ELEKTA, INC
Versa HD Delivery System

Prepared For:
JOHNS HOPKINS HOSPITAL
VAULT B192
BALTIMORE, MARYLAND

THIS SITE PLAN IS PROVIDED FOR CUSTOMER CONVENIENCE, AND IS NOT TO BE CONSTRUED AS AN ARCHITECTURAL PLAN OR A CONSTRUCTION DOCUMENT.
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PROJECT: ONC13098

Sheet Description
Beam Applicator Storage AD1 (1)
Fascia Wall Details / Laser Details S3 (12)
Floor Pit Details S2 (11)

JHH - B192
JOHNS HOPKINS HOSPITAL
401 N. BROADWAY
WEINBURG L2-1
BALTIMORE, MD 21231

J. Blackwell
November 22, 2013

ONC13098
2012-9165-SC v. 3
April 27, 2012

December 9, 2013

1 01/08/13 Revised architectural sheets A1 & E2.
(JAB)
Equipment Layout
Johns Hopkins Hospital
Baltimore, MD - Rev. 01.08.2014
Minimum Finish Ceiling Height: 8'-6"

Scale: 1" = 20'
VERSAL HD DELIVERY SYSTEM

SPACE DIAGRAM

PLAN VIEW

FRONT VIEW

SIDE VIEW

NOTE: THE FASCIA OPENING IS TO BE CENTERED FROM ISOCENTER.

NOTE: IF THE AREA BEHIND THE FASCIA WALL (GANTRY ROOM) WILL NOT BE FINISHED WITH STUD AND DRYWALL, THE WALLS MUST BE SEALED AND PAINTED WHITE FOR DUST CONTAINMENT AND LIGHT REFLECTION.
Linear Accelerator Drive with PCDU Power Supply Configuration

Primary Circuit Breaker: 3 Pole, 70 Amps (480VAC)
Secondary Circuit Breaker: 3 Pole, 70 Amps (415VAC - Part of PCDU)

Recommended Conductor Sizes for 0.5% Impedance of Branch:
- #2/0AWG 365ft
- #1/0AWG 290ft
- #4/0AWG 119ft 474ft 634ft
- #3/0AWG 94ft 376ft 503ft
- #4AWG 182ft
- #2AWG 75ft 298ft 399ft
- #1/0AWG 59ft 236ft 316ft
- #2AWG 37ft 149ft 199ft
- #4AWG N/A 118ft 158ft
- #6AWG N/A 74ft 99ft

Electrical Specifications:
- Input Power: 480 Volts, 60 Cycle, Instantaneous 48.11A
- Maximum Load: 24.0V
- Maximum Ph-Ph: 0.320Ω
- Maximum Power Demand: 40KVA
- Primary Circuit Breaker: 3 Pole, 70 Amps (480VAC)
- Recommended Conductor Sizes, as listed in the table above, assume a circuit breaker to X-ray generator distance of 0.5% between the two. Refer to project specific conductor size tables for full details. Recommended conductor sizes are based on equipment power requirements and include the impedance of the power source. The facility source impedance is well below the 0.5% limit.

Note:
- Linear Accelerator or with PCDU power supply configuration.
- The following devices provide a high impedance, non-linear voltage regulation:
  - Power Conditioners
  - Voltage Regulators
  - Static UPS Filters
  - Series Filters
  - Motorized Load
- Power feeds to air conditioning, elevators, outdoor lighting, and other frequently switched or motorized loads. Such loads can cause waveform distortion and voltage fluctuations that can affect equipment performance.

Electrical System Requirements:
- Line Impedance is the combined resistance and inductance of the electrical system, and includes the impedance of the power source. The facility source impedance is well below the 0.5% limit.
- Power quality guidelines and recommended conductor sizes are based on equipment power requirements and include the impedance of the power source. The recommended conductor sizes are based on equipment power requirements and include the impedance of the power source. The recommended conductor sizes are based on equipment power requirements and include the impedance of the power source.
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Electrical System Design Notes:
- Electrical power distribution feeding the radiation therapy equipment must be separate from the electrical system, and includes the impedance of the power source. The facility source impedance is well below the 0.5% limit.
- The minimum conductor size is based on total line impedance and NEC requirements. The ELEKTA PCDU provides comprehensive TVSS protection.

Electrical Requirements Notes:
- Electrical power distribution configuration for radiation therapy equipment shall comply with the following:
  - Nominal voltages per ANSI C84.1
  - Phase conductors to be same size as phase conductors between phases
  - Neutral and ground conductors to be the same size as phase conductors
  - Not to exceed 1% max. phase to phase voltage unbalance
  - On-site preparation for use of the X-ray equipment:
    - Ensure primary power source is adequate and consistent with the power requirements of the equipment.
    - Ensure that the electrical system is configured to meet the power requirements of the equipment.
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Note:
- The recommended conductor sizes, as listed in the table above, assume a circuit breaker to X-ray generator distance of 0.5% between the two. Refer to project specific conductor size tables for full details.
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**Electrical Plan**

Johns Hopkins Hospital  
Baltimore, MD - Rev. 01.08.2014

Minimum Finish Ceiling Height: 8'-6"
**SUPPLY RETURN**

**TYPICAL GAUGE LOCATION/PIPING LAYOUT**

**VIEW OF REAR WALL THROUGH UNIV**

**ELEVATION - NOT TO SCALE**

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**NOTES**

- INSTALL CHECK VALVE ON RETURN LINE TO CHILLER, ISOCENTER.
- INSTALL AUTOMATIC SPOTS ON CHILLED WATER LINES.
- FLOWMETERS REQUIRED.
- TEMPERATURE GAUGE ON INPUT LINE.
- PRESSURE GAUGES ON INPUT AND RETURN LINES.
- INSTALL CHECK VALVE ON RETURN LINE TO CHILLER, ISOCENTER.
- INSTALL AUTOMATIC SPOTS ON CHILLED WATER LINES.
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**FILTER**

- WATER FILTER (100 MICRON FILTRATION MINIMUM). WATER FILTER MAY BE LOCATED INSIDE VAULT.
- WATER FILTER (100 MICRON FILTRATION MINIMUM). WATER FILTER MAY BE LOCATED OUTSIDE VAULT.

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**FLOW GAUGES MUST BE INSTALLED ON THE LINES**

- PRESSURE GAUGES ON INPUT AND RETURN LINES.
- INSTALL CHECK VALVE ON RETURN LINE TO CHILLER, ISOCENTER.
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**MATERIALS**

- FILTER
- GAUGE
- PRESSURE
- TEMPERATURE
- FLOW GAUGES

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**INSTALLATION**

- 120 VAC Bypass if Req'd to Run Mech. Open, Solenoid Valve
- Mech. Closed
- Electrically Open

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**ACCELERATOR**

- FROM LOCATED 36" A.F.F.
- VALVES
- SHUT-OFF
- BALL TYPE
- 1" HOSE BARBS
- OUTSIDE VAULT

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**CHILLED WATER SUPPLY**

- CITY WATER / FACILITY
- TYPICAL GAUGE LOCATION/PIPING LAYOUT

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**TYPICAL WATER CONNECTIONS AND LOOPED TOGETHER AT 36" ABOVE FLOOR FOR TESTING**

- INSTALLATION
- SHUT-OFF
- BALL TYPE
- MANUAL

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**NOTE:**

- FOLLOW LOCAL CODES REGARDING BACKFLOW PREVENTERS AND SHUT-OFF VALVES
- INSTALL AUTOMATIC SPOTS ON CHILLED WATER LINES
- NO WATER CONTROL BOX
- WCB, ALONG WITH IN-LINE FILTERS.
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**PROJECT: ONC13098**

FLOOR GRAYTHICKNESS: 80mm (3 1/4")

**SECTION THROUGH A - B**

**SECTION THROUGH T - G**

FLOOR GRAYTHICKNESS: 80mm (3 1/4")

**CONCRETE FINISH DETAIL**

1. FINISHED SURFACE DIMENSIONS (Length x Width) OF PIT CONCRETE WORK SHALL BE WITHIN A TOLERANCE OF ±12mm (±1/2")

2. MINIMUM THICKNESS OF CONCRETE IN PIT FLOOR AND UNDER LINEAR ACCELERATOR SHALL BE A MINIMUM OF 220mm (8 1/16") THICK REINFORCED CONCRETE, CREATED WITH A CONTINUOUS FLOOR - NOT LAYERED

3. CONCRETE FLOOR IN PIT AND UNDER LINEAR ACCELERATOR SHALL BE LEVEL AND FREE FROM SMOOTH TO WITHIN ±5mm (±1/16")

4. PIT EDGES SHALL BE MADE STEEL ANGLE, 2" x 2" x 1/4" WEB THICKNESS.

5. PIT COVERS ARE PROVIDED BY ELEKTA. CUSTOMER/CONTRACTOR SHALL PROVIDE COVER TO FIT PIT EDGES.

6. CUSTOMER/CONTRACTOR SHALL SUPPLY AND FIT FLOORING MATERIAL TO THE PIT COVERS.

**Pit Details**

2" [50]

**1/2" = 1'-0"**

**Table Anchor Detail**

**Concrete Finish Detail**
SUPPORT NOTES:

1. Gaps between Elekta and contractor's fascia to be closed with removable filler strip, supplied and installed by customer/contractor after equipment installation.

2. Contractor's fascia is to be self-supporting.

3. Contractor to supply I-beam lifting girder (7000 lbs SWL) and a manual chainfall with trolley (2000 lbs SWL) that will be used for installation and future service needs. Riggers will supply a 7000 lb trolley and chainfall for their part of the installation. If it is impossible to construct such a device, the contractor must supply, on a permanent basis, a portable aluminum frame with a chainfall and trolley (using 7000 lbs SWL) for use during installation and service.

4. Ceiling below I-beam lifting girder shall be removable to allow free access to the chain host. Chain host must be able to move unrestricted along the entire length of the girder.

5. If the area behind the fascia wall (gantry room) will not be finished with stud and drywall, the walls must be sealed and painted white for dust containment and light reflection.

NOTE:

- The fascia opening is to be centered from isocenter.

APPROVED SUPPLIERS:

- SPANCO, INC.
  - FOR NEAREST SPANCO DEALER, CALL:
  - TEL: 800.869.2080
  - MODEL # 1ALU0808B

- US CRANE
  - PO BOX 46104
  - CINCINNATI, OH 45246
  - TEL: 800.466.8224
  - FAX: 513.671.1956
  - MODEL # A28-8G

(Does not include Chainfall and Trolley)

NOTE:

- If an I-beam lifting girder is used, a certificate of the load test to 7000 lbs must be provided. Also, contractor must supply an aluminum plate, 24" x 24" x 1/4" thick, for mounting of overhead laser.
SUGGESTED BEAM APPLICATOR STORAGE SCHEME

EXAMPLE - APPLICATOR & BLOCK STORAGE

SUGGESTED SHADOW BOX TRAY STORAGE