

APPENDIX 3I - COMMISSIONING ROLES AND RESPONSIBILITIES

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

Commissioning Task	Owner	Project Co		Building Systems included in Cx process by Cx Authority, and Level of Involvement by Cx Authority																
	Owner/ Rep. Role	Cx Authority	Consultant & Contractor Roles	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	Fire Protection Systems	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	Communications - IM/IT 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), IM/IT End User Equipment	Health Care Facility Integrated Systems and Controls	M&V Energy Metering and Fault Detection and Diagnostic Systems	Owner Supplied Equipment and Clinical Cx
30% Phase																				
Review OPRs	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Confirm Cx Roles and Responsibilities	R	L	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Develop BOD	R	P	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Develop Initial Cx Plan Outline	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Develop Initial Cx Schedule	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hold 30% Phase Cx Meetings	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	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 Documents Phases																				
Verify OPR & BOD for completeness & clarity	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform Cx focused reviews of output drawings and specifications and report directly to Owner. Cx 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.	P	L	P	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	P	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	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Determine Operational Training requirements	R	L	P	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	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	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	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Participate in Construction phase kickoff and progress meetings	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Review Contractor submissions 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	P	L	yes	yes	yes														
Update OPR & BOD review if appropriate at this time.	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Update Cx Plan to include final equipment selections.	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

APPENDIX 3I - COMMISSIONING ROLES AND RESPONSIBILITIES

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

Commissioning Task	Owner	Project Co		Building Systems included in Cx process by Cx Authority, and Level of Involvement by Cx Authority																
	Owner/ Rep. Role	Cx Authority	Consultant & Contractor Roles	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/Horizontal 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	Fire Protection Systems	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	Communications - IM/IT 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), IM/IT End User Equipment	Health Care Facility Integrated Systems and Controls	M&V Energy Metering and Fault Detection and Diagnostic Systems	Owner Supplied Equipment and Clinical Cx
Conduct regular Commissioning meetings with all applicable contractors and consultants present. Ensure sufficient notice is provided to the Owner for Owner participation in these meetings.	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Prepare detailed Commissioning 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 Commissioning tasks.	R	P	L	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform & Document static verification	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform & Document start-up	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform & Document functional performance testing	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform & Document Integrated Systems Testing per CAN/ULC S1001 for Fire Protection and Life Safety Systems and CSA-Z8001.	R	L	P	yes	yes		yes			yes			yes		yes	yes	yes			yes
Prepare and Update Issues Logs	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Resolve Issues resulting from Tests	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Prepare Owner Training Agenda	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Verify, Review & Conduct Training	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Review Systems Operations Manual	R	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Prepare Cx Report	R	L	R	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Prepare Cx Manual	R	L	R	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Occupancy & Operations Phase																				
Resolve outstanding Cx issues	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform seasonal/ deferred testing	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform Smart Cx / Monitoring Based Cx analysis (quarterly, at minimum)	P	L	P	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Resolve Issues Resulting from Seasonal/deferred tests	P	L	P	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	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Perform Warranty review	P	L	P	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	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Acceptance	L																			

NOTES:
 1. 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.
 2. L = Leads/Responsible, R = Review (subject to Review Procedure), P = Participates

APPENDIX 31 - COMMISSIONING ROLES AND RESPONSIBILITIES

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	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)	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	Owner Review and Witness of Integrated System Tests Complete? (Y/N)
Mechanical, HVAC, General					Mech. Cx Agent name:			Cx Checklists						
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														
Lab Exhaust														
MDRD Exhaust														
Generator														

APPENDIX 31 - COMMISSIONING ROLES AND RESPONSIBILITIES

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	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)	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	Owner Review and Witness of Integrated System Tests Complete? (Y/N)
Chiller Room														
Smudging Exhaust System														
Fume Hood Certification														
Air Systems														
AHU's														
Supply Fans														
Packaged Supply Air Equipment														
Clean room Systems														
MAU's														
Rooftop Packaged Systems														
Process Cooling System														
Air Filtration Systems														
Testing of all Filtration Systems														
HEPA, Carbon, etc.														
Humidification														
PRV's, RBPB's, DCVA's, safety relief valves,														
Terminal Units, (VAV's, FCU's, Split Systems, Panels, FFH's, UH's, BBH's, etc.)														
Pressurization (Zone pressurization, room pressurization, Clean rooms, CL3, AIRs, AIR-Hybrid, PCR, etc.)														
Natural Gas Feed														
Renewable Energy Systems														
Zone Level Smoke Control under all Modes of Operation														
Smoke Control - Patient areas														
Smoke Control - Areas of Refuge and Containment														
M&V														
BMS Controls														
Integration of BMS and Life Safety														
Exhaust Systems: general exhaust / relief, AIR rooms / CL3														
Filtration								HEPA filter testing						
Pneumatic Conveying System														
Building Pressurization														
Clean room systems, Pharmacy - Airborne testing														
Process Cooling														
PRV's, RBPB's, DCVA's														
Terminal Units - VAV, FCU, radiant panels, FFH														
Plumbing Venting														
Division 25														
Integrated Building Management Platform (IBMP)								IBMP data point aggregation Power loss test Integration commissioning						
FMO Network and Infrastructure								Fiber, copper Fluke testing Network hardware commissioning						
Equipment Alarms								Manufacturer commissioning BMS integration commissioning IBMP integration commissioning						
Building System Alarms								Manufacturer commissioning BMS integration commissioning IBMP integration commissioning						
Division 27														
IM/IT Common Works								Communications room equipment commissioning UPS power test						
IM/IT Structured Cabling								Fiber, copper Fluke testing Base network connectivity commissioning Network hardware commissioning						
IM/IT Data Network								Power loss test Active Site Survey Network hardware commissioning						
IM/IT Wireless Network								Commissioning by Owner						
IM/IT VoIP System								Commissioning by Owner						
IM/IT End Use Equipment														
Audio-Visual Systems								Manufacturer specific commissioning Connectivity commissioning Programming commissioning						
Patient Physiological and Vital Signs Monitoring System								Base network connectivity commissioning Hardware commissioning Power loss test						
Distributed Antenna System (DAS)								Active Site Survey Network hardware commissioning						
Location Services (RTLS)								Manufacturer recommended commissioning Site Survey to verify all zones Hardware commissioning Integration commissioning						
Public Address System								Hardware commissioning Site survey to verify sound levels Integration commissioning						

APPENDIX 31 - COMMISSIONING ROLES AND RESPONSIBILITIES

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	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)	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	Owner Review and Witness of Integrated System Tests Complete? (Y/N)
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						
Wireless Panic Duress System								Hardware commissioning Programming commissioning Site survey to verify zone accuracy Integration commissioning						
Fixed Duress System								Hardware commissioning Integration commissioning						
Intrusion Detection System								Hardware commissioning Integration commissioning						
IP Video Surveillance System								Hardware commissioning Power loss test Integration commissioning						
Patient Wandering System								Hardware commissioning Integration commissioning						
Clinical Observation Camera System								Hardware commissioning Programming commissioning						
Intercommunications System								Hardware commissioning Integration commissioning						
Power Distribution Equipment								Power distribution equipment commissioning -Rotation checks -Insulation resistance testing -Contact resistance testing						
Lighting								Lighting controls commissioning Lighting levels testing (spot checks)						
Electrical Rooms								N/A						
Equipment Replacement Strategy								N/A						
Zoning								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 panel/distribution equipment), confirmation of required spare capacity.						
Protective Device Co-ordination								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								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 Strength								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								Confirm adequate drainage						
Distribution Equipment - 600 Volts and Below								Equipment commissioning Alarms/remote monitoring Equipment commissioning						
Uninterruptible Power Supply (UPS) System								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								Z32						
Lighting														
Lighting Control System								Confirm zoning, addressing, levels, etc. as per design/shop drawings Colour tuning if specified Integrations testing as per integration sections						

APPENDIX 3I - COMMISSIONING ROLES AND RESPONSIBILITIES

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	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)	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	Owner Review and Witness of Integrated System Tests Complete? (Y/N)
Mechanical Equipment Connections														
Clock System								Confirm full signal coverage & all operational Commission including network access & load management & demand response & payment systems						
Electric Vehicle Chargers								Elevator sign-off, integration testing						
Elevators								Vendor start-up testing, integration testing						
Automated Guided Vehicles (AGV)								Electronic leak detection test.						
Envelope Systems								Window leak testing: ASTM E 1105.						
Roofing								Thermal scanning						
Punched Windows														
Thermal Bridging														
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 = Outdoor-Indoor Transition Class testing														
Medical Equipment - to be developed further by Project Co with input 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).