



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP – 0497 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Carestream Health, Inc.

Manufacturer's Technical Representative: Ted Young

Mailing Address: 150 Verona Street, Rochester, NY 14608

Telephone: On File Email: On File

Product Information

Product Name: DRX Evolution Plus

Product Type: Digital Radiography System

Product Model Number: See Attachment 1

(List all unique product identification numbers and/or part numbers)

General Description: Multiple component medical diagnostic imaging system. Enhancement made to the test unit identified in Attachment 1, Table 1 shall be incorporated into the certified units.

Mounting Description: See Attachment 1.

Applicant Information

Applicant Company Name: EASE Co.

Contact Person: Jonathan Roberson, S.E.

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

Telephone: (909) 606-7622 Email: j.roberson@easeco.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 3/06/2017

Title: Principal Structural Engineer Company Name: EASE Co.



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: EASE Co.
Name: Jonathan Roberson, S.E. California License Number: S4197
Mailing Address: 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709
Telephone: (909) 606-7622 Email: j.roberson@easeco.com

Supports and Attachments Preapproval

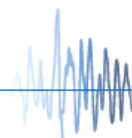
- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

Certification Method

- ☒ Testing in accordance with: ☒ ICC-ES AC156
- ☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Environmental Testing Laboratory, Inc.
Contact Name: Brady Richard
Mailing Address: 11034 Indian Trail, Dallas, TX. 75229-3513
Telephone: (972) 247-9657 Email: brady@etldallas.com





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = See Attachment 1

S_{DS} (Design spectral response acceleration at short period, g) = 2.0 (z/h = 1); 2.5 (z/h = 0)

a_p (In-structure equipment or component amplification factor) = See Attachment 1

R_p (Equipment or component response modification factor) = See Attachment 1

Ω_0 (System overstrength factor) = See Attachment 1

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 ($S_{DS} = 2.0$); 0 ($S_{DS} = 2.5$)

Equipment or Component Natural Frequencies (Hz) = See Attachment 2

Overall dimensions and weight (or range thereof) = See Attachment 1

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

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

S_{DS} (Design spectral response acceleration at short period, g) = _____

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☒ Manufacturer's Catalog

☒ Other(s) (Please Specify): Attachments 1 & 2

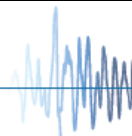
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: Ali Sumer Date: April 17, 2017

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable): _____



ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

ATTACHMENT PAGE | 1 OF 3

TABLE 1:

System Manufacturer	Carestream Health, Inc.												
System	DRX Evolution Plus												
COMPONENT	IDENTIFICATION NO.	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT	BASIS ^[1]	F _P /W _P	S _{DS}	z/h	a _P	R _P	Ω ₀
		W	D	H									
Power Distribution Unit (PDU) including:	VX3733-PDU	25.59	22.47	55.06	535	Floor	UUT1	1.44 1.13	2.0 2.5	1 0	1	2 ½	2 ½
• High Voltage Generator	CGF-80												
• APC Smart-UPS 1500	SMT1500I												
Wireless Access Point (D-Link)	DAP-2553	7.75	6.25	1.75	2	Rigid Base	UUT8						
Over-head Tube Crane (OTC) - Motor assisted (4m bridge) including:	VX3733-OTC	36	157.7	46.2 / 109.7	714 ^[3]	Ceiling	UUT2	3.60 1.50	2.0 2.5	1 0	2 ½	2 ½	2 ½
• X-ray Tube (Varian)	B-130H housing w/ RAD-92 Insert				44								
• Collimator, Automatic (Ralco)	R 302 DACS/A DHHS				25								
Over-head Tube Crane (OTC) - Motor assisted (4m bridge) including:	VX3733-OTC	36	157.7	46.2 / 109.7	714 ^[3]	Ceiling	SAME	3.60 1.50	2.0 2.5	1 0	2 ½	2 ½	2 ½
• X-ray Tube (Varian)	B-130H housing w/ RAD-60 Insert				44								
• Collimator, Motorized (Ralco)	R 302 L/A DHHS				25								
Over-head Tube Crane (OTC) - Motor assisted (2.5m to 4m bridge) including:	VX3733-OTC	36	98.6 / 157.7	46.2 / 109.7	714 ^[3]	Ceiling	INT	3.60 1.50	2.0 2.5	1 0	2 ½	2 ½	2 ½
• X-ray Tube (Varian)	B-130H housing w/ RAD-60 Insert or RAD-92 Insert				44								
• Collimator, Automatic (Ralco) • Collimator, Motorized (Ralco)	R 302 DACS/A DHHS or R 302 L/A DHHS				25								
Over-head Tube Crane (OTC) - Motor assisted (3m bridge) including:	VX3733-OTC	36	98.6	46.2 / 109.7	665 ^[3]	Ceiling	SAME	3.60 1.50	2.0 2.5	1 0	2 ½	2 ½	2 ½
• X-ray Tube (Varian)	B-130H housing w/ RAD-92 Insert				44								
• Collimator, Motorized (Ralco)	R 302 L/A DHHS				25								
Over-head Tube Crane (OTC) - Motor assisted (3m bridge) including:	VX3733-OTC	36	98.6	46.2 / 109.7	665 ^[3]	Ceiling	UUT10	3.60 1.50	2.0 2.5	1 0	2 ½	2 ½	2 ½
• X-ray Tube (Varian)	B-130H housing w/ RAD-92 Insert				44								
• Collimator, Automatic (Ralco)	R 302 DACS/A DHHS				25								

ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

ATTACHMENT PAGE | 2 OF 3

TABLE 1:

System Manufacturer	Carestream Health, Inc.												
System	DRX Evolution Plus												
COMPONENT	IDENTIFICATION NO.	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT	BASIS ^[1]	F _P /W _P	S _{DS}	z/h	a _P	R _P	Ω ₀
		W	D	H									
Premium Wall Stand, fixed mount including:	VX3733-CWS-B	36.2	38	106.3 / 117.3	476 ^[4]	Floor/ Ceiling	UUT5	2.40 1.13	2.0 2.5	1 0	1	1 ½	1 ½
• DRX Plus 3543 Detector GOS	2272233002	18.1	15.1	0.6	8								
Premium Wall Stand, fixed mount including:	VX3733-CWS-B	36.2	38	106.3 / 117.3	476 ^[4]	Floor/ Ceiling	SAME	2.40 1.13	2.0 2.5	1 0	1	1 ½	1 ½
• DRX-1 Plus Detector GOS	DRX-1	18.1	15.1	0.6	8								
Patient Table including: ^[6]	VX3733-TAB	33	94.5	20.8 / 33.9	480 ^[5]	Floor	UUT6	2.40 1.13	2.0 2.5	1 0	1	1 ½	2 ½
• DRX Plus 3543 Detector GOS	2272233001	18.1	15.1	0.6	8								
Patient Table including: ^[6]	VX3733-TAB	33	94.5	20.8 / 33.9	480 ^[5]	Floor	SAME	2.40 1.13	2.0 2.5	1 0	1	1 ½	2 ½
• DRX-1 Plus Detector GOS	DRX-1	18.1	15.1	0.6	8								
Table, Console w/	VX3733-CT	35.5	23	38.6	87 ^[7]	Floor	UUT7	1.44 1.13	2.0 2.5	1 0	1	2 ½	2 ½
• Monitor touch screen 23" (HP)	HP S230tm	23.6	1.6 / 10.6	16.1 / 21.3	14	Rigid Base							
• Computer (HP RP5 Retail 5810)	M6A84UP#ABA	13.2	15.5	4	16	Rigid Base							
• Control Box	-----	5.75	8.5	3	1.5	Rigid Base							
• Keyboard (HP)	KU-0316	18.1	6.4	1.5	1.5	Rigid Base							
• Mouse (HP)	-----	-----	-----	-----	0.5	Rigid Base							
Table, Console	VX3733-CT	35.5	23	38.6	87 ^[7]	Floor	UUT9	1.44 1.13	2.0 2.5	1 0	1	2 ½	2 ½
• Monitor touch screen 23"	HP S230tm	23.6	1.6 min 10.6 max	16.1 min 21.3 max	14	Rigid Base							
• Computer with graphics card • (HP Z440 Workstation)	W4K31US#ABA	23.6	1.6 min 10.6 max	16.1 min 21.3 max	29	Rigid Base							
• Control Box	-----	5.8	8.5	3	1.5	Rigid Base							
• Keyboard (HP)	KU-0316	18.1	6.4	1.5	1.5	Rigid Base							
• Mouse (HP)	-----	-----	-----	-----	0.5	Rigid Base							

Table notes next page

ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

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TABLE 1:

System Manufacturer	Carestream Health, Inc.												
System	DRX Evolution Plus												
COMPONENT	IDENTIFICATION NO.	APPROX. DIMENSIONS (IN.)			MAX. WT. (LB.)	MOUNT	BASIS ^[1]	F _P /W _P	S _{DS}	z/h	a _P	R _P	Ω ₀
		W	D	H									
Mount	<p><u>FLOOR (RIGID BASE) MOUNT</u>: free-standing, base-mounted condition with the component rigidly attached to a supporting structure and no lateral support above the base.</p> <p><u>WALL</u>: refers to a condition where the unit is fully supported- both vertically and laterally – by a building wall or partition.</p> <p><u>CEILING (SUSPENDED)</u> 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</p> <p><u>FLOOR/CEILING</u> refers to a condition where the unit is supported at both the floor and ceiling.</p>												
Notes	<p>1. BASIS:</p> <ul style="list-style-type: none">• UUT#: Indicates that a test specimen matching these characteristics was tested as part of this testing program.• SAME: Model is physically, mechanically & electrically the same as test specimen. Difference is limited to model number, color, or software.• INT (Interpolate/Extrapolate): indicates a model that was not specifically tested, and by which seismic certification is established through evaluation of testing of other, similar models in the product line. <p>2. Height of wireless AP excludes antennas.</p> <p>3. OTC dimensions and weight excludes longitudinal rail weight of 24.3 lb/m per rail.</p> <p>4. Weight of wall stand includes 4 lb. grid, and excludes weight of detector.</p> <p>5. Patient Table weight does not include 480 lb. simulated patient load, 4lb grid or detector.</p> <p>6. Patient Table detector tray shall be secured in place with screw as tested.</p> <p>7. Console Table weight excludes weight of contents.</p>												

ATTACHMENT 2: SEISMIC CERTIFIED COMPONENTS

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UUT1		Power Distribution Unit (PDU)	
UUT8		Wireless Access Point (WAP)	
MANUFACTURER:		Carestream	D-Link
	Model No.:	VX3733-PDU	DAP-2553
		PDU	WAP
DESCRIPTION:		Component of the DRX Evolution Plus System <u>Installed options include:</u> <ul style="list-style-type: none">• X-Ray Generator: Model: CF-80• APC UPS Model: SMT15001• UUT8 WAP - surface mounted on top cover	
MOUNTING:		UUT-1 PDU: Rigid Base (Floor) Mounted using (6) – 1/2" dia GR 8 bolts. UUT-8 WAP: Rigid Base Mounted using (2) rows 1"x4" Velcro hook & loop tape.	

PROPERTIES:							
DIMENSIONS (in.)				Weight (lb.)	LOWEST RESONANT FREQUENCY (Hz.)		
	Width	Depth	Height		Side-Axis	Front-Axis	Vert-Axis
PDU	25.59	22.47	55.06	535	7.3	7.3	13.0
WAP	7.75	6.25	1.75	2	---	---	---

SHAKE TABLE TEST PARAMETERS								
CODE	TEST CRITERIA	S _{DS} (G)	z/h	I _P	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20	2.40	1.68	0.68

Unit maintained structural integrity and remained functional per manufacturer requirement.





UUT2		Premium OTC w/ 4m Bridge						
MANUFACTURER:		Carestream						
IDENTIFICATION:		Model No.: VX3733-OTC						
DESCRIPTION:		Component of the DRX Evolution Plus System Installed options include: Motor-assisted movement 4m Bridge X-Ray Tube Housing (Varian B-130H) X-Ray Tube Insert (Varian RAD-92) Collimator, Automatic (Ralco R302 DACS/A DHHS)						
MOUNTING:		Ceiling Mounted using: (2) – ½”-13 x 1.5” SHCS W/ UNISTRUT CHANNEL NUTS TYP. EACH OF 5 SUPPORT POINTS SPACED 26” O.C. ALONG EACH LONGIT. RAIL. (TORQUE = 50 FT-LB) (20 BOLTS TOTAL)						
								
PROPERTIES:								
DIMENSIONS (in.)			Weight (lb.)	LOWEST RESONANT FREQUENCY (Hz.)				
Width	Depth	Height		Front-Axis	Side-Axis	Vert-Axis		
36	157.7	46.2 / 109.7		2.4	2.7	12.9		
				N/A				
SHAKE TABLE TEST PARAMETERS								
CODE	TEST CRITERIA	S _{DS} (G)	z/h	I _P	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20	2.40	1.68	0.68
Unit maintained structural integrity and remained functional per manufacturer requirement.								



ATTACHMENT 2: SEISMIC CERTIFIED COMPONENTS


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UUT5 Premium Wall Stand - Fixed Mount									
MANUFACTURER:				Carestream					
IDENTIFICATION:				Model No.: VX3733-CWS					
DESCRIPTION:				Component of the DRX Evolution Plus System Installed options include: Premium Wall Stand DRX Plus 3543 Detector GOS (2272233001) Mitaya Antiscatter Grid					
MOUNTING:				Ceiling/Floor Mounted using: (6) - ½" DIA GR 8 BOLTS AT FLOOR & (2)-½"-13 x 1.5" GR 8 BOLTS W/ UNISTRUT P1010 CHANNEL NUTS AT 26" OC ALONG RAIL TO UNISTRUT P1000 SUPPORT ABOVE. (TORQUE = 50 FT-LB) (4 BOLTS TOTAL)					
									
PROPERTIES:									
DIMENSIONS (in.)			Weight (lb.)	LOWEST RESONANT FREQUENCY (Hz.)					
Width	Depth	Height		Front-Axis	Side-Axis	Vert-Axis			
36	157.7	46.2 / 109.7	485	2.4	2.7	12.9	N/A		
SHAKE TABLE TEST PARAMETERS									
CODE	TEST CRITERIA	S _{DS} (G)	z/h	I _P	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)	
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20	2.40	1.68	0.68	
Unit maintained structural integrity and remained functional per manufacturer requirement.									

UUT6 Patient Table																	
MANUFACTURER:				Carestream													
IDENTIFICATION:				Model No. VX3733-TAB													
DESCRIPTION:				<div>Component of the Carestream DRX Evolution Plus System</div> <div>Installed options:</div> <div><div><div>•</div><div>DRX Plus 3543 Detector GOS (2272233001)</div></div><div><div>•</div><div>Mitaya Antiscatter Grid</div></div></div> <div>480 lb. patient load</div>													
MOUNTING:				Rigid Base (Floor) Mounted using (4) – 5/8" dia GR 8 bolts													
																	
PROPERTIES:																	
DIMENSIONS (in.)						LOWEST RESONANT FREQUENCY (Hz.)											
Width		Depth		Height		Weight (lb.)		Front-Axis		Side-Axis		Vert-Axis					
33		94.5		20.80 min 33.9 max		480 + patient		18.8		6.0		6.6					
SHAKE TABLE TEST PARAMETERS																	
CODE		TEST CRITERIA		S _{DS} (G)		z/h		I _P		A _{FLX-H} (G)		A _{RIG-H} (G)		A _{FLX-V} (G)		A _{RIG-V} (G)	
CBC 2016		ICC-ES AC156		2.0 2.5		1 0		1.5		3.20		2.40		1.68		0.68	
Unit maintained structural integrity and remained functional per manufacturer requirement.																	

ATTACHMENT 2: SEISMIC CERTIFIED COMPONENTS


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UUT 7 Console w/ HP RP5 Retail System, Model 5810 Computer									
MANUFACTURER:			Carestream						
IDENTIFICATION:			Model No. VX3733-CT						
DESCRIPTION:			Component of the DRX Evolution Plus System Installed options include: HP RP5 Retail 5810 M6A84UP#ABA Monitor touch screen 23" HP S230tm Keyboard KU-0316 Mouse --- Control Box ---						
MOUNTING:			Rigid Base (Floor) Mounted using (4) – 3/8" dia. Grade 8 bolts.						
									
PROPERTIES:									
DIMENSIONS (in.)			Weight (lb.)	LOWEST RESONANT FREQUENCY (Hz.)					
Width	Depth	Height		Front-Axis	Side-Axis	Vert-Axis			
35.5	23	35.75	133.5	9.3	7.6	10.5			
SHAKE TABLE TEST PARAMETERS									
CODE	TEST CRITERIA	S _{DS} (G)	z/h	I _p	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)	
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20	2.40	1.68	0.68	
Unit maintained structural integrity and remained functional per manufacturer requirement.									

UUT9 Console w/ HP Z440 workstation																	
MANUFACTURER:			Carestream														
IDENTIFICATION:			Model No. VX3733-CT														
DESCRIPTION:			Component of the DRX Evolution Plus System Installed options include: HP computer Z440 Workstation W4K31US#ABA Monitor touch screen 23" HP S230tm Keyboard KU-0316 Mouse --- Control Box ---														
MOUNTING:			Rigid Base (Floor) Mounted using (4) – 3/8" dia. Grade 8 bolts.														
																	
PROPERTIES:																	
DIMENSIONS (in.)					LOWEST RESONANT FREQUENCY (Hz.)												
Width		Depth		Height		Weight (lb.)	Front-Axis		Side-Axis		Vert-Axis						
35.5		23		35.75			120.5		8.7		7.4		10.3				
SHAKE TABLE TEST PARAMETERS																	
CODE		TEST CRITERIA		SDS (G)		z/h		IP		AFLX-H (G)		ARIG-H (G)		AFLX-V (G)		ARIG-V (G)	
CBC 2016		ICC-ES AC156		2.0 2.5		1 0		1.5		3.20		2.40		1.68		0.68	
Unit maintained structural integrity and remained functional per manufacturer requirement.																	

ATTACHMENT 2: SEISMIC CERTIFIED COMPONENTS

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UUT10				Premium OTC w/ 3m Bridge				
MANUFACTURER:		Carestream						
IDENTIFICATION:		Model No.: VX3733-OTC						
DESCRIPTION:		Component of the DRX Evolution Plus System Installed options include: Motor-assisted movement 3m Bridge X-Ray Tube Housing (Varian B-130H) X-Ray Tube Insert (Varian RAD-92) Collimator, Automatic (Ralco R302 DACS/A DHHS)						
MOUNTING:		Ceiling Mounted using: (2) – ½"-13 x 1.5" SHCS W/ UNISTRUT CHANNEL NUTS TYP. EACH OF 5 SUPPORT POINTS SPACED 26" O.C. ALONG EACH LONGIT. RAIL. (TORQUE = 50 FT-LB) (20 BOLTS TOTAL)						
PROPERTIES:								
DIMENSIONS (in.)			Weight (lb.)	LOWEST RESONANT FREQUENCY (Hz.)				
Width	Depth	Height		Front-Axis	Side-Axis	Vert-Axis		
36	157.7	46.2 / 109.7	780	2.4	2.7	12.9	N/A	
SHAKE TABLE TEST PARAMETERS								
CODE	TEST CRITERIA	S _{DS} (G)	z/h	I _P	A _{FLX-H} (G)	A _{RIG-H} (G)	A _{FLX-V} (G)	A _{RIG-V} (G)
CBC 2016	ICC-ES AC156	2.0 2.5	1 0	1.5	3.20	2.40	1.68	0.68
Unit maintained structural integrity and remained functional per manufacturer requirement.								