV – Internet Protocol Television: (Internet Protocol TV, Internet Protocol Television, IP-TV, IP-based Video, IP-based VOD system, IPTV Broadcasting) – Receiving TV and/or video signals and/or other multimedia services via your Internet connection, in particular your broadband connection.

ITS – Data Center room for new hospital construction.

LAN – Local Area Network: A user-owned and operated data transmission facility connecting a number of communicating devices (eg computers, terminals, word processors, printers, and storage units) within a single building or floor.

LEC – Local Exchange Carrier: The local phone companies, which can be either a Bell Operating Company (BOC) or an independent (for example, GTE) which traditionally had the exclusive, franchised right and responsibility to provide local transmission and switching services.

MDF – Main Distribution Frame Room: An enclosed space for housing telecommunications equipment, cable terminations, and cross-connects. Generally reserved for OSP, LEC, and service provider POE's, and building backbone connectivity.

OSP – Outside Plant: The outside plant includes all cables and wires extending outward from the network protectors on the main distribution frame, supporting structures, and other associated apparatus necessary to connect the terminal equipment to the outside plant.

PAN – Personal Area Network: Typically covers the few meters surrounding a user's workspace and provides the ability to synchronize computers, transfers files and gain access to local peripherals like printers and a range of pocket hardware. A technology like Bluetooth may enable wireless PAN.

PBX – Private Voice Exchange: A PBX is a private telephone switch that provides phone switching (including a full set of switching features) for an office or campus. PBXs often use proprietary digital-line protocols, although some are analog-based.

POE – Point of Entry: An artificial demarcation or interface point between communications entities or rooms.

RFP – Request for Proposal: A document provided to vendors to ask them to propose hardware and system software that will meet the requirements of a new system.

RFQ – Request for Quote: A solicitation document used in purchasing. An RFQ is requested for information. Quotes submitted in response to it are not offers that the buyer will normally accept without some confirmation or discussion with offerers.

RG-11 - A video coaxial cable with 75-W impedance and much thicker diameter than the popular RG-59 (of approximately 12 mm).

SATV – Satellite Access Television: See MATV

SD – Schematic Design: Represents the period in which all questions about the project are identified and general concepts are refined to represent all aspects of the ultimate design. Schematic design is not, however, detailed. It merely identifies details, which require further study. Schematic Design often represents the first understandable look at a building and allows users to begin to see the ultimate form and character. It is also the basis for much more detailed work in later phases.

TIA – Technology Institute of America: US organization that specifies minimum requirements for telecommunications cabling within an office. TIA has recommendations for topology and distances, media parameters which determine performance, connectors and pin assignments (to ensure inter-connectivity), and demands that the useful life of telecommunications cabling systems be in excess of 10 years.

UTP – Unshielded Twisted Pair: A cable that consists of two or more insulated conductors in which each pair of conductors are twisted around each other. There is no external protection and noise resistance comes solely from the twists.

VoIP – Voice over Internet Protocol: The technology used to transmit voice conversations over a data network using the Internet Protocol. Such data network may be the Internet or a corporate Intranet.

WAN – Wide Area Network: A geographically dispersed telecommunications network. The term distinguishes a broader telecommunication structure from a metropolitan, campus, or local area network.

WAO – Work Area Outlet: A telecommunications outlet is a single-piece cable termination assembly (typically on the floor or in the wall), found within the LAN, containing one or more modular telecom jacks. Such jacks might be RJ45s, coaxial terminators, fiber optic couplers, etc.

WLAN – Wireless Local Area Network: A network in which a mobile user can connect to a local area network (LAN) through a wireless (radio) connection. A standard, IEEE 802.11, specifies the technologies for wireless LANs.

Food Service

Operational Criteria:

Prepare, deliver and serve nutritious, attractive and temperate meal to the patients, visitors and staff of W. W. Hastings Hospital. Maintain high standards of sanitation and safety control throughout the department. Develop an organization of sequential function and work centers in the Dietary Department that provides adequate capacity, maximum security, minimum material handling and labor. Meet handicap code requirements in the dining and serving areas. Facility will be constructed to meet city/county health department requirements.

Provide a foodservice facility to prepare 350 meals per day.

Equipment:

Equipment will be heavy duty type. Equipment will be NSF and/or U.L. listed. Cooking equipment will be electric and gas fired. Where it is practical equipment will be mobile. Mobile cooking equipment will be furnished with AGA approved quick disconnect gas hoses. Cooking equipment will have no open flames.

Cooking equipment exhaust ventilators will be equipped with liquid chemical fire suppression systems (Ansul R-102 or Ansul "PIRAHNA")

Beverage equipment, steamers and ice makers will be provided with water filters.

Storage:

Food and supplies will be stored in a dedicated dry storage room. Storage area will be sized for 14 days.

Refrigerated and frozen food will be stored in a walk-in cooler and freezer. The walk-in cooler and freezer will have a floor level with the kitchen. Walk-in cooler and freezer will be sized for 7 days.

Kitchen:

The kitchen area will include, dry storage, walk-in cooler and freezer, preparation/production, in-patient meal assembly line, diet tech area, ware washing, catering storage area, Director's office, Janitor's closet, men's and women's toilets, and breakroom with lockers. Room finishes will comply with health department requirements.

A blast chiller will be included in the kitchen preparation/production area.

The kitchen may provide food production support for the existing hospital cafeteria and catering.

In-Patient Meal Service:

The in-patient menu will be non-selective. Meal assembly will be centralized in the kitchen. The meal assembly line will be kept compact to minimize labor. A space for specialized diets will be allocated in the in the meal assembly area. Permanent serviceware will be used for in-patient meal service. Meal delivery will re-use existing hot/cold carts. Dedicated tray retrieval carts will return soiled patient trays and serviceware to centralized warewashing.

Cafeteria:

Trays and silverware will be picked up at the start of the serving lines. Serviceware will be disposable type. Serving counters will include hot food and short order counters. The food serving line will include grilling equipment, cold food/salad bar, self-serve beverage and grab and go case.

Serving lines will be backed-up with hot and cold holding equipment.

The serving area will include a cashier's station. POS system will be, Owner Furnished, wireless and located at servery exit.

Dining Room:

Dining room is to seat approximately 60 people. Seating is to be flexible to accommodate varied group sizes.

Two (2) or three (3) dining seats will be equipped for computer hook-up.

CNWWH Exterior Materials Schedule

03 45 00 Precast Architectural Concrete

- A. Architectural Precast Association
Color: Natural

04 43 13 Stone Masonry Veneer

- A. Minick Materials
3" – 5" Moss Wallstone – Dark Brown Moss Rock

06 46 29 Wood Fascia and Soffits

- A. Western Red Cedar Lumber Association
Tongue-and-Groove Siding
1" x 6"
Clear Heart – Smooth Faced
V-Groove Two Sides
Color: See 09 93 13

07 24 00 Exterior Insulation and Finish Systems

Dryvit Systems, Inc.

- A. Limestone
Color: 105 Suede

07 41 13 Metal Roof Panels

Pac-Clad

- A. Snap-Clad
Color: Hemlock Green
16" O.C.
Snowguards (Color to match roof panel.)

07 42 13 Metal Wall Panels

Pac-Clad

- A. PAC Precision Series
Color: Slate Gray
12" O.C.
Horizontal Application
- B. Flush Wall Panel
Color: Copper Penny
12" O.C.
Vertical Application
- C. Flush Wall Panel
Color: Terra Cotta
12" O.C.
Vertical Application

- D. Flush Wall Panel
Color: Colonial Red
12" O.C.
Vertical Application

07 60 00 Flashing and Sheet Metal

- A. Scuppers, Gutters & Downspouts
To match Pac-Clad Granite.
- B. Prefinished Metal Flashing & Trim
To match Pac-Clad Granite.

08 33 23 Overhead Coiling Doors

Cornell Iron Works, Inc.

- A. Thermiser ESD20
Color: RAL1019 Graubeige

08 42 29 Automatic Entrances

Besam

- A. SL500
Unislide / Bipart
Narrow Stile Doors
Color: Aluminum

08 43 13 Aluminum-Framed Storefronts

Tubelite, Inc.

- A. T14000 Center Series Storefront
2" x 4-1/2"
Color: Clear Anodized

08 44 13 Glazed Aluminum Curtain Walls

Tubelite, Inc.

- A. 400 Series Curtainwall
2-1/2" x 5"
Color: Clear Anodized

08 81 00 Glass Glazing

PPG Industries, Inc.

- A. Solarban 60 Laminated Glass
Tint: TBD
- B. Spandrel Glass

- C. Varia Ecoresin XT
Color: Fossil Leaf Large Random
Front: Clear Float
Back: Clear Float
- D. Varia Ecoresin XT
Color: Bear Grass
Front: Clear Float
Back: Clear Float

08 91 00 Louvers

BarnettBates Corporation

- A. STL-100 (Aluminum)
Color: To match Pac-Clad Slate Gray

09 91 13 Exterior Painting

- A. Exposed Painted Steel
Tnemec, Inc.
Primer – Organic Zinc Rich Urethane (Tnemec Tneme-Zinc Series 90-97)
Intermediate Coat – Polyurethane (Tnemec Endura-Shield Series 73)
Top Coat – Polyurethane (Tnemec Enduralume Series 1077)
Color: TBD
- B. Hollow Metal Doors and Frames
Color: SW7642 Pavestone

09 93 13 Exterior Staining and Finishing

- A. Wood Soffit
Semi-Transparent Stain with Clear Protective UV Finish

10 14 00 Signage

- A. Cherokee Nation Seal
Material: Cast Aluminum
Finish: Bronzed Aluminum
- B. Lettering
Material: Cast Aluminum
Finish: Brushed Aluminum
Font: Times New Roman
- C. Directional Signage
Per Cherokee Nation Standards

11 13 13 Loading Dock Bumpers

Beacon Industries, Inc.

- A. Dock Bumpers
1018-4.5

26 56 29 Site Lighting

Gardco Lighting

- A. LED Bollard – Dome Top Louver
BRM833
Color: Natural Aluminum Paint

March 21, 2014

Cherokee Nation
WW Hastings East Hospital
Tahlequah, Oklahoma
Project 13-13

EXTERIOR COLOR AND FINISHES SCHEDULE

Notes: Coordinate with plans and specifications and Accent Color Plans.
If discrepancies are noted, notify Architect.

EXTERIOR FINISHES

1. STONE AND STONE CAP

- | | | | |
|----|--|--|------------------------------|
| A. | <u>Stone</u>
S | 3"-5" Moss Rock Wallstone-Dark Brown Moss Rock | Minick Materials |
| B. | <u>Stone Cap</u>
SC | 2" Flat Gray Chiseled Cap | Minick Materials |
| C. | <u>Precast Architectural Concrete</u>
PAC | Color: Natural | Architectural Precast Assoc. |

2. DOORS, FRAMES & WINDOWS

- | | | | |
|----|--|--|--------------------------|
| A. | <u>Storefront</u>
SF | T14000 Center Series Storefront
2" x 4-1/2"
Color: Clear Anodized | Tubelite, Inc. |
| B. | <u>Glazed Aluminum Curtain Wall</u>
CW | 400 Series Curtainwall
2-1/2" x 5"
Color: Clear Anodized | Kawneer |
| C. | <u>Hollow Metal Doors & Frames</u>
HM | SW7642 Pavestone | Sherwin Williams |
| D. | <u>Louvers</u>
L | STL-100 (Aluminum)
Color: To match Pac-Clad Slate Gray | BarnettBates Corporation |
| E. | <u>Exposed Painted Steel</u>
ESP | Primer – Organic Zinc Rich Urethane (Tnemec Tneme-Zinc Series 90-97)
Intermediate Coat – Polyurethane (Tnemec Endura-Shield Series 73)
Top Coat – Polyurethane (Tnemec Enduralume Series 1077)
Color: TBD | Tnemec, Inc. |

3. METAL ROOF

- | | | |
|----|--|----------|
| MR | Snap-Clad
Color: Hemlock Green
16" O.C.
Snowguards (Color to match roof panel.) | PAC-Clad |
|----|--|----------|

4. METAL WALL PANELS PAC-Clad
- MWP-1 PAC Precision Series
Color: Slate Gray
12" O.C.
Horizontal Application
- MWP-2 Flush Wall Panel
Color: Copper Penny
12" O.C.
Vertical Application
- MWP-3 Flush Wall Panel
Color: Terra Cotta
12" O.C.
Vertical Application
- MWP-4 Flush Wall Panel
Color: Colonial Red
12" O.C.
Vertical Application
5. FLASHING & SHEET METAL
- A. Scuppers, Gutters, & Downspouts PAC-Clad
S/G/D To match PAC-Clad Granite.
- B. Prefinished Metal Flashing & Trim PAC-Clad
PMF/T To match PAC-Clad Granite.
6. Exterior Insulation Finish System Dryvit-Lymstone
EIFS 105 Suede
7. TONGUE-AND-GROOVE SIDING/ SOFFITS Western Red Cedar Lumber
TGS/S Tongue-and-Groove Siding
1" x 6"
Clear Heart – Smooth Faced
V-Groove Two Sides
Semi-Transparent Stain with Clear Protective UV Finish
8. Overhead Coiling Doors Cornell Iron Works, Inc.
OCD Thermiser ESD20
Color: RAL1019 Graubeige
9. Automatic Entrances Besam
AE SL500-Unislide / Bipart-Narrow Stile Doors
Color: Aluminum
10. Glass Glazing PPG Industries, Inc.
- G-1 Solarban 60 Laminated Glass
Tint: TBD
- G-2 Spandrel Glass

G-3 Varia Ecoresin XT
 Fossil Leaf Large Random
 Front: Clear Float
 Back: Clear Float

G-4 Varia Ecoresin XT
 Bear Grass
 Front: Clear Float
 Back: Clear Float

11. Exterior Signage

ES Cherokee Nation Seal
 Material: Cast Aluminum
 Finish: Bronzed Aluminum

 Lettering
 Material: Cast Aluminum
 Finish: Brushed Aluminum
 Font: Times New Roman

 Directional Signage
 Per Cherokee Nation Standards

12. Loading Dock Bumpers

LDB Dock Bumpers
 1018-4.5

Beacon Industries, Inc.

13. Site Lighting

SL LED Bollard – Dome Top Louver
 BRM833
 Color: Natural Aluminum Paint

Gardco Lighting

WW Hastings East Hospital

SCHEMATIC DESIGN PHASE - INTERIOR DESIGN NARRATIVE

Ceiling:

Specify Armstrong Ceiling as basis of design

4x4 Optima tile in 15/16" Grid - LOBBY, DINING & O.P. WAITING.

2x2 Optima tile in 15/16" Grid - WAITING, ADMINISTRATION, ALL PUBLIC & PATIENT AREAS
UNLESS NOTED OTHERWISE.

2x4 Non-regular tile in 15/16" Grid - ALL 'BACK OF HOUSE' AREAS.

2x2 Mylar covered clean room tile and 15/16" grid - SERVERY.

2x4 Mylar cover clean room tile and 15/16" Grid - KITCHEN.

Monolithic Painted gyp board ceiling - VESTIBULES, OPERATING ROOMS, SUB-STERILE ROOMS, ENDO ROOMS, SCOPE WASH, TRAUMA ROOMS, DECONTAM, STERILE HOLD, C-SECTION, SOIL UTILITIES, SOILED LINEN, ANTE ROOMS, ISOLATION PATIENT ROOMS/LDRP/EXAM/PREP/RECOVERY, ASSISTED BATHING, ALL TOILETS, IV PREP, BODY HOLD, EVS ROOMS.

Painted gyp board soffit accents - LOBBY, DINING, O.P. WAITING, SERVERY, GIFT SHOP, RECEPTION, ADMITTING, CHAPEL, PUBLIC CORRIDORS, PATIENT CORRIDORS, WAITING (OPEN TO CORRIDOR) CHARTING ALCOVES, EQUIPMENT ALCOVES, NOURISHMENT ALCOVES, MEDS ALCOVES, SCRUB ALCOVES, PUBLIC ELEVATOR LOBBIES, NURSE STATIONS, LDRP & PATIENT ROOMS.

Ceiling design is emphasized at Lobby, Dining, O.P. Waiting, Servery, Gift Shop, Reception, Admitting, Chapel, Public Corridors, Waiting (Open to Corridor), Public Elevator Lobbies, Nurse Stations & Patient Rooms.

Specialty light fixtures at Lobby, Dining, O.P. Waiting, Servery, Gift Shop, Reception, Chapel, Admin. Conference, Public Elevator Lobbies, Nurse Stations, Physician Lounge, Waiting Rooms, Consult Rooms, Patient Rooms and all Public & Patient Toilets.

Wall:

Vinyl Wallcovering

Type II, 20 oz. 54" Wide - LOBBY, WAITING, ADMINISTRATION, DINING AND ALL CORRIDORS.

One main wallcovering to be selected for the whole facility. Different colors will be used to highlight specific areas. No more than 8 different wallcoverings will be specified, but all will be Type II.

Wood Panel Wall System

One species to be specified in wall cladding system. Public lobbies, elevator lobbies, waiting rooms.

Paint

Eggshell or Semi Gloss Healthcare Quality (i.e. Sherwin Williams Harmony) with Low VOC.
Semi Gloss or Gloss Epoxy in all Sterile and Cleanable areas of New Construction only.

All exterior facing walls will be painted with water based paint. Epoxy will not be used on exterior walls. One main paint color to be selected for the whole facility. No more than 8 accent paints will be in Patient Care Areas and Staff Areas. Multi-Color paint coating will not be used.

Fabric

Fabric Wrapped Panel Systems for Acoustical Purposes in hard surface flooring areas.
flooring. LOBBY, DINING AND O.P. WAITING.

Glass Wall Tile

1" x 1" Glass Tile Accent - PATIENT TOILETS. 1/2" x 4"
Random Stagger Glass Tile Accent - PUBLIC TOILETS & ALL DRINKING FOUNTAIN ALCOVES.
1/2" x 4" Random Stagger Glass Tile - SERVERY & COFFEE BARS AT WAITING ROOMS

One main One row of 1" x 1" glass tile accent on all walls of Patient Toilets. Two rows of 1/2" x 4" glass tile accent below bullnose wall tile at wainscot height on all walls of Public Toilets. Grout joints should be 1/16". Select full height accent walls of 1/2" x 4" glass tile at Servery. Full height accent splash of 1/2" x 4" glass tile above millwork at Coffee Bars in Waiting Rooms. All grout to be epoxy. Refer to Building Code for special requirements.

Porcelain Wall Tile

Min. 12" x 12" wall tile full height of all walls. Refer to Building Code for Special Requirements. No more than 4 colors will be used for wall patterns.
ALL TOILETS, ASSISTED BATHING, SERVERY, SCRUB SINKS, KITCHEN, DECONTAMINATION ROOMS.

Bases:

Resilient

4" High x 120' roll standard color - ALL AREAS NOT NOTED BELOW.
Millwork profile rubber base 4.25" x 8'. ADMINISTRATION, ADMITTING, WOMEN'S SERVICES UNIT, WAITING ROOMS, CONSULT ROOMS & CHAPEL.

One main base color to be selected for the whole facility. Accent color bases may be selected for accent paint or wallcovering.

Porcelain Base

Match Floor Material. Height to vary from 4" to 10" depending on the design. Bullnose or eased edge, provide outside and inside corners if available, otherwise cut on site.

Terrazzo Base

Match Floor Material. (Refer to Flooring for locations.) Height to vary from 4" to 6" depending on the design. Straight or cove with trim at floor and wall transition.

Integral Sheet Vinyl Cove Base - Heat Welded

6" High w/ aluminum top cap.

LDRP Patient Rooms will have wood-look sheet vinyl and contrasting 12" wide sheet vinyl surround at integral cove base.

Quarry Tile

Match Quarry Tile Floor. Include accessories: cove, outside and inside corners, etc.

Floors - Class A material only:

Transition: Hard Surface Material to Carpet will be 1/4" recessed metal strip; Carpet to Vinyl Tile or Sheet Vinyl will be low profile (no higher than 1/2" and wider than 1 1/2") rubber transitions. Vinyl Tile or Sheet Vinyl to Ceramic or Hard Surface Material will be 1/2" thick Class A Solid Surface Material with beveled edges and no more than 1 1/2" wide. All flooring will be level and feathered up or down to accommodate flush transitions.

Carpet

Combination 70% Solution and 20% Yarn dyed Name Brand 100% Type 6,6 Nylon Fibers (Dupont, BASF and Solutia) enhanced backed. Multi-Color textured tufted loop. 30 oz. Pile weight, 1/13 Gauge. High Performance Carpet in all patient and family high traffic areas - ADMINISTRATION, OFFICES, CONF. ROOMS, ADMITTING, CLASSROOMS.

No more than 3 patterns and colors to be selected for the whole facility.

Porcelain Tile

Min. 6 x 6 floor tile. Refer to Building Code for Special Requirements. No more than 4 colors will be selected for accent color. ALL TOILETS, ASSISTED BATHING, SERVERY, DECONTAMINATION ROOMS.

Do not use textured or polished finish in any tile product. Grout joints should be as small as possible. Use darker grout color, grout release and seal all grout.

Quarry Tile

Min. 8 x 8 floor tile. Refer to Building Code for Special Requirements. KITCHEN

Do not use textured or polished finish in any tile product. Grout joints should be as small as possible. Use darker grout color, grout release and seal all grout. Use acid (food) resistance grout.

Terrazzo

Thin-Set Terrazzo 3/8" Thick poured epoxy with divider strips. LOBBY, DINING, O.P. WAITING, PUBLIC CORRIDORS, SERVERY & PUBLIC ELEVATOR CAB FLOOR

One main pattern and color to be selected for the whole facility. No more than 6 accent colors will be selected.

Sheet Vinyl - Heat Welded

6 Foot wide vinyl roll to be heat welded. SURGERY CORRIDORS, ANESTHESIA WORK, OPERATING ROOMS, SUB-STERILE ROOMS, TRAUMA, ENDO ROOMS, SCOPE WASH, CATH LABS, C-SECTION, DECONTAM, STERILE HOLD, SOIL UTILITIES, HOUSEKEEPING, ANTE ROOMS, LDRP ROOMS, ISOLATION PATIENT ROOMS, EXAM, PREP/RECOVERY AREAS, IV PREP, LAB, BODY HOLD & EVS ROOMS.

Solid Vinyl Tile

Tile or wood-look plank. WAITING ROOMS & GIFT SHOP.

Bio-Based Tile

12 x 12 x 1/8 floor tile. No more than 6 colors to be selected for accents. PATIENT CORRIDORS, ALL AREAS NOT NOTED ABOVE.

Waterjet cutting will not be required. Use static dissipative tile in MRI, Computer Rooms, etc.

Millwork:

Wood

Quarter sliced cherry or maple depending on the stain color. LOBBY, O.P. WAITING, RECEPTION, DINING, ADMIN. CONFERENCE & LDRP ROOMS.

Wood grain will run in vertical direction unless noted otherwise on drawings. Vertical application only. Specialty/ decorative hardware and finish to be selected for high profile areas. No more than 3 accent stain colors will be selected. Wood trim will be used in Lobby, O.P. Waiting, Dining, Admin. Conference & LDRP Rooms.

Quartz Surfacing

3/4" thick quartz surfacing for transaction tops in Lobby and Reception. Vanity tops in Public Toilets.

One color will be selected for the whole project.

Solid Surface Material

1/2" thick Class A fire rating will be used for transaction tops, countertops and 1-1/2" eased edges. RECEPTION, ADMITTING, DINING, SERVERY, NURSE STATIONS & CHARTING ALCOVES.

1/2" thick solid surface material with 1-1/2" eased edge will be used for vanity tops with integral sink bowls in ALL PATIENT ROOMS.

1/2" thick solid surface material with 1-1/2" eased edge will be used at all window sills.

All wet countertop locations to be solid surface material. All edges will be eased. Material less than 1/2" thick will not be used unless they are classified as Class A and vertical application only.

Plastic Laminate

All horizontal and vertical casework and millwork will be plastic laminate, unless noted otherwise. Accent colors will be utilized for wayfinding and design elements. Avoid sharp corners and edges. Use chemical resistant laminate for countertops in Lab, Pharmacy & Hot Lab.

All door and drawer edges to receive 3mm edge banding.

Miscellaneous:

Shower Enclosures

All patient room toilets to have porcelain tile floor and solid surfaced vanity with integral bowl, and accessory shelves (2 per room). Two floor drains to be provided in each patient toilet room (1 trench and 1 standard. PATIENT TOILETS.

Elevator Cabs

Enhanced cab wall design with bonded metal. PUBLIC ELEVATOR CABS.

Ceilings to be metal with low voltage downlights. PUBLIC ELEVATOR CABS.
Floors to be terrazzo. PUBLIC ELEVATOR CABS.

Staff/service elevators to receive manufacturer standard finish selections.

Entrance Mats

Recessed Pedimat or similar. ALL VESTIBULES.

Toilet Partitions

Phenolic resin or similar toilet partitions. STAFF TOILETS.

Stainless steel toilet partitions. PUBLIC TOILETS.

Cubicle Curtains

Multiple colors or patterns to delineate areas. Utilize to ensure patient privacy.

PVC-Free Wall Protection

Crash/Bumper Rail at both high and low location on walls throughout staff and back-of-house
Corner Guards to be full height throughout facility. No more than three standard colors throughout.

Stainless steel corner guards - MATERIALS MANAGEMENT, KITCHEN, SURGERY, C-SECTION & TRAUMA.

Rigid sheet wall protection. To be installed to 48" above finished floor. No more than three standard colors throughout. JANITOR CLOSETS, EQUIPMENT ALCOVES, OPERATING ROOMS, C-SECTION, TRAUMA & EXAM ROOM HEADWALLS.

Rigid sheet wall protection. To be installed full height above finished floor. No more than three standard colors throughout. PATIENT ROOM HEADWALLS (FULL-HEIGHT & WIDTH).

Handrail to be located in In-Patient corridors. No more than three standard colors throughout.

Communication Boards

Combination marker/tack board with clock - ALL PATIENT ROOMS.

Fabric Tackable Wall Panel

Fabric wrapped tackable panel system with aluminum trim - NURSE STATIONS & CHARTING STATIONS.

All Nurse Stations will have tackable panel below transaction top to work surface below. All Charting

Specialty Lighting

Decorative lighting to be selected - NURSE STATIONS & RECEPTION (SMALL PENDANTS), ADULT/PEDS WAITING (LARGE CEILING PENDANTS), PUBLIC/PATIENT TLTS, TLT/SHOWERS (VANITY FIXTURE) & PHYSICIANS LOUNGE & CHAPEL 9WALL SCNCES)

Plumbing Fixtures

Solid Surface Counter Tops with Integral Bowls - TLTS & TLT/SHOWER

Window Coverings

Roller Window Shades - ALL EXTERIOR WINDOWS

All shades to be manual solar shades, 1% openness factor at ED exam rooms & 3% openness factor in all public areas & offices.

Shower Curtains

Shower Curtain and Hardware - TLT/SHOWER

Liner scheduled for each room behind scheduled fabric.

Hollow Metal Doors/Frames

All Hollow Metal Doors/Frames to be painted.

Plastic Laminate Doors

Wood-look Plastic Laminate Doors - ALL AREAS,

ARCHITECTURAL NARRATIVE CHECKLIST

Hastings Hospital

Tahlequah, Oklahoma

Programming and Planning Study

PW Project Number: 142859.000

Date: 02-13-2014

(Yes or No)
per RF

DIVISION 2 - SITEWORK

DIVISION 3 - CONCRETE

DIVISION 4 - MASONRY

DIVISION 5 - METALS

Steel stairs required YES

Steel rails required YES

Aluminum rails required _____

Steel ladders required _____

Other standard metal fabrications (window sill pans, exp joint covers) YES

Expansion joints required, give model numbers YES

Model numbers	Floors: Metalines C-93	_____
	Walls: Metalines KF-11 and KC-21	_____
	Suspended Ceiling Systems: Metalines 52	_____
	Gypsum Bd. Ceilings: Metalines KF-11	_____

Other steel or metals required:
describe: **Structure for glass curtainwall systems; Misc. steel for equipment supports** _____

DIVISION 6 - WOOD

Wood stud framing NO

Plywood backup behind gypsum board (P. T. areas, etc.) NO

Wood trusses NO

one piece _____

two piece _____

Standard millwork requirements YES

Wood benches in dressing rooms YES

Wood rails at storefront NO

DIVISION 7 - THERMAL & MOISTURE PROTECTION per RF

DIVISION 8 - DOORS & WINDOWS

Standard hollow metal doors and frames YES

Aluminum frames (doors and windows) _____

Model No. _____

Wood doors		<u>NO</u>
Pre-hung wood doors		<u>NO</u>
Plastic faced doors		<u>YES</u>
Paneled decorative doors		<u>NO</u>
Push up doors		<u>YES</u>
galvanized		
stainless steel	<u>YES</u>	
Steel access doors		<u>YES</u>
ceiling	<u>ROOF</u>	
wall		
Overhead doors		<u>YES</u>
roll-up (coiling)	<u>Central Plant; Receiving area at Dock</u>	
sectional		
Bi-folding wood doors		<u>NO</u>
louvered		
flush		
Sliding glass doors		<u>YES</u>
how many sections	<u>2-panel ICU breakaway type (trackless at floor)</u>	
Hurculite glass doors		<u>PER RF</u>
Standard casement windows		<u>PER RF</u>
Curtainwall systems required		<u>PER RF</u>
Model No.		
Standard finish hardware		<u>YES</u>
Match existing mortise		
Match existing cylinder		
Type of finish	<u>Stainless Steel or brushless alum as applicable.</u>	
Automatic doors sliding		<u>YES</u>
Automatic doors swinging		<u>YES</u>
Security or detention screens required		<u>YES</u>
Total doors required		<u>Approx 600</u>
Bullet/Shatter Resistant Glazing		<u>PER RF</u>
ER		
Pharmacy		
Cashier		
Standard glass and glazing		<u>PER RF</u>
glass tint		
Spandrel glass		
Curtainwall		

Model No. _____

Other requirements: _____ PER RF
describe: _____
describe: _____

DIVISION 9 - FINISHES REFER TO INTERIOR DESIGN NARRATIVE

Seismic design required _____ PER RF
Zone _____
Stucco soffits *Exterior only.* _____ PER RF
Plaster and metal lath required _____ PER RF

DIVISION 10 - SPECIALTIES REFER TO INTERIOR DESIGN NARRATIVE

Any access flooring _____ YES
computer flooring YES
MRI aluminum floor YES

Flagpole _____ PER RF

Graphics and signs _____ YES
(ADA upgrades including secondary floor signage)

Aluminum building letters _____ PER RF
to read: TBD
how many sets _____
backlighted _____

Metal lockers _____ YES
single tier YES, at Physician locker rooms
double tier YES

Narcotics locker required _____ YES

Wire mesh partition required _____ YES

Standard folding accordion partitions _____ YES

Telephone enclosure required _____

Standard toilet accessories _____ YES

Projection screens _____ YES
electrical YES
manual _____

Other specialties: _____
describe: _____

DIVISION 11 - EQUIPMENT

Parking control systems required _____ PER RF
key control _____
card control _____

Standard dock bumpers _____ PER RF

Incinerator required PER RF

Incinerator relocated _____

Revolving darkroom doors NO

Film illuminator by contractor PER RF

Undercounter refrigerator by contractor PER RF

Residential type washer/dryer by contractor NO

Other special equipment: YES

describe: REFER BELOW.

Premanufactured Headwall Systems or Equipment Booms (CFCI):

Location	Qty.	Allowance per unit	Type/Mfr.	Yes/No
ICU/CCU/CVICU	per plan	\$12,000	TBD by facility	Yes
LDRP	per plan	\$12,000	TBD by facility	YES
PACU	per plan	\$12,000	TBD by facility	YES
M/S, PP & AP - and other non-specialty type nursing units	per plan	\$5,000	TBD by facility	YES
Pre-Op/Stage 2 Recovery; CV Recovery	per plan	\$5,000	TBD by facility	YES
IP Holding	per plan	\$5,000	TBD by facility	YES
Trauma / Cardiac	per plan	\$20,000	TBD by facility	YES
OR	per plan	\$25,000	TBD by facility	YES

DIVISION 12 - FURNISHINGS REFER TO INTERIOR NARRATIVE

DIVISION 13 - SPECIAL CONSTRUCTION

Walkway connectors or walkway covers PER RF
how many L.F. _____

Pre-engineered buildings NO
size: _____

Standard lead-lining requirements for: YES
Walls YES
Doors/frames YES
Lead glass YES

Transfer cabinet NO

R/F shielding for MRI YES

by owner	_____	
by contractor	<u>YES</u>	
Mag. shielding for MRI		<u>YES</u>
approx. thickness or tonnage	<u>TBD</u>	
by owner	_____	
by contractor	<u>YES</u>	
Saunas		<u>NO</u>
Whirlpool equipment		<u>NO</u>
Swimming pool		<u>NO</u>
size	_____	
granite/concrete	_____	
liner	_____	
tile	_____	

DIVISION 14 - CONVEYING SYSTEMS

Traction elevators	Public Elevators: Kone EcoSpace MRL Low-Rise Elevator Patient Elevators: Kone MonoSpace MRL Mid-Rise Elevator 5000AIA	<u>YES</u>
How many	<u>2 Public Elevators / 2 Patient Elevators</u>	
Cab Size	<u>Public Elevators: 6'-8"w x 5'-6 3/16" / Patient Elevator: 5'-8 1/2"w x 9'-0" d</u>	
Capacity	<u>Public Elevators: 3,500lbs / Patient Elevator: 5,000 lbs</u>	
Speed	<u>350 fpm</u>	
Weight Rating	_____	
Number in bank	<u>2 banks of 2</u>	

Hydraulic elevators NO

Capacity for future cars NO
 how many _____
 future stops _____

Will there be a penthouse for elevator equipment? NO

Will elevator be on emergency generator? YES

"Wye-Delta" starting required YES

Other special requirements (ADA upgrade, elevator shaft, sprinkling, etc): NO

General notes or special conditions:
 describe: _____

Pneumatic Tube System PER RF
 New System? _____
 Existing System to be extended? _____
 New Stations to be provided: _____

GENERAL NOTES & SPECIAL CONDITIONS:

CHEROKEE NATION
1820.0 - WW HASTINGS EAST HOSPITAL
SUMMARY COST ESTIMATE BY DEPARTMENT

SC009

Sort: Dept Name

Issued: 03/18/2014

Dept No	Department Name	Total Estimated Cost
	ADMINISTRATION	900
	C-SECTION	718,375
	CENTRAL STERILE	958,295
	CORE LAB	24,528
	EMERGENCY (3T, 11E)	417,806
	ENDOSCOPY	638,561
	ICU (1 ISO/11 ICU)	1,303,949
	IMAGING	6,257,927
	LABOR & DELIVERY (18 LDRP)	1,848,060
	MAIN LOBBY/ADMITTING	6,000
	MED-SURG/PEDS (25 BED)	700,510
	NURSERY (5 NURS/2 ISO)	504,954
	PHARMACY	20,928
	PRE ADMIT TESTING	43,661
	PREP & PACU (10/10)	699,403
	RESPIRATORY CARE	2,046
	SURGERY	731,659
	Subtotal for Department(s) listed	14,877,562
	Add Inflation 0.00% for 0 years	0
	Subtotal after Inflation	14,877,562
	Add Freight 0.00%	0
	Add Tax 0.00%	0
	Project Subtotal	14,877,562
	Add Contingency 0.00%	0
	Total	14,877,562

**CHEROKEE NATION
1820.0 - WW HASTINGS EAST HOSPITAL
UTILITY REPORT**

Sort: Item Description

Issued: 03/18/2014

ASE	EQUIPMENT ITEM	CPE	Qty			DIMENSIONS				Gr	See Dims on Mfrg Spec	WEIGHT (lbs)	OP WEIGHT (lbs)	Placement/ Mounting	Anch	VOLTS	PHASE	AMPS	WATT	VA	CIRCUIT BREAKER SIZE	DEDICATED	EMERGENCY	HARDW I RED	POWERCORD	NETWORK PORT	PHONE . LINE	REMOTE . ALARM	OTHER . ELEC . REQS	MED GAS	CMPRSD . AIR	EXT . EXHAUST	VENTILATION	BLDG . STEAM	INT STEAM GEN	COLD . H2O	HOT . H2O	TREATED . H2O	DRAIN	BTUs	INST BY				See Comments on Cutsheet Summary											
			N	E	F	H	W	D	C																																V	O														
X	27758 ICEMAKER, COUNTERTOP, 50 LB		1	0	0	52	30	27	2	X	215	265	Countertop	CTP	120	1	13			20	X			X												X				5,000	X															
X	1489 ICEMAKER, COUNTERTOP- 12 LB		1	0	0	33	19 1/4	26 1/2	1	X	199	211	Countertop	CTP	120	1	13			20				X												X				5,000	X															
X	300 ILLUMINATOR, 1-PANEL RECESSED	X	2	0	0	21 3/4	14 3/4	4	1	X	19	19	Recessed	WAL	120	1							X																			X														
X	2540 ILLUMINATOR, 2 PANEL RECESSED	X	8	0	0	21 3/4	28 3/4	3	1	X	37	37	Recessed	WAL	120	1	1						X																				X													
X	2110 INCUBATOR, INFANT		2	0	0	62	33	28	2	X	195		Mobile	POR	120	1	6	450				X		X																			X													
X	22100 INJECTOR, CONTRAST- MRI		1	0	0	52	19	22	2	X	60		Mobile	POR	120	1			250					X																				X												
X	28461 INJECTOR, SINGLE CONTRAST- CT		1	0	0	7	12	13		X	12		Mobile		120	1		150						X																				X												
X	22707 LIFT, FIXED, CEILING-MOUNT	X	2	0	0	--	--	--	1	X	28	578	Ceiling Mount	CLG	120	1	1					X		X																					X											
X	12819 LIGHT CONTROLLER, DUAL		10	0	0	4	6	3	1	X	1		Wall Mount	WAL	120	1	2	210				X	X																								340	X								
X	24540 LIGHT, BIRTHING	X	18	0	0	--	43	65 3/4	1	X	340		Ceiling Mount	CLG	120	1	5					X	X																									X								
X	24882 LIGHT, SURGICAL- DUAL- CEILING	X	7	3	0	--	--	--	1	X	350		Ceiling Mount	CLG	120	1	2				X	X	X																									X								
X	9485 LOAD/UNLOAD CONVEYOR, SINGLE		1	0	0	31	32	32	2	X	94	229	Freestanding	FLR	120	1	15				X	X	X					X																				X								
X	14957 LOCK, REMOTE MEDICATION MANAGEMENT		9	1	0	6	12	6	3	X	19		Other	VIC											X																							X								
X	25509 MEDICATION DISPENSER- AUXILIARY- DOUBLE		0	1	0	78	52	25	2	X	750	2,359	Freestanding	FLR	120	1	2					X		X																									600	X						
X	25506 MEDICATION DISPENSER- AUXILIARY- SINGLE		0	1	0	78	28	25	1	X	500	1,232	Freestanding	FLR	120	1	2					X		X																									600	X						
X	25474 MEDICATION DISPENSER- MAIN- 12-DWR		1	2	0	78	37	25	2	X	500	1,232	Freestanding	FLR	120	1	2					X		X	X																									600	X					
X	25556 MEDICATION DISPENSER- MAIN- HALF		4	2	0	58	28	27	2	X	518	850	Mobile	FLR	120	1	2					X		X	X																								400	X						
X	313 MICROWAVE, COUNTERTOP 2.0 CUFT		14	3	0	14	25	20	2	X	48		Countertop	POR	120	1		1,200						X																											X					
X	651 MONITOR, CENTRAL STATION, 12 BED	X	3	2	0	--	--	--	2	X	112		Countertop	CTP	120	1	6			20	X		X	X			X																									652				

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 RedFern Group