



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF HEALTH SERVICE REGULATION

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

MARK PAYNE
DIRECTOR

April 19, 2017

Carolyn Coward
PO Box 7376
Asheville, NC 28802

Exempt from Review – Replacement Equipment

Record #: 2237
Facility Name: Carolina Spine and Neurosurgery Center
FID #: 970332
Business Name: Carolina Spine and Neurosurgery Center, P.A.
Business #: 2615
Project Description: Replace existing fixed MRI scanner
County: Buncombe

Dear Ms. Coward:

The Healthcare Planning and Certificate of Need Section, Division of Health Service Regulation (Agency), determined that based on your letter of April 11, 2017, the above referenced proposal is exempt from certificate of need review in accordance with N.C. Gen. Stat. §131E-184(a)(7). Therefore, you may proceed to acquire without a certificate of need the Optima MR450w 1.5T GEM MRI system to replace the Signa Hispeed LX K4 1.5T MRI system. This determination is based on your representations that the existing unit will be disposed of and will not be used again in the State without first obtaining a certificate of need if one is required.

Moreover, you need to contact the Agency’s Construction Section to determine if they have any requirements for development of the proposed project.

It should be noted that the Agency's position is based solely on the facts represented by you and that any change in facts as represented would require further consideration by this office and a separate determination. If you have any questions concerning this matter, please feel free to contact this office.

Sincerely,

Julie Halatek
Project Analyst

Martha J. Frisone
Assistant Chief, Certificate of Need

cc: Construction Section, DHSR
Paige Bennett, Assistant Chief, Healthcare Planning, DHSR

HEALTHCARE PLANNING AND CERTIFICATE OF NEED SECTION
WWW.NCDHHS.GOV
TELEPHONE 919-855-3873

LOCATION: EDGERTON BUILDING • 809 RUGGLES DRIVE • RALEIGH, NC 27603
MAILING ADDRESS: 2704 MAIL SERVICE CENTER • RALEIGH, NC 27699-2704
AN EQUAL OPPORTUNITY/ AFFIRMATIVE ACTION EMPLOYER





THE
VAN WINKLE
LAW FIRM

Writer's Direct Dial: (828) 771-2506
Writer's Facsimile: (828) 255-0255
Writer's E-Mail: ccoward@vwlawfirm.com



April 11, 2017

Martha J. Frisone, Assistant Chief
North Carolina Department of Health and Human Services
Division of Health Service Regulation
Certificate of Need Section
2704 Mail Service Center
Raleigh, North Carolina 27699-2704

Re: Request for Exemption to CON Review for Replacement MRI at Carolina Spine and Neurosurgery, P.A. / Buncombe County

Dear Ms. Frisone:

On behalf of Carolina Spine and Neurosurgery Center, P.A. ("Carolina Spine") and in accordance with N.C. gen Stat. § 131E-184(a)(7), I am writing to notify the Healthcare Planning and Certificate of Need Section, Division of Health Service Regulation ("Agency") of Carolina Spine's intention to replace an existing MRI scanner currently located at 7 Vanderbilt Park Drive, Asheville, NC 28803.

Carolina Spine currently operates a fixed MRI scanner which is a Signa Hispeed LX K4 1.5T MR, PDC Cassette Building, and MR Coil and Software Upgrade, with Upgrade of 16 Channel HDx MRI ("Signa") that was acquired in 1998. The existing equipment was obtained pursuant to a certificate of need for Project ID No. B-5583-97/970332. Carolina Spine plans to replace the existing equipment with a Optima MR450w 1.5T GEM 25.0 MR System ES Platform ("Optima"). *See* Exhibit A, attached replacement equipment comparison form.

The estimated construction costs, including architect's fees and project contingency, for the replacement equipment is \$412,218.00. The purchase price of the Optima is \$1,386,597.04. *See* Exhibit B, attached equipment quote. The total capital expenditure for the proposed replacement equipment project is \$1,798,814.04. *See* Exhibit C, attached capital cost form.

This proposal meets the definition of "replacement equipment" as set forth in N.C. Gen. Stat. § 131E-176(22a) because:

- The cost of the equipment and the cost of all activities essential to acquiring and making operational the replacement equipment are less than \$2 million; and

Van Winkle, Buck, Wall, Starnes and Davis, P.A.

11 North Market Street, Asheville, NC 28801 P.O. Box 7376, Asheville, NC 28802 (828) 258-2991

422 South Main Street, Hendersonville, NC 28792 (828) 697-6196

www.vwlawfirm.com

- The sole purpose of this proposal is to replace comparable medical equipment currently in use. The Signa will be returned to GE Healthcare and moved out of North Carolina.

This proposal meets the requirements of 10A NCAC 14C .0303(d) because:

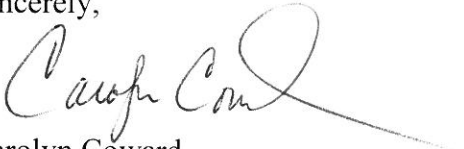
- The Optima has the same technology as the Signa although it may possess expanded capabilities due to technological improvements;
- The Optima is functionally similar and is used for the same diagnostic or treatment purposes as the Signa and is not used to provide a new health service; and
- The acquisition of the Optima will not result in more than a 10% increase in patient charges or per procedure operating expenses within the first twelve months after the replacement equipment is acquired.

The exclusions in 10A NCAC 14C .0303(e) are not applicable.

Based on the foregoing, Carolina Spine respectfully requests that the Agency confirms in writing that the above referenced proposal is exempt from CON review pursuant to N.C. Gen. Stat. § 131E-184(a)(7).

Please let me know if you need any further information.

Sincerely,



Carolyn Coward
Van Winkle, Buck, Wall, Davis and Starnes. P.A.

Attachments: Exhibit A – Equipment Comparison Chart
Exhibit B – Equipment Quote
Exhibit C – Capital Cost Form

cc: Jeff Pigg, CFO

EXHIBIT A
EQUIPMENT COMPARISON CHART

**EXHIBIT A
EQUIPMENT COMPARISON – MRI REPLACEMENT – CAROLINA SPINE**

	EXISTING EQUIPMENT	REPLACEMENT EQUIPMENT
Type of Equipment	MRI Scanner	MRI Scanner
Manufacturer of Equipment	GE Healthcare	GE Healthcare
Tesla Rating for MRIs	1.5T	1.5T
Model Number	Signa Hispeed LX K4	OptimaMR450w
Serial Number	R229	
Provider's Method of Identifying Equipment	Serial Number	Serial Number
Specify if Mobile or Fixed	Fixed	Fixed
Mobile Trailer Serial Number/VIN #	N/A	N/A
Mobile Tractor Serial Number/VIN #	N/A	N/A
Date of Acquisition of Each Component	1998	2017
Does Provider Hold title to Equipment or Have a Capital Lease?	Operating Lease	Operating Lease
Specify if Equipment Was/Is New or Used When Acquired	New	New
Total Capital Cost of Project (Including Construction)		\$1,798,815.04
Total Cost of Equipment	\$	\$1,386,597.04
Fair Market Value of Equipment		Same
Net Purchase Price of Equipment		Same
Locations Where Operated		
Number of Days in Use/To Be Used in NC Per Year	7 Vanderbilt Park Dr., Asheville, NC 28803	7 Vanderbilt Park Dr., Asheville, NC 28803
Percent of Change in Patient Charges (by Procedure)	309	309
Percent of Change in Per Procedure Operating Expenses (by Procedure)	N/A	N/A
Type of Procedures Currently Performed on Existing Equipment	N/A	N/A
Type of Procedures New Equipment is Capable of Performing	General MR Scans of the Body / Extremities	General MR Scans of the Body / Extremities – Allows for scans of larger body sizes

EXHIBIT B
EQUIPMENT QUOTE



GE Healthcare

Date: 06-22-2016
Quote #: PR3-C64025
Version #: 2

Carolina Spine & Neurosurgery Center Attn: Jeff Pigg
7 Vanderbilt Park Dr Asheville
Asheville NC 28803-1700 NC 28803

Customer Number : 1-23IC6Z
Quotation Expiration Date: 06-30-2016

This Agreement (as defined below) is by and between the Customer and the GE Healthcare business ("GE Healthcare"), each as identified herein. "Agreement" is defined as this Quotation and the terms and conditions set forth in either (i) the Governing Agreement identified below or (ii) if no Governing Agreement is identified, the following documents:

- 1) This Quotation that identifies the Product offerings purchased or licensed by Customer;
- 2) The following documents, as applicable, if attached to this Quotation: (i) GE Healthcare Warranty; (ii) GE Healthcare Additional Terms and Conditions; (iii) GE Healthcare Product Terms and Conditions; and (iv) GE Healthcare General Terms and Conditions.

In the event of conflict among the foregoing items, the order of precedence is as listed above.

This Quotation is subject to withdrawal by GE Healthcare at any time before acceptance. Customer accepts by signing and returning this Quotation or by otherwise providing evidence of acceptance satisfactory to GE Healthcare. Upon acceptance, this Quotation and the related terms and conditions listed above (or the Governing Agreement, if any) shall constitute the complete and final agreement of the parties relating to the Products identified in this Quotation.

No agreement or understanding, oral or written, in any way purporting to modify this Agreement, whether contained in Customer's purchase order or shipping release forms, or elsewhere, shall be binding unless hereafter agreed to in writing by authorized representatives of both parties.

By signing below, each party certifies that it has not made any handwritten modifications.

Governing Agreement:	None
Terms of Delivery:	FOB Destination
Billing Terms:	80% delivery / 20% Installation
Payment Terms:	Due ON Receipt - 30 Days
Total Quote Net Selling Price:	\$1,386,597.04

INDICATE FORM OF PAYMENT:

If "GE HFS Loan" or "GE HFS Lease" is NOT selected at the time of signature, then you may NOT elect to seek financing with GE Healthcare Financial Services (GE HFS) to fund this arrangement after shipment.

- Cash/Third Party Loan
- GE HFS Lease
- GE HFS Loan
- Third Party Lease (please identify financing company)

By signing below, each party certifies that it has not made any handwritten modifications. Manual changes or mark-ups on this Agreement (except signatures in the signature blocks and an indication in the form of payment section below) will be void.

Each party has caused this agreement to be executed by its duly authorized representative as of the date set forth below.

CUSTOMER
Jeff Pigg 6/29/16
 Authorized Customer Signature Date
Jeff Pigg *Practice Director*
 Print Name Print Title
 N/A
 Purchase Order Number (if applicable)

GE HEALTHCARE
 Jeffrey Keyes 06-23-2016
 Signature Date
 Account Manager - VASO - Mfr Rep
 Email: jeff.keyes@ge.com
 Office: +1 704 912 0012
 Mobile: +1 704 960 3256



GE Healthcare

Date: 06-22-2016
Quote #: PR3-C64025
Version #: 2

InvestmentSummary-Not Valid for tax or accounting purpose

Category

	<u>NetPrice</u>
Equipment/Products:	\$1,045,634.85
Accessories/Supplies:	\$104,566.00
System Software:	\$199,696.19
Itemized Installation/Services:	\$0.00
Itemized Training:	\$36,700.00
Miscellaneous Uncategorized:	\$0.00
Total Quote Selling Price	\$1,386,597.04
Trade-In and Other Credits	\$0.00
Total Quote Net Selling Price	\$1,386,597.04

To Accept this Quotation
 Please sign and return this Quotation together with your Purchase Order To:
Jeffrey Keyes
 Office: +1 704 912 0012
 Mobile: +1 704 960 3256
 Email: jeffkeyes@ge.com

Payment Instructions
 Please Remit Payment for invoices associated with this quotation to:
GE Healthcare
P.O. Box 96483
Chicago, IL 60693

To Accept This Quotation

- Please sign the quote and any included attachments (where requested).
- If requested, please indicate your form of payment.
- If you include the purchase order, please make sure it references the following information
 - The correct Quote number and version number above
 - The correct Remit To information as indicated in "Payment Instructions" above
 - The correct SHIP TO site name and address
 - The correct BILL TO site name and address
 - The correct Total Quote Net Selling Price as indicated above

"Upon submission of a purchase order in response to this quotation, GE Healthcare requests the following to evidence agreement to contract terms. Signature page on quote filled out with signature and PO number.

*****QR*****
 Verbiage on the purchase order must state one of the following: (i) Per the terms of Quotation #_____; (ii) Per the terms of GPO#_____; (iii) Per the terms of MPA #_____; or (iv) Per the terms of SAA #_____. Include the applicable quote/agreement number with the reference on the purchase order. In addition, source of funds (choice of: Cash/Third Party Loan or GE HFS Lease or GE HFS Loan or Third Party Lease through _____), must be indicated, which may be done on the quote signature page (for signed quotes), on the purchase order (where quotes are not signed) or via a separate written source of funds statement (if provided by GE Healthcare)."



GE Healthcare

Date: 06-22-2016
Quote #: PR3-C64025
Version #: 2

Qty	Description
1	<p>Optima MR450w 1.5T GEM 25.0 Optima MR450w 1.5T GEM MR System ES Platform</p> <p>The Optima MR450w 1.5T GEM MRI system from GE Healthcare is designed to deliver a comfortable patient-friendly environment while also delivering uncompromised clinical performance and streamlined workflow.</p> <p>The ES configuration includes the system electronics, operating software, imaging software, post-processing software and RF coil suite:</p> <ul style="list-style-type: none"> • eXtreme Gradient Technology • Acoustic Reduction Technology • OpTix RF Receive Technology • Volume Reconstruction Engine • Computing Platform and DICOM • GEM Express Patient Table with IntelliTouch • GEM Suite - ES Coil Package • Express 2.0 Workflow • ScanTools and ES Tools <p>eXtreme Gradient Technology: The Optima MR450w delivers high temporal resolution through 3-axis gradient amplifier power supply and efficient gradient coil design as well as high spatial integrity through excellent magnet homogeneity and gradient linearity over a large FOV. In addition, the XRM gradients are non-resonant and actively shielded to minimize eddy currents, and use an innovative digital control architecture design to deliver high fidelity, accuracy and reproducibility.</p> <ul style="list-style-type: none"> • Peak amplitude per axis: 34 mT/m • Peak slew rate per axis: 150 T/m/s • Peak current & voltage: 660 Amps, 1650 Volts • Digital PI feedback loop control • Maximum FOV: 50cm • Duty Cycle: 100% <p>Acoustic Noise Reduction Technology: The Optima MR450w GEM system features five levels of acoustic reduction technology to deliver an enhanced patient environment.</p> <ul style="list-style-type: none"> • Gradient & RF coil isolation • Acoustic dampening material



Qty	Description
	<ul style="list-style-type: none"> • Vibro-acoustic isolation • Gradient waveform optimization <p>OpTix RF Receive Technology: The OpTix RF receive chain enables high bandwidth, high channel count reception with improved SNR over conventional MR receiver designs. The MR signal is digitized within the scan room and then optically transmitted to the reconstruction engine in the electronics room increasing SNR for all volume acquisitions</p> <ul style="list-style-type: none"> • Coil input ports: 138 • Simultaneous channel/receivers: 32 • Receiver sampling per channel: 80 MHz • Receiver dynamic range at 1 Hz BW: >165 dB • Receiver resolution: up to 32 bits • Digital quadrature demodulation <p>Computing Platform: The Intel Xeon Nehalem Dual Core Processor computing platform utilizes a parallel, multi-processor design to enable simultaneous scanning, reconstruction, filming, post-processing, archiving, and networking. The keyboard assembly integrates an intercom speaker, microphone, volume controls, and emergency stop switch. Start scan, pause scan, stop scan and table advanced to center hot keys are also included.</p> <ul style="list-style-type: none"> • 8GB DDR3 Memory • 146GB SAS disk subsystem • 24" flat panel LCD with 1920x1200 resolution • Single tower configuration • DVD interchange <p>DICOM: The Optima MR450w GEM system generates MR Image, Secondary Capture, Structured Report, and Gray Scale Softcopy Presentation State D:COM objects. The DICOM networking supports both send and query retrieve as well as send with storage commit to integrate with PACS archive. Please refer to the DICOM Compliance Statement for Optima MR450w GEM for further details.</p> <p>M7000ZM (1 unit included in S7525AE) GEM Express Patient Table with IntelliTouch: The GEM Express table is a mobile patient transport device with an embedded high-density, GEM Posterior RF Array and touch sensitive IntelliTouch land-marking. The fully detachable GEM Express table is easily docked and undocked by a single operator and simple to move in and out of the exam room for patient transport and preparation. These features can be vital in instances where multiple patient transfers can negatively impact patient care or when emergency extraction is required.</p>



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Qty	Description
	<p>The GEM Express table and embedded GEM PA coil are designed to accommodate head-first or feet-first imaging for all supported exams. The table features three high-density coil connection ports: one at each end and one embedded for the GEM PA. Two additional coil connection ports are included in the docking mechanism.</p> <ul style="list-style-type: none"> • Maximum patient weight for scanning: 500 lbs • Maximum patient weight mobile: 500 lbs • Maximum patient weight for lift: 500 lbs • 205 cm symmetrical scan range • Automated vertical and longitudinal power drive • Fast longitudinal speed: 30 cm/sec • Slow longitudinal speed: 0.5 cm/sec • Integrated arm boards & non-ferrous IV pole • IntelliTouch & laser land-marking <p>GEM Suite - ES Coil Package: The Geometry Embracing Method - GEM - Suite of coils is designed to enhance patient comfort and image quality while simplifying workflow by ensuring that the geometry of the surface coil matches the geometry of the patient. The ES Coil Package includes:</p> <ul style="list-style-type: none"> • T/R Body Coil & T/R Head Coil • GEM PA, HNU & AA Arrays • GEM Standard Flex Suite & Positioners • 3-channel Shoulder Array <p>M7000AA (1 unit included in S7525AE) The GEM Posterior Array is designed to provide optimal element geometry for each targeted anatomy by using different element geometries for the cervical-to-thoracic spine transition, thoracic and lumbar spine, and the body.</p> <ul style="list-style-type: none"> • Elements: 40 • Length: 100 cm; Width: 40cm • S/I coverage: 100cm head-first or feet-first • Parallel imaging in all three scan planes • Head-first or feet-first positioning <p>The GEM PA is designed to be used in conjunction with the GEM HNU, GEM AA or GEM Small AA (purchased separately), and the GEM PV Array (purchased separately). The GEM PA is invisible to additional surface coils placed directly on top of the table surface.</p>



Qty	Description
	<p>M7000AB (1 unit included in S7525AE) The GEM Head and Neck Unit includes the head base-plate and three anatomically optimized anterior arrays: the anterior Neuro-vascular array, the anterior cervical spine array, the anterior open-face array.</p> <p>The GEM HNU may be positioned at either end of the GEM Express table to support head-first or feet-first imaging and may remain in place for all body, vascular, spine, and the majority of MSK exams. The GEM HNU base plate supports the patient's head and the Comfort Tilt variable-degree ramp can be positioned under the HNU base plate to elevate the coil to match the patient's head and neck position.</p> <ul style="list-style-type: none"> • Elements: up to 28 combined with PA and AA • Length: 49.5 cm; Width: 38.8cm • Height with NV Array: 36.8 cm • Height with Cervical Array: 33.6 cm • Height with Open Array: 25.7 cm • S/l coverage: up to 50 cm with PA and AA • Parallel imaging in all three scan planes • Head-first or feet-first positioning <p>M7000AD (1 unit included in S7525AE) The GEM Large Anterior Array facilitates chest, abdomen, pelvis, and cardiac imaging. The GEM AA is lightweight, thin and flexible, and pre-formed to conform to the patient's size and shape. The GEM AA permits upper abdomen and pelvis imaging without repositioning the coil.</p> <ul style="list-style-type: none"> • Elements: up to 36 combined with PA • Length: 55.6 cm; Width: 67.3cm • S/l coverage: 54 cm • R/L coverage: up to the full 50 cm FOV • Parallel imaging in all three scan planes • Head-first or feet-first positioning <p>M7000SC (1 package included in S7525AE) and M7005BE (1 unit included in S7525AE) The GEM Flex Suite is a versatile set of high-density 16CH receive arrays designed to provide high quality imaging in a wide range of clinical applications. The high degree of flexibility is particularly advantageous when imaging patients that do not fit the constraints of rigid coils. This standard set includes:</p> <ul style="list-style-type: none"> • Large Flex Array: 23 cm x 70 cm • Medium Flex Array: 23 cm x 48 cm



Qty	Description
	<ul style="list-style-type: none"> • GEM Flex Interface Module P-Connector • Positioning Devices <p>M7000AT (1 unit included in S7525AE) The 3-channel Shoulder Array offers the increased signal-to-noise characteristic of phased-array technology, along with unique sleeve design that delivers exceptional joint-imaging capabilities.</p> <p>Workflow: Express Workflow 2.0 incorporates features designed to streamline and automate exams.</p> <ul style="list-style-type: none"> • In-Room Operator Console and controls • IntelliTouch land-marking • Protocol Libraries & Management Tools • Workflow Manager & Auto Functions • Inline Processing, Networking & Viewing • Start Scan, Stop Scan, Pause/Resume Scan <p>The In-Room Operator Console and dual-sided controls enable interaction with the host computer from the magnet room. The user has direct control or selection of:</p> <ul style="list-style-type: none"> • Display of patient name, ID, study description • Display and entry of patient weight • Display and entry of patient orientation and position • Cardiac gating waveform display • EKG lead confirmation with gating control • Respiratory waveform display • IntelliTouch Landmarking • AutoStart • Display of coil connection and status • Display of table location and scan time • Screen saver <p>Express Exam enables complete control of protocols for prescription, archiving, searching, and sharing. Protocols are organized into two libraries – GE authored and Site authored – and Protocol Notes allow customized notes to be saved with each protocol. ProtoCopy enables a complete exam protocol, from either a library or previous exam, to be shared with a mouse click, and the Modality Worklist provides an automated method of linking exam and protocol information for a patient directly from a DICOM Worklist server.</p>



Qty

Description

The Workflow Manager controls the execution of scan prescription, acquisition, processing, viewing and networking and may automate these steps, when requested by the user. Auto Coil Prescription automatically selects the optimum subset of elements, and AutoStart automatically starts the first acquisition as soon as the technologist exits the magnet room.

Processing steps are automatically completed with Inline Processing once the data have been reconstructed and the images saved into the database. For certain tasks, the user must accept the results or complete additional steps prior to saving the images. These automatic Inline Processing steps can be saved into the Protocol Library.

Inline Viewing allows the user to conveniently view, compare, and analyze images from the Scan Desktop by selecting the desired series from the Workflow Manager.

ScanTools: ScanTools 25.0 and the ES clinical package deliver an expansive portfolio of advanced applications, imaging options, and visualization tools packaged with the system operating software to provide extensive clinical capability and enhanced productivity.

Advanced Neuro Applications:

- PROPELLER 3.0 motion robust radial FSE
- PROPELLER 3.0 FSE-based diffusion imaging
- 3D Cube 2.0 FSE-based 3D imaging
- Dual Inversion 3D Cube imaging
- Spin Echo & Fast Spin Echo Suites
- T1-FLAIR & T2-FLAIR Suite
- Gradient Echo & Fast GRE Suites
- Spoiled Gradient Echo & Fast SPGR Suites
- Echo Planar, EPI FLAIR & fMRI EPI Suites
- EchoPlus with RTFA diffusion imaging
- 3D FIESTA & 3D FIESTA-C steady-state imaging
- 3D BRAVO IR-prepped fast SPGR imaging
- 3D COSMIC modified steady-state imaging
- 2D/3D MERGE multi-echo recombined GRE imaging
- PROBE PRESS single voxel spectroscopy
- BrainSTAT GVF & AIF parametric maps
- Ready Brain automated brain exam prescription



GE Healthcare

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Qty	Description
	<ul style="list-style-type: none"> • DWI Prep <p>Advanced Spine & MSK Applications:</p> <ul style="list-style-type: none"> • PROPELLER 3.0 motion-robust radial FSE • 3D Cube 2.0 FSE-based 3D imaging • Spin Echo & Fast Spin Echo Suites • Gradient Echo & Fast GRE Suites • 3D COSMIC modified steady-state imaging • 2D/3D MERGE multi-echo recombined GRE imaging • High Bandwidth FSE artifact reduction • Spectral Spatial Fat Suppression <p>Advanced Body Applications:</p> <ul style="list-style-type: none"> • Body Navigators pencil-beam diaphragm tracker • PROPELLER 3.0 motion robust radial FSE • Spin Echo & Fast Spin Echo Suites • Gradient Echo & Fast GRE Suites • 3D Cube 2.0 FSE-based 3D imaging • 3D LAVA T1 DCE imaging with Turbo ARC • 2D/3D Dual Echo Fat-Water Imaging • 3D FRFSE MRCP & HYDRO imaging • Enhanced SSFSE single-shot FSE imaging • 2D FS FIESTA steady-state imaging • Multi-phase DynaPlan • SmartPrep automated bolus detection • Fluoro Trigger real-time bolus monitoring • Respiratory Compensation, Gating & Triggering • iDrivePro & iDrivePro Plus real-time imaging • SPECIAL IR Fat Saturation <p>Advanced Vascular Applications:</p> <ul style="list-style-type: none"> • Body Navigators pencil-beam diaphragm tracker • 2D/3D Time-Of-Flight & 2D Gated Time-of-Flight • 2D/3D Phase Contrast & Phase Contrast Cine



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	<ul style="list-style-type: none">• SmartPrep automated bolus detection• Fluoro Trigger real-time bolus monitoring• 3D QuickStep automated multi-station imaging• Magnetization Transfer & Flow Compensation• Peripheral & EKG Gating & Triggering• Respiratory Compensation, Gating & Triggering
	<p>Advanced Cardiac Applications:</p> <ul style="list-style-type: none">• Double-Triple IR-FSE with spectral fat suppression• FastCine FGRE-based, gated multi-phase imaging• 2D FIESTA Cine steady-state, gated multi-phase imaging• 3D FS FIESTA steady-state coronary imaging• iDrivePro Plus real-time inter-active imaging• Blood Suppression• Cardiac Navigator diaphragm tracker• Cardiac Compensation, Gating & Triggering• Respiratory Compensation, Gating & Triggering• Cine Paging (128 images/4 windows @ 30fps)
	<p>Advanced Imaging Tools:</p> <ul style="list-style-type: none">• ARC & Turbo ARC data-based parallel acceleration• ASSET 3.0 image-based parallel acceleration• Real Time Field Adjustment for DWI• Chemical Shift Direction Selection• 2D/3D GradWarp compensation• Acoustic Reduction Technology• IR Prep, DE Prep & T2 Prep• Full Echo Train & Tailored RF• Spectral Spatial Fat Suppression• SPECIAL IR Fat Suppression• ASPiR Fat Suppression• Matrix ZIP 512 & ZIP 1024• 3D Slice 2X ZIP & 4X ZIP• Square Pixel & Rectangular FOV



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Qty	Description
1	<ul style="list-style-type: none"> • No Phase Wrap & No Frequency Wrap • Extended Dynamic Range <p>Advanced Processing & Display:</p> <ul style="list-style-type: none"> • Inline Viewing & Inline Processing • Image Fusion & Image Pasting • SCIC & PURE surface coil intensity correction • Multi-planar Volume Reformat • Interactive Vascular Reformat • ClariView Image Filtering • Compare Mode & Reference Image • Cine Paging (128 images/4 windows @ 30fps) <p>Advanced FuncTool Analysis:</p> <ul style="list-style-type: none"> • ADC maps & eADC mapping • Correlation Coefficient analysis • NEI Negative Enhancement Integral analysis • MTE Mean Time To Enhance analysis • Positive Enhancement Integral analysis • Signal Enhancement Ratio analysis • Maximum Slope Increase analysis • Maximum Difference Function analysis • Difference Function analysis <p>Optima MR450w with GEM Magnet Design</p> <p>To improve the patient experience and provide high image quality, no other component of an MRI system has greater impact than the magnet. The Optima MR450w system features a short, wide bore magnet that delivers a large field of view. The magnet geometry has been optimized to reduce patient anxiety by providing more space in the bore and more exams with the patient's head outside of the magnet. The 50cm field of view provides uniform image quality and can reduce exam times since fewer acquisitions may be necessary to cover large areas of anatomy. Complemented by GE's active shielding technology, the Optima MR450w has very flexible installation specifications to provide easy siting. And with zero-boil-off magnet technology, helium refills are effectively eliminated, thus reducing operating costs and maximizing uptime.</p>



Qty	Description
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Magnet:

- Manufactured by GE Healthcare.
- Operating field strength 1.5T (63.86 MHz).
- Active magnet shielding.
- Zero boil-off Cryogenics.
- Magnet length 145cm.
- Patient Aperture 76 cm.
- Patient Bore Diameter 70cm.
- Patient Bore Length 105cm.
- Maximum Field of View 50 cm x 50 cm x 50 cm.

Magnet Homogeneity: Typical ppm and Guaranteed ppm shown.

- 10cm DSV 0.007 and 0.02.
- 20cm DSV 0.035 and 0.06.
- 30cm DSV 0.11 and 0.18.
- 40cm DSV 0.5 and 0.7.
- 45cm DSV 1.2 and 1.6.
- 50x50x45cm 2.3 and 3.6.
- 50cm DSV 3.3.

DSV = Diameter Spherical Volume. Homogeneity for an elliptical volume of 50cm (x,y) by 45cm (z) dimension volume is shown for reference. Fringe field (axial x radial):

- 5 Gauss = 4.0 m x 2.5 m.
- 1 Gauss = 6.2 m x 3.7 m.

Quiet Technology:

GE has implemented Quiet Technology on critical components of the Optima MR system to reduce

acoustic noise and improve the patient environment. This technology enables full use of the eXtreme Gradient Platform for excellent image quality, while maintaining a safe environment for the patient. The technology

encompasses the gradient coil, RF body coil, and magnet mounting.

1

Optima MR450w 1.5T GEM 32ch System Electronics

Patient expectations of MR have shifted in recent years, as patients have begun to demand a better, more comfortable scanning experience. Increasing the size of the bore is a good first step, but it's only the beginning. The right system should overcome traditional limitations of



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Version #: 2

Qty	Description
	<p>wide-bore MR, offering both excellent images and a user-friendly experience. Patients should be more comfortable during their scan, and clinicians more comfortable in making a diagnosis. All the while, organizations should expect their MR system to help them deliver solid financial returns, maintain a high standard of patient safety, and increase the quality of their care.</p> <p>The Optima MR450w with GEM 1.5T MRI scanner from GE Healthcare offers a range of new functionality, provides a more patient-friendly environment, and is a clinical workhorse system for practices of all sizes and specialties.</p> <p>Volume Reconstruction Engine Architecture: The backbone of any high-channel count system is the reconstruction architecture. The MR450w utilizes the latest multi-core processing engine acquisition to disk technology, and bulk-access memory to deliver the necessary processing power to reconstruct data from high channel count coils. With 36,000 2D FFTs/sec an impressive volume to ensure you are not hampered in image reconstruction speed. The result is reliable and efficient processing MR data that enhances exam productivity.</p>
1	<p>Vibroacoustic Dampening Kit</p> <p>Material in the Vibroacoustic Dampening Kit can significantly attenuate the transmission of gradient-generated acoustic noise through the building structure to nearby areas, including adjacent rooms and floors above or below the MR suite. If this kit is applied during the installation of a new magnet, no additional service charges are necessary. However, installation of the Vibroacoustic Dampening kit under an existing magnet requires special steps. The steps to prepare the site and steps to install, such as modifications to the RF screen room, and other magnet rigging, modifications to the RF screen room, and other finishing work, are not covered in the pricing.</p>
1	<p>Main Disconnect Panel</p> <p>The Main Disconnect Panel safeguards the MR system's critical electrical components, by providing complete power distribution and emergency-off control.</p>
1	<p>Preinstallation Collector and Cable Concealment Kit</p> <p>The Preinstallation Collector delivers to the site in advance of the magnet and main electronic components. This facilitates the later delivery and installation of supporting electronics. The following are the main components in the Preinstallation collector:</p> <ul style="list-style-type: none"> • Heat exchange cabinet for distribution of chilled water. • Primary Penetration wall panel for support of the penetration cabinet. • Secondary Penetration wall panel for support of gradient filters, helium cables, and chilled air and water.



Qty	Description
	<ul style="list-style-type: none"> • Helium cryocooler hose kit. <p>The Cable Concealment Kit accommodates a wide-range of scan room ceiling heights and is designed to provide a clean-look installation by concealing the overhead cabling from view.</p>
1	<p>MR450w Dock and 32-Channel Switch Collector</p> <p>The MR450w Dock and 32-Channel Switch collector provides the interface between the magnet and GEM Express Patient Table with IntelliTouch. Also included is the RF signal switching hardware that routes the input signals to the respective OpTix receivers.</p>
1	<p>Optima MR450w Cable Configuration - A</p> <p>To accommodate various electronic and scan room configurations and sizes, the MR450w has preset lengths of cables and connector kits to speed system installation. This cable collection is compatible with fixed and relocatable building configurations.</p>
1	<p>English Keyboard</p> <p>Required for our operator console. This keyboard is ergonomically designed to keep your staff comfortable even through the longest shifts. The scan control keyboard assembly has an intercom speaker, microphone, volume controls and emergency stop switch.</p>
1	<p>Operator's Console Table</p> <p>Wide table designed specifically for the color LCD monitor and keyboard.</p>
1	<p>1.5T Calibration Phantom Kit</p> <p>This 1.5T calibration kit contains a large volume shim phantom, a daily quality assurance phantom, an echo-planar calibration phantom, and the associated loader shells.</p>
1	<p>Calibration Kit Phantom Holder Cart</p>
1	<p>Standard service package delivered for the warranty period.</p>
1	<p>fMRI Elite Package (on MR console)</p> <ul style="list-style-type: none"> • BrainWave RT (Real-Time) • BrainWave PA (Post Acquisition Analysis) • BrainWave Fusion • BrainWave Advanced Visualization • BrainWave Advanced DTI Tracking • BrainWave Structured Reporting <p>BrainWave RT provides real-time acquisition, processing and display of functional results. It</p>



Qty	Description
	<p>allows a single technologist to acquire, process and display BOLD (Blood Oxygen Level Dependent) fMRI studies acquired with synchronized stimuli. It is comprehensive, equipping you with all the real-time functionality you need, including paradigm control and development, and real-time display of color activation, overlaid on source EPI images. The main features are:</p> <ul style="list-style-type: none"> • 50,000 image storage per series with data acquisition rates up to 20 images per second. • Display of 2D activation maps overlaid over Echo Planar source images in real time. • Multiple 2x2 and 4x4 display. • Optional saving of raw data in research mode for off-line analysis with 200,000 images. <p>BrainWave Post-Acquisition allows you to produce, from raw fMRI data, 3D brain renderings displaying functional activation. Display alternatives for these maps include cross sectional displays, activation Z-maps and composite paradigm displays. The features include the following:</p> <ul style="list-style-type: none"> • Integration into the operator console. • Intuitive graphic user interface for image analysis and display. • Data quality check, motion correction, temporal filtering and spatial smoothing to optimize statistical analysis and mapping. • Multiple regression analysis. • Segmented structural MRI Scan using completely automatic threshold and histogram methods and mathematical morphology techniques. • Rapid retrospective motion correction. • Sophisticated visualization techniques including true volume rendering, light box and orthogonal displays. <p>BrainWave delivers tools for fMRI analysis starting with segmentation and skull stripping of anatomical structures, and data processing to include motion correction and smoothing. Paradigm supports both block single and multi-conditions, as well as event related conditions. Registration of anatomical imaging to fMRI outputs with color overlays and fusion through B/P (fused functional to anatomical maps). Supplied interface supports control between the scanner hardware and the paradigm generation device to control experiments.</p> <p>The DTI Tracking tool enables directionally encoded FA maps to be presented in both grey and color scales for 3 plane presentation. Seed placement is provided in either 3D seeds, inclusion and/or exclusion ROIs as well as multiple ROI formats. The display is provided in real time to control tract settings based on FA, fiber length or angle. The output formats for tracts is via DICOM format.</p> <p>Reporting of cases is provided in simplified format that streamlines the report structure and process while providing a detailed description of experiment methods, output of patient centric feedback (task response, motion plot and activation curves), delivery of color screenshots of results and clinical report fields for summary outcome. The export format provides</p>



Qty	Description
1	<p data-bbox="532 422 1485 485">user-defined threshold DICOM format activation maps for reformation and display for surgical navigation or PACS review.</p> <p data-bbox="532 512 760 537">Neuro Expert Package</p> <ul data-bbox="548 552 685 688" style="list-style-type: none"> <li data-bbox="548 552 646 577">• eDWI <li data-bbox="548 590 652 615">• SWAN <li data-bbox="548 627 623 653">• DTI <li data-bbox="548 665 685 690">• FiberTrak <p data-bbox="532 711 1485 936">The eDWI application includes the acquisition sequence and post-processing tools. It is designed to provide high signal-to-noise-ratio diffusion images of the brain and liver with short-acquisition time. Its multi-B feature is designed to provide measurement of apparent diffusion coefficient (ADC) map with reduced effect of perfusion. In addition, "3 in 1" B value combining technique, applies diffusion weighting to all three gradients simultaneously, helping improve sensitivity. Its smart NEX feature significantly reduces the acquisition time. Inversion recovery has been deployed to provide robust fat suppression.</p> <p data-bbox="532 957 1485 1115">SWAN is a volumetric 3D acquisition technique that is sensitive to differences in susceptibility between different tissues. This technique acquires multiple-echoes at different echo times to highlight regions with increased T2* (susceptibility-induced) decay. Utilizing multiple-echoes, SWAN generates images with higher SNR when compared with similar techniques that rely on a single echo.</p> <p data-bbox="532 1136 1485 1325">Diffusion Tensor Imaging (DTI) creates contrast based on the degree of diffusion anisotropy in cerebral tissues such as white matter. The DTI method expands Echo planar imaging capability to include diffusion imaging sequence using motion sensing gradient pulses along 6 to 155 orientations in order to generate tensor component images. With the Express Workflow, fractional anisotropy (FA) and Volume Ratio Anisotropy (VRA) maps may be automatically created after image acquisition without any user intervention.</p> <p data-bbox="532 1346 1485 1470">FiberTrak is a host computer post processing tool expands the capability of Diffusion Tensor imaging by generation of 2D color orientation maps, 2D eigenvector maps, and 3D tractography maps from the diffusion tensor image data. The resulting datasets may be easily saved and archived for later use.</p>
1	<p data-bbox="532 1499 734 1524">Neuro Elite Package</p> <ul data-bbox="548 1549 698 1654" style="list-style-type: none"> <li data-bbox="548 1549 659 1575">• 3D ASL <li data-bbox="548 1587 698 1612">• 3D PROMO <li data-bbox="548 1625 656 1650">• FOCUS <p data-bbox="532 1675 1485 1734">3D ASL utilizes water in arterial blood as an endogenous contrast media to help visualize tissue perfusion and provide quantitative assessment of cerebral blood flow (CBF) in ml/100 g/min.</p>



Qty	Description
	<p>The quantitative CBF maps can be generated and stored in DICOM format.</p> <p>3D PROMO provides a real time 3D navigator based motion correction algorithm correcting for the six rigid body terms where re-acquisition of severely corrupted data provides robust, high quality, motion free, 3D outcomes. 3D PROMO is compatible with both T2 and T2 FLAIR Cube acquisitions.</p> <p>FOCUS delivers a highly efficient method for increasing the resolution in Single Shot DW EPI sequences. The outcome delivers robust high resolution results while removing artifacts typically induced from motion, image backfolding or unsuppressed tissue. In addition, with the higher efficiency of the application, the reduced field of view imaging leads to a reduction in blurring that translates into an overall improvement to the image quality result. The sequence utilizes 2D selective excitation pulses in DW-EPI acquisitions to limit the prescribed phase encoded field of view.</p>
1	<p>MSK Elite Package</p> <ul style="list-style-type: none"> • MAVRIC SL • Cartigram <p>MAVRIC SL is a new advanced magnetic resonance imaging technique for imaging soft tissue and bone near MR conditional metallic devices. MAVRIC SL is designed to greatly reduce susceptibility artifacts, compared to conventional fast spin echo techniques, and is suitable for use on all patients cleared for MR exams.</p> <p>Cartigram is a non-invasive imaging method for early detection of osteoarthritis. It quantifies the T2 relaxation of knee cartilage and can overlay the quantified parametric maps over high resolution images for clear visualization of the anatomy.</p>
1	<p>Vascular Expert Package</p> <ul style="list-style-type: none"> • Inhance Suite 2.0 • TRICKS • Flow Analysis <p>The Inhance Suite application consists of several sequences designed to provide high-resolution images of the vasculature with short-acquisition times and excellent vessel detail. These sequences include: Inhance Inflow IR: Inhance Inflow IR is an angiographic method, which has been developed to image renal arteries with ability to suppress static background tissue and venous flow. This sequence is based on 3D F-ESTA, which improves SNR, as well as produce bright blood images.</p> <p>Inhance 3D Velocity: Inhance 3D Velocity is designed to acquire angiography images in brain and renal arteries with excellent background suppression in a short scan time. By combining a volumetric 3D phase contrast acquisition with parallel imaging, efficient k-space traversal, and</p>



Qty	Description
	<p>pulse sequence optimization, Inhance 3D Velocity is capable of obtaining complete Neurovascular imaging in 5-6 minutes.</p> <p>Inhance 3D Deltaflow is a 3D non-contrast enhanced MRA application for peripheral arterial imaging. Inhance 3D Deltaflow is based on the 3D Fast Spin Echo technique and it utilizes the systolic and diastolic flow differences to help generate arterial signal contrast. A subtraction of the systolic phase from the diastolic phase images results in arterial only images, with venous and background suppression.</p> <p>Inhance 2D Inflow: The Inhance 2D Inflow pulse sequence is designed to acquire angiography images of arteries, which follow almost a straight path, i.e. femoral, popliteal, carotid arteries, etc.</p> <p>TRICKS provides high resolution multi-phase 3D volumes of any anatomy for fast accurate visualization of the vasculature. With segmented complex data recombination, TRICKS can accelerate 3D dynamic vascular imaging without compromising spatial detail. TRICKS also uses elliptic centric data collection for optimized contrast resolution and auto-subtraction for optimized background suppression. The result is time course imaging that does not require timing or triggering, provides high temporal and high spatial resolution, and enables the extraction of optimum phases of data. As a result, TRICKS enables reliable, high quality vascular imaging.</p> <p>Flow Analysis automates the review and analysis of gated phase contrast magnetic resonance (MR) images and generates a report for the referring physician. This version is available on the host computer.</p> <p>Flow Analysis has an automated edge detection algorithm that propagates through all the phases of the cine phase contrast series.</p> <p>The flow analysis measurement tab displays a summary chart of peak velocities in addition to individual velocity results from each phase of the cardiac cycle. A background correction may also be applied which is particularly suited to slow flowing fluid such as cerebrospinal fluid.</p> <p>Customizable Macros are a feature of Flow Analysis 4.0. These Macros allow the user to quickly write a report specific to the patient being assessed with simple mouse clicks. The macros are customizable to reflect the language used by the reporting physician.</p> <p>Flow Analysis offers the capability to archive reports or cine images as seen in a DICOM format so they may be viewed on any DICOM viewer.</p>
1	<p>GE MR Heat Exchanger Manual Cryogen Compressor Water Bypass Option</p> <p>Add a level of magnet protection with a Manual Cryogen Compressor Bypass. In case of a power failure, you can cycle municipal or facility water through the cryogen compressor and reduce cryogen loss and reduce the likelihood of quenching.</p>



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FEATURES AND BENEFITS

- Easy to install and simple to use
- Helps switch over water supply to your cryogen compressor in the event of loss of power to reduce cryogen loss
- Includes fluid supply pressure gauge, temperature gauge and flow rate meter for easy verification of operation
- Manual operation reduces unintentional switch-overs and coolant dumping during brown-outs and supply power glitches

COMPATIBILITY

Must be used with a GE MR Heat Exchanger:

- E8911CA
- E8911CB
- E8911CC
- E8911CD
- E8912CA
- E8912CB
- E8912CC
- E8912CD

NOTES:

- Item is NON-RETURNABLE and NON-REFUNDABLE

1

GE Optima MR450w Heat Exchangers
- 49kW (20Tons)

Cooling for your GE Healthcare MR system has never been so easy. GE Healthcare has partnered with the Glen Dimplex Group, a world leader in cooling systems, to offer heat exchangers designed to meet the needs of your MR System. Now you can look to GE Healthcare for your entire MR purchase and support.

This heat exchanger is highly reliable and the only unit verified to perform with the new



Qty	Description
	<p>platform of GE Healthcare MR systems. As part of your integrated GE Healthcare solution, you'll work with a single contact throughout the whole installation. A Project Manager of Installation will help with building layout, room designs, delivery and installation - every step until your system is ready to scan. Our team will work seamlessly with architects, contractors and your internal team to help ensure timely, cost-effective completion.</p> <p>Once your cooling system is running, you'll get fast, highly-skilled service support managed through GE Healthcare - with the same quality and response time you expect from your MR system.</p> <p>FEATURES AND BENEFITS</p> <ul style="list-style-type: none"> o Designed to provide stable fully dedicated cooling for your MR system's needs o Water/glycol outdoor-air-cooled heat exchangers to support your highest exam volumes and your full range of diagnostic procedures o Redundant fluid pumps with automatic switchover let you keep operating with no loss of cooling even if one pump goes down o Quad compressor, dual tandem refrigeration circuit design saves on energy while your system smoothly transitions through the 10% to 100% heat load capacity cycles of patient scanning and idling o Quiet operation between patient exams and overnight - ideal for facilities in residential areas o Comes with installation support.



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	<p>installation visits, preventative maintenance visit and 1 full year of parts and labor warranty</p> <ul style="list-style-type: none"> o Installation support includes: support through GE's Project Manager of Install, GE's Design Center, technical support from the Glen Dimplex company, two (2) installation visits o Comprehensive and quality service rapidly delivered through our CARES service solution o 65 gallons of 100% glycol concentrate for complete system filling and diluting o Wall mounted remote display panel provides the ability to monitor the system's operation and indicates possible system errors o Filter kit with flow meter helps to ensure purity of water prior to entry to the MR system o Highly recommended that Vibration Isolation Spring Kit (E8911CJ) be added for systems that will be roof top mounted <p>SPECIFICATIONS</p> <ul style="list-style-type: none"> o Net Cooling Capacity: 49 kW / 20 Ton o Maximum Coolant Flow: 35 gpm (132 l/m) o Coolant Outlet Temperature: 48 F (8.9 C) o Coolant Temp Stability: E 1.8 F (E1.0 C) o Max Coolant Pressure : 70 Psi (4.8 Bar) o Refrigerant: R407C o Ambient Temp Range: -20 to 120 F (-30 to 50 C) o Condenser Air Flow (Approx): 18,000 Cfm o Tank Capacity: 100 gal (378 l) o Flow Meter Range: 4-40 gpm o Filters: 50 micron cartridge filters o Supply Voltage: 460v / 3 phase / 60 Hz



Qty	Description
	<ul style="list-style-type: none"> o Coolant Connections: 2" NPTF o Overall Size (L x W x H) 44" x 136" x 84.5" <p>COMPATIBILITY:</p> <ul style="list-style-type: none"> o GE MR450w or MR System <p>NOTES:</p> <ul style="list-style-type: none"> o Item is NON-RETURNABLE and NON-REFUNDABLE
1	<p>Medrad Spectris Solaris EP MR Injection System</p> <p>Medrad Spectris Solaris EP MR injector for use use in all MR scanner field strengths up to and including 3.0T. Optimized touch-screen for fewer keystrokes. KVO (keep vein open) allows patient to be prepared before beginning the scan. Larger 115 ml saline syringe for longer KVO or multiple flushes. Includes cables and starter kit...E</p> <p>NOTE: GE is responsible for unpacking, assembly, and installation of equipment. Medrad will be available for technical assistance by phone at (412)767-2400. An additional charge will apply for on-site installation assistance. Medrad will be responsible for operational checkout, final calibration, in-service of the equipment, and initial applications training. Please contact the local Medrad office two weeks in advance of installation.</p>
1	<p>Magnacoustics Genesis ULTRA Communication & Music System</p> <p>The Magnacoustics Genesis ULTRA is the only MRI Communication & Music System to interface directly with GE's MRI hardware and software. This allows software driven Auto Voice Commands from GE's computer to be delivered directly into the patient's ears for breath-hold sequences. This same interface allows the Technologist to talk directly to the patient through the console Mic even while the scan is in progress. The Genesis ULTRA also features an exclusive Patient Ready Signal. By simply depressing a small button on the handheld control an audible and visual signal is transmitted to the Technologist indicating the</p>



Qty	Description
1	<p>patient's readiness for the scan to begin. This simple step streamlines the breath-hold exam which amounts to approximately 30% of all exams. Patient Handheld Volume and Media Selection Controls with Voice Feedback interface with an FM/AM stereo, CD player, and iPod interface. This distracts even the most apprehensive of your patients by allowing them to be in control of their own environment. Additionally, the Auto Gain feature automatically raises and lowers the volume level for the patient based on the Sound Pressure Level of the MRI. Magnacoustics also provides the only patented 8-driver transducer that provides the highest sound directly to the patients ears with the Magnacoil Headset System. This patented system includes an earbud-style headset with the MagnaPlug (replaceable earplug) that provides 29dB of attenuation and complies with GE Healthcare MR Safety Guide Operator Manual. The Genesis's ULTRA's See-In-the-Dark GUI Electroluminescent Backlit Technologist Control Unit enhances operation in the normally low-lit MRI environment allowing the Technologist to operate the entire system with the touch of a button. The Genesis ULTRA includes an integral interface for fMRI with built-in input for audio stimulation and output for responses...E</p> <p>TiP Discovery and Optima Family Succeed Advance</p> <p>This program is designed for CURRENT GE customers WITH HD/HDx experience who purchase the Discovery or Optima system. Program content focuses on features and differences between HD/HDx and Discovery or Optima. Blended content delivery and design promotes</p>



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learner retention and more efficient and effective advanced skill development. Extended TVA support ensures learners maintain performance over the long term.

- 1 Discovery or Optima HQ Class/session (One class is equivalent to one session.)
- 17 onsite days
- 4 hours TVA

This training program must be scheduled and completed within 24 months after the date of product delivery.

Quote Summary:

Total Quote Net Selling Price **\$1,386,597.04**

(Quoted prices do not reflect state and local taxes if applicable. Total Net Selling Price includes Trade In allowance, if applicable.)

ADDENDUM TO QUOTATION

This Addendum to Quotation(s) ("Addendum"), effective as of last signature date indicated in the signature area of this Addendum ("Effective Date") is entered into by and between the Customer and the GE Healthcare business ("GE Healthcare"), each as identified on the GE Healthcare quotation(s) which are listed below and incorporated herein by reference (each, a "Quotation" and, collectively, the "Quotations"):

Quotation Number	Quotation Date
PR3-C64025 v2	Monday, June 20, 2016

WHEREAS, GE Healthcare has provided Customer with the Quotation(s) concerning GE Healthcare's desire to sell to Customer, and Customer's agreement to purchase from GE Healthcare, certain GE Healthcare products and/or services listed on each Quotation in accordance with the terms and conditions set forth on each Quotation (each, an "Agreement" and collectively, the "Agreements"); and

WHEREAS, the parties now desire to amend and/or supplement the Agreement(s) in accordance with the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the premises and the representations and mutual undertakings hereinafter set forth, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree to the foregoing and as follows:

- Each Agreement is revised as set forth in Exhibit A, which is attached hereto and incorporated herein by reference.
- Customer's form of payment is as follows:

Initial to indicate form of payment: (If potential for a lease exists, GE HFS or otherwise, select lease) <input type="checkbox"/> Cash* <input type="checkbox"/> Lease <input type="checkbox"/> HFS Loan If leasing please provide name of finance company below: <hr/> *Selecting cash declines option for GE HFS financing

Entire Agreement. In the event of any conflict between the terms and conditions of this Addendum on the one hand, and each Agreement on the other hand, the terms and conditions of this Addendum shall govern and control. Except as otherwise expressly provided in the Addendum, the parties agree that all provisions of each Agreement are hereby ratified and agreed to be in full force and effect and are incorporated herein by reference. This Addendum and each Agreement contain the entire agreement among the parties related to the subject matter herein and all prior proposals, discussions and writings by and among the parties and relating to the subject matter herein are superseded hereby and thereby.

In WITNESS WHEREOF, Customer and GE Healthcare have caused this Addendum to be executed by their duly authorized representatives as of the Effective Date.


Carolina Spine & Neurosurgery Center	GE Healthcare
Signature: 	Signature:
Print Name: Jeff Pigg	Print Name:
Title: Practice Director	Title:
Date: 6/29/16	Date:

EXHIBIT A

Each Agreement is revised as follows:

- Section 1.1.1 ("Cancellation and Payments") of the GE Healthcare Product Terms and Conditions (the "GE Healthcare Product Terms") is amended by adding the following to such section: "Except for Healthcare IT Products, Customer may terminate the Agreement(s), without penalty, by providing written notice to GE Healthcare up to thirty (30) days prior to the scheduled delivery date of any portion of the order."

EXHIBIT C
CAPITAL COST FORM

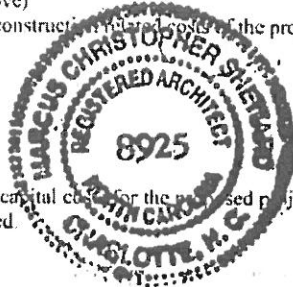
PROJECT CAPITAL COST

Project Name: Carolina Spine - MRI Replacement
 Proponent: Carolina Spine and Neurosurgery Center, P.A.

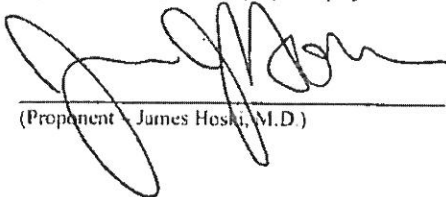
- A. Site Costs
- (1) Full purchase price of land \$ N/A
 #Acres _____ Price per Acre \$ _____
 - (2) Closing Costs \$ _____
 - (3) Site Inspection and Survey \$ _____
 - (4) Legal fees and subsoil investigation \$ _____
 - (5) Site Preparation Costs [Include]
 - Soil Borings
 - Clearing and Grading
 - Roads and Parking
 - Sidewalks
 - Water and Sewer
 - Excavation and Backfill
 - Termite Treatment
 - (6) Sub-Total Site Preparation Costs \$ _____
 - (7) Other (Specify) \$ _____
 - (7) Sub-Total Site Costs \$ _____
- B. Construction Contract (See Attached Breakout (materials and labor))
- (8) Cost of Materials [Include]-estimated-\$113,555.00
 - General Requirements -\$68,937.00
 - Concrete/Masonry/Metals-\$22,113.00
 - Woods, Doors & Windows Finishes-\$42,409
 - Thermal & Moisture Protection-\$27,140.00
 - Equipment/Specialty Items-\$27,000.00
 - Mechanical/Electrical-\$111,064.00
 - (9) Sub-Total Cost of Materials \$ _____
 - (9) Cost of Labor \$ _____
 - (10) Other \$ _____
 - (11) Sub-Total Construction Contract \$ 412,218.00
- C. Miscellaneous Project Costs
- (12) Building Purchase \$ _____
 - (13) Fixed Equipment Purchase Lease \$ _____
 - (14) Movable Equipment Purchase Lease \$ _____
 - (15) Furniture \$ _____
 - (16) Landscaping \$ _____
 - (17) Consultant Fees
 - Architect/Engineering Fees \$ _____
 - Legal Fees \$ _____
 - Market Analysis \$ _____
 - Other \$ _____
 - Total Consultant Fees \$ _____
 - (18) Financing Costs \$ Not Applicable
 (e.g. Bond, Loan, etc.)
 - (19) Interest During Construction \$ Not Applicable
 - (20) Other (Contingency) \$ _____
 - (21) Sub-Total Miscellaneous \$ _____
- D. Total Capital Cost of Project (Sum A-C above) \$ 412,218.00

I certify that to the best of my knowledge, the above construction related costs of the proposed project named above are complete and correct.


 (Signature of Licensed Architect or Engineer)



I assure that, to the best of my knowledge, the above capital costs for the proposed project are complete and correct and that it is my intent to carry out the proposed project as described.


 (Proponent James Hoski, M.D.)

 (President)

Carolina Spine-Equipemnt RM Addition-Quote#BS16-565-estimate-Rev-01



Quote#: BS16-565-Rev-01

Division #. Item # / Description	% of Project	Total
00 - PROCUREMENT (A&E)	9.41%	\$38,776.52
01 - GENERAL REQUIREMENTS	15.83%	\$65,274.52
02 - EXISTING CONDITIONS	0.00%	\$0.00
03 - CONCRETE	3.09%	\$12,723.55
04 - MASONRY	0.00%	\$0.00
05 - METALS	4.70%	\$19,388.26
06 - CARPENTRY	1.32%	\$5,452.95
07 - MOISTURE PROTECTION	9.01%	\$37,140.64
08 - DOORS, WINDOWS, GLASS	0.84%	\$3,472.58
09 - FINISHES	16.72%	\$68,936.78
10 - SPECIALTIES	0.00%	\$0.00
11 - EQUIPMENT	0.00%	\$0.00
12 - FURNISHINGS	0.00%	\$0.00
13 - SPECIAL CONSTRUCTION	12.13%	\$49,985.36
14 - CONVEYING SYSTEM	0.00%	\$0.00
21 - FIRE SUPPRESSION	1.27%	\$5,219.08
22 - PLUMBING	1.23%	\$5,089.42
23 - HVAC	15.12%	\$62,345.38
25 - CONTROLS	0.00%	\$0.00
26 - ELECTRICAL	6.91%	\$28,476.51
27 - COMMUNICATIONS	0.28%	\$1,151.18
28 - SECURITY	0.81%	\$3,332.36
31 - EARTHWORK	1.32%	\$5,452.95
32 - EXTERIOR IMPROVEMENTS	0.00%	\$0.00
33 - UTILITIES	0.00%	\$0.00
Total:	100.00%	\$412,218.00