APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP – 0051-10

Check whether application is: NEW [ ] RENEWAL [X]

1.0

GE Healthcare — *Manufacturer*

Tom Farnow — *Manufacturer's Technical Representative*

2801 Connery Way, Suite B, Missoula, MT 59808 — *Mailing Address*

(406) 541-EASE (3273) — *Telephone*

E-mail Address

2.0

Precision RXi R&F; Precision 500D R&F; Discovery XR650 X-Ray; Discovery XR656 X-Ray Optima XR640 X-Ray; Proteus XR/a X-Ray; — *Product Name*

X-Ray, Radiography and Fluoroscopy Systems — *Product Type*

SEE ATTACHMENTS 1 – 4

Product model No (List all unique product identification numbers and/or serial numbers)

General Description: Multi-component X-Ray systems and Radiography & Fluoroscopy (R/F) systems used for medical imaging.

3.0

EQUIPMENTANCHORAGE.COM — *Applicant Company Name*

JONATHAN ROBERSON, S.E. — *Contact Person*

5877 Pine Ave, Suite 210, Chino Hills, CA. 91709 — *Mailing Address*

(406) 541-EASE (3273) — *Telephone*

jon@easeco.com — *E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

Signature of Applicant

March 23, 2011 — *Date*

SENIOR ENGINEER — *Title*

EQUIPMENTANCHORAGE.COM — *Company Name*

Registered Design Professional Preparing the Report

4.0

1. Department of Civil Engineering, University of Nevada, Reno 2. EQUIPMENTANCHORAGE.COM	
Company Name	
1. Gokhan Pekcan, Ph.D. 2. Jonathan Roberson, S.E.	1. N/A 2. S4197
Contact Name	*California License Number*
1. Mail Stop 258, Reno, NV 89523 2. 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709	
Mailing Address	
1. 775-784-4512 2. 909-606-7622	1. pekcan@unr.edu 2. jon@easeco.com
Telephone	*E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

EQUIPMENTANCHORAGE.COM	
Company Name	
Jonathan Roberson, S.E.	S4197
Contact Name	*California License Number*
5877 Pine Ave, Suite 210, Chino Hills, CA. 91709	
Mailing Address	
909-606-7622	jon@easeco.com
Telephone	*E-mail Address*

Anchorage Pre-Approval

6.0

☐ *Anchorage is pre-approved under OPA-*

(Separate application for anchorage pre-approval is required)

☒ Anchorage is not Pre-approved ***SEE ATTACHMENTS***

Certification Method

70. ☒ *Testing in accordance with:* ☒ *ICC-ES AC-156* ☐ *Other (Please Specify):*

☐ *Analysis*

☐ *Experience data*

☐ *Combination of Testing, Analysis, and/or Experience Data (Please Specify):*

Testing Laboratory (if applicable)

8.0

1. Department of Civil Engineering, UNR 2. Environmental Testing Laboratory, Inc.	1. Gokhan Pekcan, Ph.D. 2. Brady Richard
Company Name	*Contact Name*
1. Mail Stop 258, Reno, NV 89523 2. 11034 Indian Trail, Dallas, TX 75229-3513	
Mailing Address	
1. 775-784-4512 2. 972-247-9657	pekcan@unr.edu brady@etldallas.com
Telephone	E-mail:

9.0 ***Approval Parameters***

Design in accordance with ASCE 7-05 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = ***SEE ATTACHMENTS***

S_{DS} (Spectral response acceleration at short period) = ***SEE ATTACHMENTS***

a_p (In-structure equipment or component amplification factor) = ***SEE ATTACHMENTS***

R_p (Equipment or component response modification factor) = ***SEE ATTACHMENTS***

I_p (Importance factor) = ***1.5***

z/h (Height factor ratio)=***1.0***

Equipment or Component fundamental period(s) = ***SEE ATTACHMENTS***

Building period limits (if any) = ***NO LIMIT***

Overall dimensions and weight (or range thereof) = ***SEE ATTACHMENTS***

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) =

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient)=1.0

Ω_0 (System overstrength factor) =1.0

C_d (Deflection amplification factor) =1.0

I_p (Importance factor) =1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = *Sec*

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: ☐ Yes ☒ No

10.0 ***List of attachments supporting the special seismic certification of equipment or components:***

☒ *Test Report* ☐ *Drawings* ☐ *Manufacturer's Catalog*

☐ *Calculations* ☒ *Others (Please Specify):* ***ATTACHMENT 1***

11.0 ***OSHPD Approval*** *(For Office Use Only)*

4/4/2011	**December 31, 2016**
Signature & Date	*Approval Expiration Date*
Chris Tokas, SHFR	S_{DS} (g) = **See Section 9.0** z/h = **1.0**
Name & Title	*Special Seismic Certification Valid Up to*

Condition of Approval (if any):

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 1: GE Healthcare Precision RXi Radiography & Fluoroscopy System

The GE Precision RXi R&F System is a multi-component system defined in the tables below

Table 1: Seismically Certified Components: Precision RXi Radiograpghy & Fluoroscopy System

COMPONENT	W (IN)	D (IN)	H (IN)	MAX. WT. (LBS)	MOUNT [C]	BASIS
Elevating Table	83	68 ± 6.7	105 max	2115 [B]	Floor	TEST
Table Cabinet (Positioner Cabinet)	23.75	13.5	77.2	263	Floor/Wall	TEST
Generator Cabinet	18	16	48.75	372	Floor	TEST
X-Ray OTS	31.5	23.6	40.0min / 99.0max	753 [A]	Ceiling	TEST
Non-Tilting Wall Stand	26.75	15	88	378	Floor/Wall	TEST
Control Console	25.6	19.7	6.2	30	Countertop Anchored	TEST
Touchscreen Monitor	14.5	10.5	19.5	20	Countertop Anchored	TEST
LCD Monitor	16.5	8	19.25	24	Countertop Anchored	TEST
Digital PC Tower	8	18.5	16.75	34	Countertop Anchored	TEST
Foot Pedal	2.75	3.5	.75	1	Unanchored on Floor	TEST

Notes:

A) Listed weight does not include the 5.8 lb/ft weight of each longitudinal rails along which the bridge travels.
B) Listed weight does not include maximum seismically certified patient load of 350 lb.
C) In the table above, mounting configurations are defined as follows:
   a. ***Floor*** *refers to a free-standing, floor-mounted condition, with no lateral supports at the top that are affixed to adjacent supporting elements.*
   b. ***Wall/Floor*** *indicates a condition where the unit bears on, and is anchored directly to the supporting floor. In addition, lateral restraint anchoring the unit to an adjacent wall or other supporting structure is provided at the top of the equipment.*
   c. ***Countertop Anchored*** *refers to a condition where the unit sits atop and is anchored to a counter, desk, or other piece of fixed furniture.*
   d. ***Ceiling*** *refers to a condition where the unit is anchored to and suspended from a framing system at or slightly above the ceiling line of the room. This supporting framing system above the ceiling line is not part of the manufactured system addressed by this report, and must be designed to develop all loads imposed by the system into the supporting structure*
D) All dimensions are approximate.

Table 2: Test Specimen Lowest Resonant Frequencies

	LOWEST RESONANT FREQUENCIES (HZ)		
COMPONENT	FRONT-TO-BACK AXIS	SIDE-TO-SIDE AXIS	TOP-TO-BOTTOM AXIS
Elevating Table	4.3 Hz.	4.2 Hz.	9.3 Hz.
Generator Cabinet	7.2 Hz.	8.1 Hz.	22.9 Hz.
Control Console	> 50 Hz.	> 50 Hz	> 50 Hz.
Touchscreen Monitor	7.2 Hz.	5.4 Hz.	7.3 Hz.
LCD Monitor	19.2 Hz.	4.8 Hz	32.8 Hz.
Digital PC Tower	22.4 Hz.	10.6 Hz.	37.4 Hz.

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 1: GE Healthcare Precision RXi Radiography & Fluoroscopy System

Table 3: Example ASCE 7-05 Seismic Design Basis of Equipment

COMPONENT	TYPE	F_p/W_p	z/h	S_{DS}	a_P	R_P
Table Cabinet	A	1.50Wp	1.0	2.00	2.5	6.0
Generator Cabinet						
Elevating Table	B	2.40Wp	1.0	2.00	1.0	1.5
Non-Tilting Wallstand						
Control Console						
Touchscreen Monitor						
LCD Monitor						
Digital PC Tower						
Foot Pedal						
X-Ray OTS	C	3.00Wp	1.0	2.00	2.5	3.0

Type Key:

A) Panel boards, instrumentation cabinets and other components constructed of sheet metal framing.
B) Typical medical equipment.
C) Suspended medical equipment.

Table 4: OSHPD Anchorage Pre-Approvals (OPA)

COMPONENT	OPA NO.	APPROVAL STATUS
ELEVATING TABLE	OPA-1161-10	PENDING
TABLE CABINET	OPA-1167-10	PENDING
GENERATOR CABINET	OPA-1162-10	PENDING
X-RAY OTS	OPA-1166-10	PENDING
NON-TILTING WALLSTAND	OPA-1169-07	PENDING

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SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 2: GE Healthcare Precision 500D Radiography & Fluoroscopy System

The GE Precision 500 R&F System is a multi-component system defined in the tables below

Table 1: Seismically Certified Components: Precision 500D Radiograpghy & Fluoroscopy System

COMPONENT	W (IN)	D (IN)	H (IN)	MAX. WT. (LBS)	MOUNT [C]	BASIS
R&F Table	89.5	74.5	79.9	3444 [B]	Floor	TEST
System Cabinet	35.7	29.7	74.8	946	Floor/Wall	TEST
Positioner Cabinet	33	18.5	78	685	Floor/Wall	TEST
SG80 Non-tilting Vertical Bucky Stand	36	36.5	88	428	Floor	TEST
Overhead Tube Suspension (OTS) & Bridge	120.5	25.8	43	625 [A]	Ceiling Suspension	TEST
Operator Console:						Interpolated
• PC Tower	8.3	20.7	17.9	54	Countertop	TEST
• IUI Touchscreen Monitor	16.5	10	18	18	Countertop	TEST
• Keyboard	11.5	5.5	0.5	2	Countertop	TEST
18-inch LCD Desktop-Mounted Flat Panel Monitor	16.5	10	18	18	Countertop	TEST

Notes:

A) Listed weight does not include the 3.6 lb/ft weight of each longitudinal rails along which the bridge travels.

B) Listed weight does not include maximum seismically certified patient load of 275 lb.

C) In the table above, mounting configurations are defined as follows:

a. ***Floor*** *refers to a free-standing, floor-mounted condition, with no lateral supports at the top that are affixed to adjacent supporting elements.*

b. ***Wall/Floor*** *indicates a condition where the unit bears on, and is anchored directly to the supporting floor. In addition, lateral restraint anchoring the unit to an adjacent wall or other supporting structure is provided at the top of the equipment.*

c. ***Countertop*** *refers to a condition where the unit sits atop but is not otherwise anchored to a counter, desk, or other piece of fixed furniture (unless otherwise noted).*

d. ***Ceiling*** *refers to a condition where the unit is anchored to and suspended from a framing system at or slightly above the ceiling line of the room. This supporting framing system above the ceiling line is not part of the manufactured system addressed by this report, and must be designed to develop all loads imposed by the system into the supporting structure*

D) All dimensions are approximate.

Table 2: Test Specimen Lowest Resonant Frequencies

	LOWEST RESONANT FREQUENCIES (HZ)		
COMPONENT	FRONT-TO-BACK AXIS	SIDE-TO-SIDE AXIS	TOP-TO-BOTTOM AXIS
R&F Table	4.9	4.4	Ŧ
System Cabinet	13.8	11.0	Ŧ
Notes: Ŧ = Not Monitored			

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SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 2: GE Healthcare Precision 500D Radiography & Fluoroscopy System

Table 3: Example ASCE 7-05 Seismic Design Basis of Equipment

COMPONENT	TYPE	F_p/W_p	z/h	S_{DS}	a_P	R_P
SYSTEM CABINET POSITIONER CABINET	A	1.45Wp	1.0	1.93	2.5	6
R&F TABLE VERTICAL BUCKY STAND	B	2.32Wp	1.0	1.93	1.0	1.5
OVERHEAD TUBE SUSPENSION (OTS) & BRIDGE	C	2.90Wp	1.0	1.93	2.5	3.0

Type Key:

A) Panel boards, instrumentation cabinets and other components constructed of sheet metal framing.
B) Typical medical equipment.
C) Suspended medical equipment.

Table 4: OSHPD Anchorage Pre-Approvals (OPA)

COMPONENT	OPA NO.	APPROVAL STATUS
R&F TABLE	OPA-1747-10	PENDING
SYSTEM CABINET	OPA-1750-10	PENDING
POSITIONER CABINET	OPA-1746-10	PENDING
VERTICAL BUCKY STAND	OPA-1749-10	PENDING
OVERHEAD TUBE SUSPENSION (OTS) & BRIDGE	OPA-1745-10	PENDING

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SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 3: GE Healthcare Discovery XR650, Discovery XR656 & Optima XR640 X-Ray Systems

The GE Discovery XR650, Discovery XR656 & Optima XR640 X-Ray Systems are multi-component systems defined in the tables below:

Table 1: Seismically Certified Components:

COMPONENT	WIDTH (IN)	DEPTH (IN)	HEIGHT (IN)	MAX. WT. (LBS)	MOUNT [C]	BASIS
2M Overhead Tube Suspension	83.6	25.8	32min / 103max	884 [A]	Ceiling	Interpolated
3M Overhead Tube Suspension	120.5	25.8	32min / 103max	944 [A]	Ceiling	TEST
4M Overhead Tube Suspension	172.8	26.3	32min / 103max	1097 [A]	Ceiling	Interpolated
Detector Support Assembly (DSA)	18.5	24.5	21.0	87	Floor	TEST
XR650 System Cabinet	35.7	29.5	51.0	679	Floor/Wall	TEST
XR640 System Cabinet	35.7	29.5	51.0	679	Floor/Wall	Interpolate
XR656 System Cabinet	27.5	23.7	55.4	784	Floor/Wall	TEST
XRxxx Table	88.6	36.9	32.3	992 [B]	Floor	TEST
Extended Wall Stand (Tilting)	24.8	57.1	90.9	618	Floor	TEST
Wall Stand	24.8	42.3	90.9	596	Floor	Interpolated
Operators Console:	---	---	---	---	---	---
• PC Tower	8.3	20.7	17.9	62	Floor	Test
• LCD monitor	15.2	7.1	19.9	18.1	Countertop	Interpolated
• Keyboard & Mouse	---	---	---	1	Countertop	Interpolated

Notes:

A) Listed weight does not include the 3.6 lb/ft weight of each longitudinal rails along which the bridge travels.

B) Listed weight does not include maximum seismically qualified patient load of 350 lb.

C) In the table above, mounting configurations are defined as follows:

- *a. **Floor** refers to a free-standing, floor-mounted condition, with no lateral supports at the top that are affixed to adjacent supporting elements.*
- *b. **Wall/Floor** indicates a condition where the unit bears on, and is anchored directly to the supporting floor. In addition, lateral restraint anchoring the unit to an adjacent wall or other supporting structure is provided at the top of the equipment.*
- *c. **Countertop** refers to a condition where the unit sits atop but is not otherwise anchored to a counter, desk, or other piece of fixed furniture (unless otherwise noted).*
- *d. **Ceiling** refers to a condition where the unit is anchored to and suspended from a framing system at or slightly above the ceiling line of the room. This supporting framing system above the ceiling line is not part of the manufactured system addressed by this report, and must be designed to develop all loads imposed by the system into the supporting structure*

D) All dimensions are approximate.

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 3: GE Healthcare Discovery XR650, Discovery XR656 & Optima XR640 X-Ray Systems

Table 2: Test Specimen Lowest Resonant Frequencies

	LOWEST RESONANT FREQUENCIES (HZ)		
COMPONENT	X-DIRECTION AXIS	Y-DIRECTION AXIS	TOP-TO-BOTTOM AXIS
Extended Wall Stand	6.21	4.71	Ŧ
XRxxx Table	3.75	n/a	Ŧ
Notes: Ŧ = Not Tested			

Table 3: Example ASCE 7-05 Seismic Design Basis of Equipment

COMPONENT	TYPE	F_p/W_p	z/h	S_{DS}	a_P	R_P
Discovery XR656 System Cabinet	A	1.95Wp	1.0	2.6	2.5	6
Discovery XR650/XR 640 System Cabinet	A	1.45Wp	1.0	1.93	2.5	6
Optima XR640 System Cabinet	A	1.45Wp	1.0	1.93	2.5	6
Extended Wall Stand	B	2.32Wp	1.0	1.93	1.0	1.5
XRxxx Table						
Wall Stand						
2M OTS	C	2.90Wp	1.0	1.93	2.5	3
3M OTS						
4M OTS						

Type Key:

A) Panel boards, instrumentation cabinets and other components constructed of sheet metal framing.
B) Typical medical equipment.
C) Suspended medical equipment.

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 3: GE Healthcare Discovery XR650, Discovery XR656 & Optima XR640 X-Ray Systems

Table 4: OSHPD Anchorage Pre-Approvals (OPA)

COMPONENT	OPA NO.	APPROVAL STATUS
Discovery XR656 System		
System Cabinet	OPA-2663-10	PENDING
Discovery XR650 System		
2M OTS	OPA-2236-10	PENDING
3M OTS	OPA-2229-10	PENDING
4M OTS	OPA-2230-10	PENDING
Extended Wall Stand	OPA-2231-10	PENDING
System Cabinet	OPA-2233-10	PENDING
XRxxx Table	OPA-2234-10	PENDING
Wall Stand	OPA-2235-10	PENDING
Optima XR640 System		
2M OTS	OPA-2265-10	PENDING
3M OTS	OPA-2266-10	PENDING
4M OTS	OPA-2267-10	PENDING
Extended Wall Stand	OPA-2268-10	PENDING
System Cabinet	OPA-2270-10	PENDING
XRxxx Table	OPA-2271-10	PENDING
Wall Stand	OPA-2272-10	PENDING

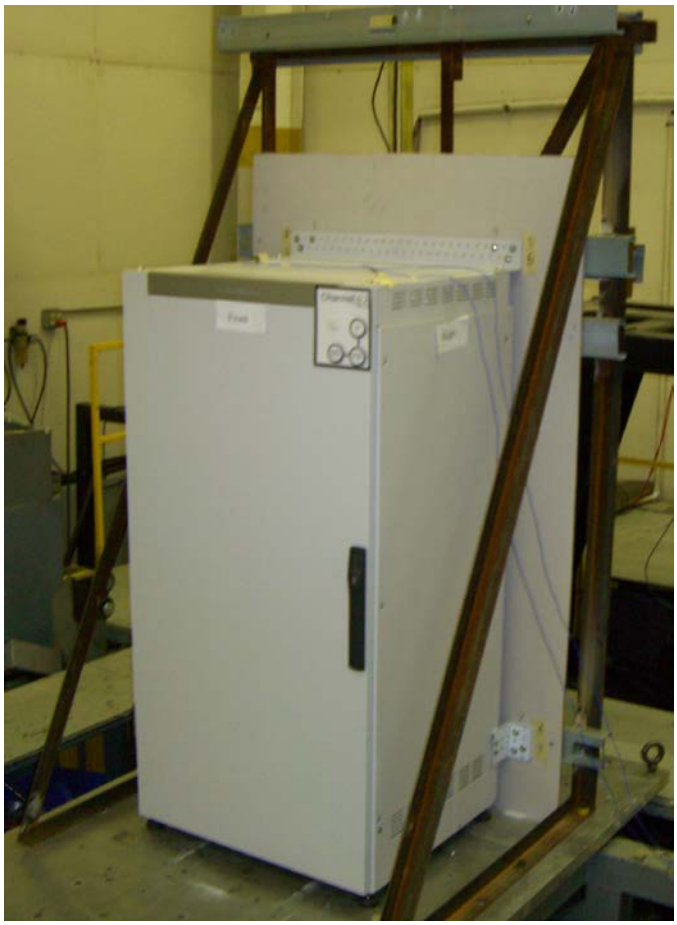
APPLICATION FOR PREAPPROVAL

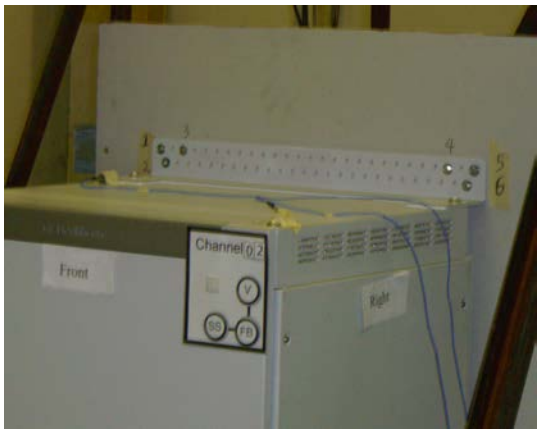
SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 3: GE Healthcare Discovery XR650, Discovery XR656 & Optima XR640 X-Ray Systems

Test Specimen: Testing conducted Febuary 21, 2011

Name:	GE DISCOVERY XR656 System Cabinet
UTT Number:	1
Manufacturer:	GE Healthcare
UUT Function:	Control cabinet governing interconnection and interface between various components and high voltage power generation for production of X-Ray.
Identification:	No label present.
Dimensions:	27 ½" W x 23 ¾" D x 55 3/8" H
Weight:	784 lbs
Restrictions:	None
Mounting:	Floor/Wall





APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 4: GE Healthcare Proteus XR/a X-Ray System

The GE Proteus XR/a X-Ray System is a multi-component system defined in the tables below:

Table 1: Seismically Certified Components: Proteus XR/a X-Ray System

COMPONENT	W (IN)	D (IN)	H (IN)	MAX. WT. (LBS)	MOUNT	BASIS
Generator Cabinet	17.7	22	63.0	360	Floor	TEST
XRxxx Table	34.6	90.3	19.7 min / 31.5 max	445	Floor	TEST
Wall Stand	24.4	15	89.9	240	Floor/Wall	TEST
Console	9.1	13.8	2.4	6	Countertop	TEST
SG 120 Wall Stand	36	36.5	88	485	Floor	Interpolated
2M Overhead Tube Suspension	84	25.3	32min / 103max	697	Ceiling	Interpolated
3M Overhead Tube Suspension	120.5	25.3	32min / 103max	750	Ceiling	Interpolated

Notes:

A) Listed weight does not include the 5.8 lb/ft weight of each longitudinal rails along which the bridge travels.

B) Listed weight does not include maximum seismically qualified patient load of 350 lb.

C) In the table above, mounting configurations are defined as follows:

- ***Floor*** *refers to a free-standing, floor-mounted condition, with no lateral supports at the top that are affixed to adjacent supporting elements.*
- ***Wall/Floor*** *indicates a condition where the unit bears on, and is anchored directly to the supporting floor. In addition, lateral restraint anchoring the unit to an adjacent wall or other supporting structure is provided at the top of the equipment.*
- ***Countertop*** *refers to a condition where the unit sits atop but is not otherwise anchored to a counter, desk, or other piece of fixed furniture (unless otherwise noted).*
- ***Ceiling*** *refers to a condition where the unit is anchored to and suspended from a framing system at or slightly above the ceiling line of the room. This supporting framing system above the ceiling line is not part of the manufactured system addressed by this report, and must be designed to develop all loads imposed by the system into the supporting structure*

D) All dimensions are approximate.

Table 2: Test Specimen Lowest Resonant Frequencies

	LOWEST RESONANT FREQUENCIES (HZ)		
COMPONENT	X-DIRECTION AXIS	Y-DIRECTION AXIS	TOP-TO-BOTTOM AXIS
Generator Cabinet	7.78	6.55	Ŧ
XRxxx Table	18.0	3.43	Ŧ
Notes: Ŧ = Not Monitored			

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

ATTACHMENT 4: GE Healthcare Proteus XR/a X-Ray System

Table 3: Example ASCE 7-05 Seismic Design Basis of Equipment

COMPONENT	TYPE	F_p/W_p	z/h	S_{DS}	a_P	R_P
Generator Cabinet	A	1.24Wp	1.0	1.65	2.5	6.0
XRxxx Table	B	1.98Wp	1.0	1.65	1.0	1.5
Wall Stand						
SG 120 Wall Stand						
Console w/Pedestal						
Console						
OTS Suspension	C	2.48Wp	1.0	1.65	2.5	3.0

Type Key:

A) Panel boards, instrumentation cabinets and other components constructed of sheet metal framing.
B) Typical medical equipment.
C) Suspended medical equipment.

Table 4: OSHPD Anchorage Pre-Approvals (OPA)

COMPONENT	OPA NO.	APPROVAL STATUS
Generator Cabinet	OPA-0833-07	PENDING
XRxxx Table	OPA-0828-07	PENDING
Wall Stand	OPA-0830-07	PENDING
SG 120 Wall Stand	OPA-0832-07	PENDING
OTS Suspension	OPA-0829-07	PENDING