

## DESIGN & PRE-DESIGN PHASE

### Owner's Project Requirements

- 1.1.1 Owners-Project-Requirements-Template-Outline.docx
- 1.1.2 OPR-Template-and-Sample-Long-Version.docx
- \*1.1.3 OPR-Workshop-Guide.docx

### Basis of Design

- \*1.2.1 Basis-of-Design-Guideline-and-Outline.docx
- \*1.2.2 Basis-of-Design-Template.docx
- \*1.2.3 Basis-of-Design-Sample.pdf

### Requests for Cx Qualifications and Proposals

- 1.3.0 RFQ-RFP-Forms-Descriptions.Rev1.docx
- 1.3.1.Pt.A Cx.New.Constr.Request.for.Quals.for.Specific.Project.Rev1.docx
- 1.3.1.Pt.B Cx.New.Construction.RFP.to.CxP.RFQ.Awardee.Rev1.docx
- 1.3.2.Pt.A Cx.New.Constr.Request.for.Quals.for.Pool.or.CxP.Shortlist.Rev1.docx
- 1.3.2.Pt.B Cx.New.Construction.RFP.to.Prequalified.Pool.or.Shortlist.of.CxPs.Rev1.docx
- 1.3.3\_ Cx.New.Construction.RFP.and.RFQ.Rev1.docx

### Cx Contracts

- 1.4.2 Notice-of-Intent-to-Award-Cx-Services.docx
- 1.4.3 Shortlist-Notification-to-Award-Cx-Services.docx
- \*1.4.4 Sample-CxP-ContractCx

### Budgeting & Cost Benefits

- \*1.5.1 Cx-Cost-Benefit-Study-2004-LBNL
- \*1.5.2 Cx-Cost-Benefit-Study-2009-LBNL
- \*1.5.3 Monitored-Based-Cx-Cost-Benefit-Study-2009-LBNL

### Cx Plan

- \*1.6.1 Design-Phase-Cx-Plan-Template.docx
- \*1.6.4 New-Const-Cx-Plan-Template.docx

### Commissioning Specifications

- \*1.7.11 019113-General-Commissioning-Requirements.docx
- \*1.7.12 230800-Commissioning-of-HVAC-and-Controls.docx
- \*1.7.13 220800-Commissioning-of-Plumbing.docx
- \*1.7.14 260800-Commissioning-of-Electrical.docx
- \*1.7.15 210800-Commissioning-of-Fire-Suppression.doc
- \*Building Enclosure Commissioning

### Training Requirements, Plan, Agendas, Evaluation

- 1.8.0 Training-Forms-List-and-Instructions.docx
- 1.8.1 Training-and-Demonstration-Specification.docx
- 1.8.2 Overall-Training-Plan-&-Record.xlsx
- 1.8.3 Generic-Equipment-Training-Agenda-&-Record.docx
- 1.8.4 BAS-1-Controls-Fundamentals-Training-Agenda-&-Record.docx
- 1.8.5 BAS-2-Controls-Equip-Specific-Training-Agenda-&-Record.docx
- 1.8.6 Test-&-Balance-Training-Agenda-&-Record.docx
- 1.8.7 Trainee-Evaluation-of-Training.docx

### O&M Manual Requirements, Checklist and Review Forms

- 1.9.1 O&M-Manual-Specification.docx
- 1.9.2 O&M-Manual-Submission-&-Review-Checklist.xlsx

### Systems Manual Requirements

- 1.10.1 Systems-Manual-Requirements-&-Organization.docx
- 1.10.3 Systems-Manual-General-Building-Information-&-Contractor-List.docx
- 1.10.4 System-Manual-Record-of-Content-Submitted.docx
- 1.10.5 Systems-Manual-Template-Example-Univ-Lab.docx

### Design Review

- 1.11.1 Cx-Design-Review-Template.xlsx
- 1.11.3 Sample-Cx-Design-Review.pdf
- Design Phase Controls Coordination Meeting

## CONSTRUCTION PHASE

### Meetings

- 2.1.1 Const-Phase-Cx-Planning-Meeting-Agenda.docx
- 2.1.2 Kickoff-Meeting-Agenda.docx

### Cx Equipment List

- 2.2.2 Cx-Request-for-Documentation.xlsx

### Cx Schedule, Tracking and Progress Reports

- 2.3.1 Cx-Schedule-(detailed).xlsx
- 2.3.2 Weekly-Test-Plan-and-Record.xlsx
- 2.3.3 Cx-Progress-Summary.docx
- 2.3.4 Detailed-Cx-Progress-Report-Sample.docx
- 2.3.5 Cx-Progress-Status-Detailed.xlsx
- 2.3.6 Cx-Summary-Report-Sample.docx

### Submittal Review (Equipment)

- 2.4.1 Submittal-Review-Template.docx

### Issue Management & Field Observation

- 2.5.1 Cx-Issues-Log-Template.xlsx
- 2.5.3 Field-Observation-Record-Form.docx
- 2.5.4 Startup-Witness-Record-Form.docx
- 2.5.5 Test-Witness-Record-Form.docx

## HVAC CONSTRUCTION CHECKLISTS

### Air handlers, roof top units and ducts

- 2.6.1.1 AHU-Construction-Checklist.docx
- 2.6.1.2 Ductwork-Construction-Checklist.docx
- \*2.6.1.3 Rooftop-Unit-DX-w-&-w-o-gaspack-Checklist.docx
- \*2.6.1.4 Heat-Pump-Hydronic-Construction-Checklist.docx

### Boilers and HW Piping

- 2.6.2.1 Boiler-Construction-Checklist.docx
- 2.6.2.3 Steam-and-Condensate-Piping-Construction-Checklist.docx

### Chillers, Cooling Towers and Piping

- 2.6.3.1 Water-Cooled-Chiller-Construction-Checklist.docx
- 2.6.3.2 Air-Cooled-Chiller-Construction-Checklist.docx
- 2.6.3.3 Chilled-Water-Piping-Construction-Checklist.docx
- 2.6.3.4 Condenser-Water-Piping-Checklist.docx
- 2.6.3.5 Cooling-Tower-Construction-Checklist.docx
- 2.6.3.6 Air-Separator-Construction-Checklist.docx
- 2.6.3.7 Expansion-Tank-Construction-Checklist.docx
- 2.6.3.8 Chem-Free-Condenser-Water-Treat-&-Conductivity-Control-Construction-Checklist.docx
- 2.6.3.9 Condenser-Water-Treatment-Circulation-Water-Filters-Construction-Checklist.docx

### Controls

- 2.6.4.1 BAS-Construction-Checklist.docx
- 2.6.4.3 Air\_Flow\_Measuring\_Station\_Construction-Checklist.docx
- 2.6.4.4 Hydronic-Flow-Meter-Calibration-Check

### Exhaust fans

- 2.6.5.1 Exhaust-Fan-Construction-Checklist.docx

### Heat Exchangers

- 2.6.6.1 Heat-Exchanger-Construction-Checklist.docx

### Indoor Air Quality

- 2.6.7.1 Construction-Indoor-Air-Quality-Plan-Checklist.docx

### Pumps

- 2.6.8.1 Pump-Construction-Checklist.docx

### Small AC, HP's, Unit Heaters

- 2.6.9.1 AC-Fan-coil-unit-(hydronic)-Checklist.docx

### TAB

- 2.6.10.1 TAB-Plan-Review-Checklist.docx

### VAV Units

- 2.6.11.1 Fan-Powered-Variable-Air-Volume-with-Electric-Reheat-Construction-Checklist.docx
- 2.6.11.2 Fan-Powered-Variable-Air-Volume-with-Hot-Water-Reheat-Construction-Checklist.docx
- 2.6.11.3 Variable-Air-Volume-(Cooling-Only)-Construction-Checklist.docx
- 2.6.11.4 Variable-Air-Volume-with-Electric-Reheat-Construction-Checklist.docx
- 2.6.11.6 Variable-Air-Volume-with-Hot-Water-Reheat-Construction-Checklist.docx
- 2.6.11.7 VAV-Air-Terminal-Unit-(all-types)-Check-Table.xlsx

NOTE: \*Documents Coming Soon.

### Plumbing Checklists

- 2.7.1 Domestic-Water-Heater-Construction-Checklist.docx
- 2.7.2 Domestic-Hot-Water-Circulation-Pumps-and-Aquastat-Controls-Construction-Checklist.docx
- 2.7.3 Plumbing-Fixture-Construction-Checklist.docx
- 2.7.5 Irrigation-System-Controls-Construction-Checklist.docx
- 2.7.6 Solar-Water-Heater-Construction-Checklist.docx

### Lighting Controls

- 2.8.1 Lighting-and-HVAC-Occupancy-Sensors.docx
- 2.8.2 Bldg-Wide-Lighting-Control-Sys-Construction-Checklist.docx
- 2.8.3 Daylight-Dimming-Construction-Checklist.docx

### Electrical Equipment

- 2.9.1 Variable-Frequency-Drive-Construction-Checklist.docx
- 2.9.2 Photovoltaic-System-Construction-Checklist.docx
- \*2.9.3 Automatic-Transfer-Switch-waLarge-Construction-Checklist.docx
- \*2.9.4 Automatic-Transfer-Switch-Small-Construction-Checklist.docx
- \*2.9.5 Emergency-Generator-Large-Construction-Checklist.docx
- \*2.9.6 Emergency-Generator-Small-Construction-Checklist.docx
- \*2.9.7 Grounding-System-Construction-Checklist.docx
- \*2.9.8 Low-Voltage-Dry-Type-Transformer-Construction-Checklist-(under-500-kVA)-4.docx
- \*2.9.10 600-Volt-Transformer-Construction-Checklist.docx
- \*2.9.11 Low-Voltage-Motor-Control-Center-Construction-Checklist.docx
- \*2.9.12 Low-Voltage-Switchgear-Construction-Checklist-(under-500-kVA).docx
- \*2.9.13 Medium-Voltage-Switchgear-Construction-Checklist-(over-500-kVA).docx
- \*2.9.14 Panel-Board-Construction-Checklist.docx
- \*2.9.15 Unit-Substation-Construction-Checklist-(Main-Load-Break-Disconnect).docx
- \*2.9.16 Unit-Substation-Transformer-Construction-Checklist-(under-500-kVA).docx
- \*2.9.17 Lightning-Protection-Construction-Checklist.docx
- \*2.9.18 Electrical-Room-Equipment-Construction-Checklist.docx

### Fire-Life-Safety Checklists

- 2.10.1 Fire-Alarm-Construction-Checklist.docx

### Security, Paging, Communications and Data Checklists

- 2.11.1 Nurse-Call-&-Paging-System-Construction-Checklist.docx
- 2.11.2 Security-CCTV-System-Construction-Checklist.docx

### Process and Lab Equipment Checklists

- 2.12.1 Laboratory-Air-Compressor-Drier-Construction-Checklist.docx
- 2.12.2 Laboratory-Vacuum-&-Pump-System-Construction-Checklist.docx
- 2.12.3 Fan-Filter-Unit-Construction-Checklist.docx
- 2.12.4 Lab-Fume-Hood-Construction-Checklist.docx

### Building Enclosure Checklists

- \*Doc1
- \*Doc2
- \*Doc3

### Applications

- \*3.4.1 Automated-Fault-Detection-&-Diags-CEC2008.pdf
- \*3.4.2 Bldg-Performance-Tracking-Handbook-CEC2011.pdf