## **APPENDIX 3I - COMMISSIONING ROLES AND RESPONSIBILITIES**

TABLE 1: Building Systems included in Cx process by Cx Authority and Level of Involvement by Cx Authority

	Owner	Proje	Building Systems included in Cx process by Cx Authority, and Level of Involvement by Cx Authority																	
Commissioning Task	Owner/ Rep. Role	Cx Authority		LEED Energy-related systems for LEED v4 EAp1 / EAc1 Option 1 Path 1: -Mechanical, including HVAC&R equipment and controls -Plumbing, including domestic hot water systems, pumps, and controls -Electrical, incl. service, distribution, lighting and lighting controls and daylighting controls -Renewable Energy systems	Building Envelope for LEED EAc1 Option 2, Building Envelope Cx	Architectural Systems - Wall assemblies, Floor/ceiling assemblies, Interior space assemblies, Acoustic barriers, Hardware	Vert/Horiz transportation systems	High Voltage Electrical Service	High Voltage Electrical Distribution (main and branch)	Fire Alarm and Detection Systems	Plumbing Systems - External water distribution, non potable & process water, water purification systems, drainage systems, stormwater connections	Protection	Other Health Care Facility Mechanical Systems - Natural gas, propane, fuel transfer systems, Kitchen NFPA 96 exhaust, laboratory	Emergency Generator/ ATS	UPS	Electronic Safety & Security - Access Control System, Wireless Staff Duress System, Fixed Duress System, Intrusion Detection System, Intercommunications System, IP Video Surveillance System, Clinical Observation Camera System, Patient Wandering System	Wireless Network, IM/IT Data Network, Audio-Visual Systems, IM/IT VoIP System, Integration Engine,	Health Care Facility Integrated Systems and Controls	M&V Energy Metering and Fault Detection and Diagnostic Systems	
30% Phase	<b>n</b>												Ī							
Review OPRs Confirm Cx Roles and	R	<u>L</u>	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Responsibilities	R	L	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Develop BOD	R	Р	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Develop Initial Cx Plan Outline	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
·				,	,	,		+ ,		<del> </del>	,	,	,	,	,	,	,		,	
Develop Initial Cx Schedule	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Hold 30% Phase Cx Meetings	P		D	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	•	<u> </u>	<u>'</u>	yes	yes	усэ	yes	yes	yes	yes	yes	yes	yes	yes	yes	усэ	усэ	усо	yes	yes
Identify Project Specific Cx Responsibilities	R	L	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Design & Construction Document	ts Phases																			
Verify OPR & BOD for	R	1	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
completeness & clarity  Perform Cx focused reviews of output drawings and specifications and report directly to Owner. Cx	K		<u> </u>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
focused reviews shall also include review of the Facility infrastructure's ability to serve Owner supplied equipment.	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Meet with Owner to relay findings from Cx focused reviews of output drawings and specifications and incorporate Owner's comments.	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Plan/Prepare Sample Verification Checklists and Test Procedures	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Define Requirements for Systems Operations Manuals	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Determine Operational Training requirements	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Develop Cx specifications	R	L	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
Update Cx Schedule	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Update Cx Plan	R	L		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Construction Phase Integrate Cx activities into project																				
schedule  Participate in Construction phase	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
kickoff and progress meetings  Review Contractor submissions	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
and shop drawings from a Cx perspective and report directly to Owner and incorporate Owner comments. Installation and operations manuals (IOMs) shall be included with shop drawing submissions and reviewed by the CxA. Ensure that shop drawings for any approved alternate equipment are also reviewed by the CxA.	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Construct Mock-ups	P	Р	L	yes	yes	yes				<u> </u>										
Update OPR & BOD review if	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
appropriate at this time. Update Cx Plan to include final		<del>-</del>	<u> </u>	, , , ,	,	, , , ,		, , , ,	,	, , , ,		,55	, , , , ,	, , , ,	,55	, , , ,	,	,	,55	

## **APPENDIX 3I - COMMISSIONING ROLES AND RESPONSIBILITIES**

TABLE 1: Building Systems included in Cx process by Cx Authority and Level of Involvement by Cx Authority

The second control of the control of		Owner	Proje	ect Co					Building	Systems inc	cluded in C	x process by Cx Autho	rity, and Lo	evel of Involvement	by Cx Auth	nority					
From the Control of Management	Commissioning Task	•	Cx Authority	Consultant &	for LEED v4 EAp1 / EAc1 Option 1 Path 1: -Mechanical, including HVAC&R equipment and controls -Plumbing, including domestic hot water systems, pumps, and controls -Electrical, incl. service, distribution, lighting and lighting controls and daylighting controls	Envelope for LEED EAc1 Option 2, Building	assemblies, Floor/ceiling assemblies, Interior space assemblies, Acoustic barriers,	transportation	Electrical	Electrical Distribution (main and	and Detection	External water distribution, non potable & process water, water purification systems, drainage systems, stormwater	Protection	Facility Mechanical Systems - Natural gas, propane, fuel transfer systems, Kitchen NFPA	Generator/		Security - Access Control System, Wireless Staff Duress System, Fixed Duress System, Intrusion Detection System, Intercommunications System, IP Video Surveillance System, Clinical Observation Camera System, Patient	Common Works, IM/IT Structured Cabling, IM/IT Wireless Network, IM/IT Data Network, Audio-Visual Systems, IM/IT VoIP System, Integration Engine, Patient Physiological and Vital Signs Monitoring System, Public Address System, Nurse Call System, Distributed Antenna System, Location Services (RTLS),	Facility Integrated Systems and Controls	Metering and Fault Detection and Diagnostic	Owner Supplied Equipment and Clinical
Contract and Service of the Part of the Pa	meetings with all applicable contractors and consultants	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Part	schedule clearly identifying dates for static verification, start-up, functional performance and integrated system testing. The schedule will include duration of tasks and critical path items required to proceed with	R	P	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
P	Perform & Document static	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
P		Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Part	Perform & Document functional	P	L	P				•	ves	-			ves	-	ves	ves	·		-		+
Reactive Saues resulting from P L P 90 90 90 90 90 90 90 90 90 90 90 90 90	Perform & Document Integrated Systems Testing per CAN/ULC	R	L	P				· ·		•											·
Tosls P L P yes	Prepare and Update Issues Logs	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Verify Review & Conduct Training   R	Resolve Issues resulting from Tests	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Review Systems Operations R L P yes	Prepare Owner Training Agenda	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Review Systems Operations R L P yes	Verify, Review & Conduct Training	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Program C Report   R	Review Systems Operations	R	ı	P		-								<u> </u>	-		<u> </u>		-		
Prepare CM Memual		R		R					-			·	•	_	-		·				
Resolve outstanding Cx issues P L P yes	Prepare Cx Manual	R	L	R	•	-	<u> </u>				<u> </u>	· ·		-				-		<del>-</del>	<u> </u>
Perform seasonal/ deferred testing P L P yes		<b>n</b>														,,,,,					
Perform Smart Cx / Monitoring Based Cx analysis (quarterly, at minimum) Resolve Issues Resulting from Seasonal/deferred tests  P L P yes		۲	L	P		-									•	yes	<u>-</u>		-		
Based Cx analysis (quarterly, at minimum)  P L P yes		Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Seasonal/deferred tests  P L P yes	Perform Smart Cx / Monitoring Based Cx analysis (quarterly, at minimum)	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Update Issues Logs resulting from seasonal/deferred tests  P L P yes	Resolve Issues Resulting from Seasonal/deferred tests	Р	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform Warranty review P L P yes	Update Issues Logs resulting from	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Close-Out Phase Complete Final Cx Report R L P yes	Perform Warranty review	Р	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Close-Out Phase			ļ																ļ	
Acceptance	Complete Final Cx Report	R	L	Р	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Acceptance	L				<u> </u>			<u> </u>		1	1	<u> </u>	I	<u> </u>	1		L	<u> </u>	1	1

<sup>1.</sup> The list of building systems included is based on CSA Z8001, Table 1 (modified) and is not intended to be exhaustive. Project Co will ensure that all CSA Z8001 systems applicable to the Project are included in the Commissioning process, even if not listed here.

<sup>2.</sup> L = Leads/Responsible, R = Review (subject to Review Procedure), P = Participates

TABLE 2: COMMISSIONING RESPONSIBILITIES TRACKING (NOTE: This table is provided as an example and is to be completed and further developed in the first draft of the Commissioning Plan and updated thereafter.)

TABLE 2: COMMISSIONING RESPONSIBILITIES TRACKING (NOTE: This to	table is provided as a	n example and is to b	be completed and fur	ther develope	ed in the first draft of the Cor	mmissioning Plan and upda	ated thereafter.)								
System	Responsible Project Co Consultant		Trade Test		*Responsible Commissioning Representative from Project Co	Installation Predecessors (key requirements for Cx of this Equipment / System)	Installation Successors (key systems enabled as a result of successful Cx of this equipment /system)	Tests Required (Can provide reference to Schedule 3 Section)	Fu	Project Co CxA Review and Witness of unctional Tests Complete? (Y/N)	Date of Project Co CxA Review and Witness of Functional Tests	Toete	Witness of	CxA Review	Owner Review and Witness of Integrated System Tests Complete? (Y/N)
Mechanical, HVAC, General					Mech. Cx Agent name:		Cx Chec	cklists							
Hot Water Heating Plant & Components – gas inspection, boiler start-															
up report															
Solar Heating System  Steam Plant & Components – gas inspection, start-up reports for each component  Chilled Water Plant & Components  Process Cooling System															
Heat Recovery System & Components  Condenser Water System & Components															
Domestic Hot Water Generation Hot Water Sterilization Reverse Osmosis Systems Medical Gas Systems (O2, CO2, N2, NO, Air, Vac) Pneumatic Conveying System															
Lab Instrumentation Air System (Gas, N2, Air) Water Distribution Systems (including vendor supported mechanical															
coupling systems) Booster and Recirc Pumps, PRVs															
DCW															
DHW Tempered															
Irrigation & make-up water (include greywater reclaim components)															
Aeration															
UV system															
Pumping System Drainage System															
Sump Pumps															
Sanitary Ejectors Separators (grease, oil, solids)															
Condensate (non-steam)															
Acid Neutralizers Specialty Drainage – Hemodialysis															
Rainwater Harvesting Sanitary Storage															
Plumbing venting system															
Fire Systems Fire Pumps															
Wet Systems, Dry Systems, Pre-Action, Dry Agent															
Air Supply Storage Tank															
Fire Alarm integration															
Heat Tracing Zone Valves															
Kitchen Fire Suppression															
Smoke Control System Stair Pressurization															
Smoke Evacuation															
Zone Level Smoke Control (Under all Modes of Operation) Inpatient Area / Areas of Refuge / Containment															
Integration with BMS and Life Safety Systems / Fire Alarm Panel															
Fuel Systems															
Natural Gas (interruptible and non-interruptible)															
Fuel Oil Systems (One for Generators, One for Heating) – primary storage, day tanks, transfer pumps, monitoring system, fill system															
Measurement & Verification All Meters															
BMS integration															
Archiving Fault Detection															
Exhaust Systems General Exhaust / Relief															
Process / Fume Exhaust Systems (perchloric, radioactive, etc.)															
Contamination Exhaust (ARR rooms / CL3 / Morgue)															
Kitchen Exhaust Parking Exhaust incl. CO Monitoring and Control of the Exhaust															
System Negative Air Exhaust System															
Negative Air Exhaust System  Lab Exhaust															
MDRD Exhaust															
Generator															

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Comment   Comm	TABLE 2: COMMISSIONING RESPONSIBILITIES TRACKING (NOTE: This to	The provided as all the	Stample and le to be	- Completed S	The farmer develope					
The property of the control of the c	System	Responsible Project Co	CxA Design Review Complete?	Trade	CxA Pre- functional Test Review Complete?	Commissioning Representative	Predecessors (key requirements for Cx of this Equipment /	Successors (key systems enabled as a result of successful Cx of this equipment	Tests Required (Can provide reference to Schedule 3 Section)  Tests Required (Can provide reference to Schedule 3 Section)  Tests Required (Can provide reference to Schedule 3 Section)  Tests Review and Witness of Functional Tests Complete? (V(N))  Tests Date of Project Co CXA Review and Witness of Functional Tests Complete?	Witness of ntegrated stem Tests omplete?
Company   Comp	Chiller Poom									
The control of the co										
	Fume Hood Certification									
Section   Sect	Air Systems									
	AHU's									
The control prisons of	Packaged Supply Air Equipment									
Single Formation of the Control of t		+								
Control   Cont	MAU's									
2 million de planes  1 million de planes  2 million de planes  2 million de planes  2 million de planes  3 million de planes  3 million de planes  4 million	Rooftop Packaged Systems									
March   Marc		+ +								
ERA Casterna de la company de		+								
Interface	HEPA, Carbon, etc.	+ +								
A PROPERTY OF THE PROPERTY OF	Humidification									
Here were a superior and an analysis of the superior and an analysis of the superior and an analysis of the superior and analysis of the superior analysis of the superior analysis of the superior analysis of the superio	PRV's, RPBP's, DCVA's, safety relief valves,									
Treatment of the grant product allows (and in the control of the c										
Section of the part of the par	Pressurization (Zone pressurization, room pressurization, Clean	+ +								
	rooms, CL3, AIRs, AIR-Hybrid, PCR, etc.)									
seed Level different Control Labority Co	Natural Gas Feed									
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Control   Cont										
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All content System  Linding Processing  Linding System  Lindin	BMS Controls									
Intention System  Intention Sy	Integration of BMS and Life Safety									
Transmitt Charles (AT POLY A PRINTED		++							HEDA filter testing	
Julius granus cristics and section of the control o		+							TIEFA litter testing	
revises Colling With Management Perform (IBMP) Stopping Colling Mana	Building Pressurization									
No. Reference, DCAVAS  Internal Linds - VAVI, ECL, Andered previsit, EFFH  Internal Linds - VAVI, ECL, Andered Previsit, ECL, Andere	Clean room systems, Pharmacy - Airborne testing									
Seminal Lands - AVEX FELL pointed agenous. FFFF	Process Cooling	1								
Tuming Verting										
SEP Obtain interpretation (REMP)    Provided Building Management Platform (REMP)   Provided Building Platform (REMP)   Provided Building Management Platform (REMP)   Provided Building Platform (R	, , ,									
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MO Network and infrastructure    Per coper Place Seeting   Per coper P	Integrated Building Management Platform (IBMP)									
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vision 27	Building System Alarms									
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WIT Structured Cabling Inference oper Files testing Inference oper Files t	Division 27									
MIT Structured Cabiling  MIT Total Network  MIT Wireless Network  Network Network  MIT Wireless Network  MIT Wireless Network  MIT Wireless Network  Network Network Network  MIT Wireless Network  Network Network	IM/IT Common Works									
MIT Data Network  MIT Wireless Network  MIT VoIP System  MIT Commissioning  Active Site Survey Network partware commissioning Power loss test Active Site Survey Network partware commissioning Active Site Survey Network hardware commissioning Active Commissioning Active Site Survey Network hardware commissioning Active Active Site										
MRT Data Network  MRT Wireless Network  MRT Wireless Network  MRT End Use Equipment  Commissioning by Owner  Commissioning by Owner  Manufacturer specific commissioning  Manufacturer specific commissioning  Connectivity commissioning  Active Site Survey  Manufacturer specific commissioning  Connectivity commissioning  Active Site Survey  Alaient Physiological and Vital Signs Monitoring System  Manufacturer specific commissioning  Programming commissioning  Frogramming commissioning  Programming commissioning  Power loss lest  Active Site Survey  Network hardware commissioning  Power loss lest  Active Site Survey  Network hardware commissioning  Power loss lest  Active Site Survey  Network hardware commissioning  Manufacturer recommended commissioning  Manufacturer commended commissioning  Manufacturer c	IM/IT Structured Cabling									
MIT Wireless Network MIT Wireless Network MIT Work Signer MIT Fed Use Equipment MIT End Use Equipment MIT Wireless Network MIT Wirel	IM/IT Data Network									
Mil' Wineless Network Mil' Wineless Network Mil' De System Commissioning by Owner Commissioning by Owner Mil' De Equipment Mil' Systems Manufacturer specific commissioning Connectivity commissioning Connectivity commissioning Programming commissioning Ration Physiological and Vital Signs Monitoring System  Manufacturer specific commissioning Connectivity commissioning Programming commissioning Programming commissioning Power loss lest Described Antenna System (DAS)  Manufacturer reporting commissioning Power loss lest Described Antenna System (DAS)  Manufacturer reporting commissioning Power loss lest Described Antenna System (DAS)  Manufacturer reporting commissioning Power loss lest Described Antenna System (DAS)  Manufacturer recommended commissioning Network hardware commissioning Manufacturer recommended commissioning Ma	IIIIII Data NOTWOIN									
MIT VolP System  MIT End Use Equipment  Commissioning by Owner  Manufacturer specific commissioning by Comer  Manufacturer specific commissioning Connectivity commissioning Connectivity commissioning Programming commissioning Programming commissioning Programming commissioning Prover loss test  Instributed Antenna System (DAS)  Active Site Survey Network hardware commissioning Site Survey to verify all zones Hardware commissioning Manufacturer recommended commissioning Manufacturer recommissioning Manufac	IM/IT Wireless Network								Active Site Survey	
Mil End Use Equipment  Judio-Visual Systems  Annufacturer specific commissioning Connectivity commissioning Programming commissioning Programming commissioning Programming commissioning Programming commissioning Programming commissioning Hardware commissioning Programming commissioning Hardware commissioning Programming commissioning Hardware commissioning Programming commissioning Hardware commissioning Programming commissioning										
Audio-Visual Systems  Manufacturer specific commissioning Connectivity commissioning Programming		+								
Connectivity commissioning Programming Connectivity Conne	mint End Osc Equipment	+			+			1		
Active Site Survey Action Services (RTLS)  Active Site Survey Active s	Audio-Visual Systems									
Base network connectivity commissioning Hardware commissioning Hardware commissioning System  Active Site Survey Network hardware commissioning  Manufacturer recommended commissioning System  Active Site Survey Network hardware commissioning Site Survey to verify all zones Hardware commissioning  Manufacturer recommended commissioning Site Survey to verify all zones Hardware commissioning Site Survey to verify all zones  Hardware commissioning Site Survey to verify all zones System  Manufacturer commissioning Site Survey to verify sound levels  Manufacturer vecommended commissioning Site Survey to verify sound levels	- ladio Floadi Ojotolilo									
Hardware commissioning Power loss test  Active Site Survey Network hardware commissioning  Manufacturer recommended commissioning  Manufacturer recommended commissioning Site Survey to verify all zones Hardware commissioning Integration commissioning  Wallic Address System  Hardware commissioning Site survey to verify sound levels  Hardware commissioning Site survey to verify sound levels		+								
Power loss test  Active Site Survey Network hardware commissioning  Amunifacture recommended commissioning Site Survey to verify all zones Hardware commissioning Integration commissioning  Public Address System  Power loss test  Active Site Survey Network hardware commissioning Site Survey to verify all zones Hardware commissioning Site Survey to verify all zones Hardware commissioning Site survey to verify sound levels	Patient Physiological and Vital Signs Monitoring System									
Active Site Survey Network hardware commissioning Manufacturer recommended commissioning Site Survey to verify all zones Hardware commissioning Integration commissioning Site survey to verify sound levels	. addit i ilydididgidai alia vitai digiid moliitolilig dyatelli									
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Manufacturer recommended commissioning Site Survey to verify all zones Hardware commissioning Integration commissioning Site survey to verify sound levels	Distributed Antenna System (DAS)									
Hardware commissioning Integration commissioning  Hardware commissioning  Hardware commissioning  Sublic Address System  Site survey to verify sound levels									Manufacturer recommended commissioning	
Hardware commissioning Integration commissioning Hardware commissioning Fublic Address System Site survey to verify sound levels	Location Services (RTLS)								Site Survey to verify all zones	
Hardware commissioning Public Address System Site survey to verify sound levels										
Site survey to verify sound levels		<u> </u>					<u> </u>		Integration continues to the second s	
Site survey to verify sound levels Integration commissioning										
Integration commissioning	Public Address System								Site survey to verify sound levels	
									integration commissioning	

TABLE 2: COMMISSIONING RESPONSIBILITIES TRACKING (NOTE: This table is provided as an example and is to be completed and further developed in the first draft of the Commissioning Plan and updated thereafter.)

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System	Responsible Cx. Project Co Consultant Co	roject Co A Design Review Tra omplete? (Y/N)	Project Co CxA Pre- functional Test Review Complete? (Y/N)	*Responsible Commissioning Representative from Project Co	Installation Predecessors (key requirements for Cx of this Equipment / System)	Installation Successors (key systems enabled as a result of successful Cx of this equipment /system)	Tests Required (Can provide reference to Schedule 3 Section)	Project Co CxA Review and Witness of Functional Tests Complete? (Y/N)	Date of Project Co CxA Review and Witness of Functional Tests	Owner Review and Witness of Functional Tests Complete? (Y/N)	Integrated System	I DECIDE L'A	Integrated
Nurse Call Systems							Hardware commissioning Power loss test Integration commissioning						
Integration Engine							Power loss test Software commissioning Integration commissioning						
Division 28													
Access Control System							Hardware commissioning Programming commissioning Integration commissioning Hardware commissioning						
Wireless Panic Duress System							Programming commissioning Site survey to verify zone accuracy Integration commissioning						
Fixed Duress System							Hardware commissioning Integration commissioning						
Intrusion Detection System							Hardware commissioning Integration commissioning Hardware commissioning						
IP Video Surveillance System							Power loss test Integration commissioning						
Patient Wandering System							Hardware commissioning Integration commissioning Hardware commissioning						
Clinical Observation Camera System  Intercommunications System							Programming commissioning Hardware commissioning						
Power Distribution Equipment							Integration commissioning Power distribution equipment commissioning -Rotation checks -Insulation resistance testing						
Lighting							-Contact resistance testing Lighting controls commissioning Lighting levels testing (spot checks)						
Electrical Rooms Equipment Replacement Strategy							N/A						
Integrated Controls for High Voltage Equipment in the Energy Centre							Demand response / load management / energy management systems commissioning High voltage integrated controls system commissioning Generator synchronization / paralleling commissioning Closed transition transfer switch commissioning, including relay commissioning and BC Hydro approval Redundant control system PLC fail-over demonstration Demonstration of operation in tie-breaker off-nominal configurations						
Provisions for Future							Summary report of actual peak demand loads in first year of operation (on each metered						
Protective Device Co-ordination							panel/distribution equipment), confirmation of required spare capacity.  Confirmation of coordinated setting implementation and relay commissioning						
Arc Flash Hazard Reduction							Arc flash reduction systems commissioning (ZSI, maintenance modes, remote racking, arc detection relays etc.)						
Power Quality  Magnetic Field Strength							Summary report of power quality measurements in first month of operation (on each metered point in the system), confirmation that required metrics achieved.  Magnetic field testing (spot checks)						
Utility Power Emergency Power							C282/Z32 testing, failure (e-stop) test						
High Voltage Distribution							Feeder hi-pot testing						
Buried Duct Bank System for Campus Distribution Distribution Equipment - 600 Volts and Below  Uninterruptible Power Supply (UPS) System							Confirm adequate drainage  Equipment commissioning  Alarms/remote monitoring  Equipment commissioning  Verify backup time and kW capacity (for spare calc) including comm ATS/dual supply switched to UPS [IMIT tested as soon as WiFi operational, Clinical/IMIT UPS both tested at 6-months in-service]  Verify wrap-around backup connection  Must be commissioned before servers / switches connected						
Metering							After loads energized Loads by department End use categories Integrations to BMS, VFD, lighting, IBMP						
Wiring Methods, Materials, Devices							Z32						
Raceways  Grounding and Bonding							Soil resistivity test (Wenner or soil analysis) Ground Grid Fall-of-Potential Test						
Seismic Requirements for Electrical System Lighting							N/A						
Lighting Control System							Confirm zoning, addressing, levels, etc. as per design/shop drawings Colour tuning if specified Integrations testing as per integration sections						

 TABLE 2: COMMISSIONING RESPONSIBILITIES TRACKING (NOTE: This table is provided as an example and is to be completed and further developed in the first draft of the Commissioning Plan and updated thereafter.)

System	Responsible Project Co Consultant	Project Co CxA Design Review Complete? (Y/N)	Trade	Test Review	*Responsible Commissioning Representative from Project Co	Installation Predecessors (key requirements for Cx of this Equipment / System)	Installation Successors (key systems enabled as a result of successful Cx of this equipment /system)	II.AN NYOVINE PETERENCE IN SCHENUIE & SECTION	Project Co CxA Review and Witness of Functional Tests Complete? (Y/N)	Date of Project Co CxA Review and Witness of Functional Tests	Owner Review and Witness of Functional Tests Complete? (Y/N)	Project Co CxA Review and Witness of Integrated System Tests Complete? (Y/N)	Date of Project Co CxA Review and Witness of Integrated System Tests	Integrated System Tests
Mechanical Equipment Connections														
Clock System								Confirm full signal coverage & all operational						
Electric Vehicle Chargers								Commission including network access & load management & demand response & payment systems						
Elevators								Elevator sign-off, integration testing						
Automated Guided Vehicles (AGV)								Vendor start-up testing, integration testing						
Envelope Systems														
Roofing								Electronic leak detection test.						
Punched Windows								Window leak testing: ASTM E 1105.						
Thermal Bridging								Thermal scanning						
Curtain Wall incl. spandrels and doors														
Cladding														
Air Barrier								Air leakage testing whole-building. ASTM E 779						
Below Grade Waterproofing														
Envelope Mock-ups														
Kitchen Equipment														
Acoustics														
Sound isolation between spaces								ASTC / NIC testing - to happen as soon as first walls are boarded and sealed.						
Background Noise								After mechanical equipment up and running and balanced.						
Reverb Time Tests								Key spaces - conference rooms, classrooms						
Speech Privacy Tests														
Sound Masking								Cx by vendor/supplier						
OITC = Outoor-Indoor Transition Class testing														
Medical Equipment - to be developed further by Project Co with inpu														
from the Owner. To include medical equipment categories A, B, C, D	)													
and G2														

\* Although the Commissioning Authority is responsible for the commissioning of all systems, it is understood that commissioning of some specific systems will be undertaken by system specific Commissioning Agents or Specialists and will be reviewed and witnessed by the Commissioning Authority and included in the Commissioning process (reviews, testing, schedules, reporting, etc).