



## CPM COMMISSIONING ELEVATOR UNIT

| HYDRO ELEVATOR CONSTRUCTION & COMMISSIONING SEQUENCE AS OF ..... |  |         |                          |                  |
|--|--|---------|--------------------------|------------------|
| CONTRACT # A-37109   |  |         | ELEVATOR # EL198 & EL199 |                  |
| Item   | Description of Task  | Dates   |                          | Relating parties |
|  |  | Expect. | Complete                 |                  |
| 1.   | Elevator Shop Drawings & Catalog Cuts Submittals<br>(see submittals log)   |         |                          |                  |
| 1.1.   | Controller Wiring Schematics review & approval   |         |                          |                  |
| 1.1.1.   | Catalog Cuts – Controller components & parts   |         |                          |                  |
| 1.2.   | Controller Test Procedures review & approval   |         |                          |                  |
| 1.2.1.   | Test Procedure - Elevator Emergency Automatic Operation  |         |                          |                  |
| 1.3.   | Elevator Machine Room Coordination Layout review & approval  |         |                          |                  |
| 1.4.   | Shop Drawings – coordination of Channel-Rail Base in the elevator pit with details   |         |                          |                  |
| 1.5.   | Shop Drawings – Coordination and details for elevator rails Z-brackets and structural brackets   |         |                          |                  |
| 1.6.   | Catalog Cut – Emergency Car Power Supply   |         |                          |                  |
| 1.7.   | Catalog Cuts – Terminal Boxes and Terminal Strips for elevator wiring  |         |                          |                  |
| 1.8.   | Catalog Cut for Leveling/Selector system   |         |                          |                  |
| 1.9.   | Catalog Cut – Elevator Cab Flooring  |         |                          |                  |
| 1.10.  | Catalog Cut –submit Travel Cable type ETT  |         |                          |                  |
| 1.11.  | Shop Drawings – Elevator electrical conduits routing inside Hoistway and for Car, with details for installation of conduit brackets on square tubing of elevator shaft structure |         |                          |                  |
| 1.12.  | Shop Drawings – Elevator cab conduits & wiring   |         |                          |                  |
| 1.13.  | Submittal & approval for elevator signs, nameplates & tags   |         |                          |                  |
| 1.14.  | O&M submittals   |         |                          |                  |
| 1.15.  | Submittals for syllabus & training manuals   |         |                          |                  |
|  |  |         |                          |                  |
| 2.   | ELEVATOR CONSTRUCTION  |         |                          |                  |
| 2.1.   | DEMOLITION AND REMOVALS  |         |                          |                  |
| 2.1.1.   | Barricades erection  |         |                          |                  |
| 2.1.2.   | Old elevator demolition or new shaft construction  |         |                          |                  |
| 2.1.3.   | Jack hole drilling/ old jack removal   |         |                          |                  |
| 2.2.   | SYSTEMS INTEGRATION  |         |                          |                  |
| 2.2.1  | Elevator Intercoms (talk-back system)  |         |                          |                  |
| 2.2.1.1.   | Request telephone numbers and/or IPs for phone in machine room and for intercoms.  |         |                          |                  |
| 2.2.1.2.   | Conduits, wiring and connection termination  |         |                          |                  |
| 2.2.1.3.   | System pre-test by contractor  |         |                          |                  |
| 2.2.2.   | Fire Alarm   |         |                          |                  |
| 2.2.2.1.   | Installation of smoke heads, relays, etc.  |         |                          |                  |
| 2.2.2.2.   | Completion of conduits, wiring and connections   |         |                          |                  |

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| 2.2.2.3.  | System pre-test with Fire Alarm Vendor  |  |  |  |
| 2.2.3.    | <b>ELEVATOR INSTALLATION PROGRESS</b>   |  |  |  |
| 2.2.3.2.  | Installation of Steel parts for Jack, Rail Base & Buffers pedestals in the pit  |  |  |  |
| 2.2.3.3.  | Installation of Structural Brackets on elevator shaft structure   |  |  |  |
| 2.2.3.4.  | Installation of Guide Rails Z-Brackets  |  |  |  |
| 2.2.3.5.  | Installation of Guide Rails   |  |  |  |
| 2.2.3.6.  | <b>Guide Rails Alignment Hold Point Inspection</b>  |  |  |  |
| 2.2.3.7.  | Installation of hydraulic jack  |  |  |  |
| 2.2.3.8.  | Hydro cylinder/Jack alignment   |  |  |  |
| 2.2.3.9.  | <b>Hydro Jack Alignment Hold Point inspection</b>   |  |  |  |
| 2.2.3.10. | Installation of pit ship ladder   |  |  |  |
| 2.2.3.11. | Installation of pit sump pump and pit drainage  |  |  |  |
| 2.2.3.12. | G/C and other trades work in hoist way  |  |  |  |
| 2.2.3.10. | G/C and other trades work in Elevator Machine Room  |  |  |  |
| 2.2.3.11. | <b>Elevator Cab Factory Acceptance (FAT)</b>  |  |  |  |
| 2.2.3.12. | Delivery of Cab   |  |  |  |
| 2.2.3.13. | Installation & Powering Up for machine room EDB panels and elevator Main Line Disconnect switch                         |  |  |  |
| 2.2.3.14. | Delivery of Controller and Hydraulic Power Unit   |  |  |  |
| 2.2.3.15. | Installation of Hydraulic Power Unit  |  |  |  |
| 2.2.3.16. | Installation of hydraulic oil line from tank to cylinder  |  |  |  |
| 2.2.3.17. | Installation of Controller  |  |  |  |
| 2.2.3.18. | Installation of electrical conduits for controller and power unit.  |  |  |  |
| 2.2.3.19. | Wiring of hydro power unit to controller in construction mode. Temporary elevator run                                   |  |  |  |
| 2.2.3.20. | <b>Hydrostatic Pressure Test Hold Point Inspection</b>  |  |  |  |
| 2.2.3.21. | Installation of buffers, car sling and platform   |  |  |  |
| 2.2.3.23. | Installation of conduits and light fixtures for machine room and in hoistway  |  |  |  |
| 2.2.3.24. | Installation of HVAC in machine room  |  |  |  |
| 2.2.3.25. | <b>Commissioning Observation list walkthrough #1</b>  |  |  |  |
| 2.2.3.26. | Building of elevator Cab, installation of car panels, electrical boxes, Top of Car devices & guard railing (outriggers) |  |  |  |
| 2.2.3.27. | Installation of Door Operators  |  |  |  |
| 2.2.3.28. | Installation of Hoistway & Car Door Sills/ Entry Ways   |  |  |  |
| 2.2.3.29. | <b>Shaft Clearances Verification Hold Point Inspection (running platform)</b>   |  |  |  |
| 2.2.3.30. | Installation of elevator door frames, door tracks, doors and door locks   |  |  |  |
| 2.2.3.31. | Grout for Door Sills and Entry Ways   |  |  |  |
| 2.2.3.32. | Installation of Hall & Car Stations   |  |  |  |
| 2.2.3.33. | Sealing, caulking gaps and holes into hoistway  |  |  |  |
| 2.2.3.34. | Installation of elevator safety switches & sensors in hoistway  |  |  |  |
| 2.2.3.35. | Installation of Fascia in elevator shaft  |  |  |  |
| 2.2.3.36. | Installation and wiring of elevator hoistway conduits and selector unit   |  |  |  |
| 2.2.3.37. | <b>Commissioning Observation list walkthrough update #2</b>   |  |  |  |
| 2.2.3.38. | Installation of sump pump and pit/hoistway lighting   |  |  |  |

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| 2.2.3.39. | Pit Sump Pump - wiring & heat tracing for exposed drain line  |                      |  |  |
| 2.2.3.39. | Oil Line route – wiring and heat tracing for exposed line   |                      |  |  |
| 2.2.3.40. | Heat tracing tests by 3-rd party (electrical contractor)  |                      |  |  |
| 2.2.3.41. | Insulation of exposed oil line and drainage   |                      |  |  |
| 2.2.3.42. | Installation of canopy lighting (for street elevators)  |                      |  |  |
| 2.2.3.43. | Installation of Travel cables and elevator wiring termination   |                      |  |  |
| 2.2.3.44. | Installation of intercom & CCTV camera inside the car   |                      |  |  |
| 2.2.3.45. | Installation of communication travel cables and communication wiring termination                                    |                      |  |  |
| 2.2.3.46. | Installation of Fire Alarm conduits and devices inside hoistway and in machine room                                 |                      |  |  |
| 2.2.3.47. | Removal of temporary wiring from elevator hoistway  |                      |  |  |
| 2.2.3.48. | 100% completion and sealing of hoistway enclosure   |                      |  |  |
| 2.2.3.49. | Mechanical & Electrical Adjustments and alignments  |                      |  |  |
| 2.2.3.50. | Painting & Clean Up inside hoistway   |                      |  |  |
| 2.2.3.51. | Glass work - Cab & Doors, Mylar, etc.   |                      |  |  |
| 2.2.3.52. | Epoxy flooring inside the cab   |                      |  |  |
| 2.2.3.53. | <b>Commissioning Observation list walkthrough update #3</b>   |                      |  |  |
| 2.2.3.54. | Completion of G.C. & other trades work inside hoistway (tagging, nameplates, signs, etc.)                           |                      |  |  |
| 2.2.3.56. | Necessary Corrections & re-adjustments  |                      |  |  |
| 2.2.3.57. | <b>Drift Test and Rupture Valve Calibration (as part of Hydro ASME)</b>   |                      |  |  |
| 2.2.3.58. | Install five-year tags  |                      |  |  |
| 2.2.3.59. | Painting & Clean Up inside Machine Room   |                      |  |  |
| 2.2.3.60. | Completion of G.C. & other trades work inside machine room and outside hoistway. (Tagging, nameplates, signs, etc.) |                      |  |  |
| 2.2.3.61. | <b>Pit drainage/ Sump pump operation witnessing</b>   |                      |  |  |
| 2.2.3.62. | <b>Fire Alarm/ Fire Recall Test (EMD/ System Safety)</b>  |                      |  |  |
| 2.2.3.63. | <b>Intercom &amp; CCTV camera tests (EMD)</b>   |                      |  |  |
| 2.2.3.64. | <b>ADA compliance inspection (CPM ADA group)</b>  |                      |  |  |
| 2.2.3.65. | <b>System Safety group inspection</b>   |                      |  |  |
| 2.2.3.66. | <b>ASME Doors Inspection Module –</b>   | <b>Cx PRE-TESTS</b>  |  |  |
| 2.2.3.67. | <b>ASME Electrical Inspections Module</b>   |                      |  |  |
| 2.2.3.68. | <b>ASME Hydraulic Inspections Module</b>  |                      |  |  |
| 2.2.3.69. | <b>ASME General Part Module</b>   |                      |  |  |
| 2.2.3.70. | <b>Commissioning Observation list walkthrough update #4</b>   |                      |  |  |
| 2.2.3.71. | <b>Controller functionality field tests</b>   |                      |  |  |
| 2.2.3.72. | <b>ASME Doors Inspection Module</b>   | <b>E&amp;E FINAL</b> |  |  |
| 2.2.3.73. | <b>ASME Electrical Inspections Module</b>   |                      |  |  |
| 2.2.3.74. | <b>ASME Hydraulic Inspections Module</b>  |                      |  |  |
| 2.2.3.75. | <b>ASME General Part Module</b>   |                      |  |  |
| 2.2.3.76. | O&M and laminated electrical drawings delivery in EMR   |                      |  |  |
| 2.2.4     | <b>E&amp;E PERSONNEL TRAINING</b>   |                      |  |  |
| 2.2.4.1.  | Coordinating of schedules, syllabus & training manuals  |                      |  |  |
| 2.2.4.2.  | Mechanical Training   |                      |  |  |
| 2.2.4.3.  | Controller Training   |                      |  |  |
| 2.2.7.    | <b>Concurrence Letters:</b><br>- Stations (Sump pump operation);  |                      |  |  |

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|-----------|--|--|--|--|
|           | <ul style="list-style-type: none"> <li>- Stations Lighting;</li> <li>- EMD (Fire Alarm; Intercom &amp; CCTV camera);</li> <li>- ADA Compliance letter;</li> <li>- System Safety letter;</li> </ul> |  |  |  |
| 2.2.8     | <b>E&amp;E 24 hours operation test</b>   |  |  |  |
|           |  |  |  |  |
| <b>3.</b> | <b>Placement into Service – Letter from E&amp;E</b>  |  |  |  |
| 3.1.      | Issue of Punch List for open items   |  |  |  |
| 3.2.      | Closing of punch list items  |  |  |  |
| 3.4.      | Start of warranty period   |  |  |  |
|           |  |  |  |  |