



February 10, 2010 Revision 2

**Submittal for Commissioning Services for the BT Collins High  
Tech RTS Project in Sacramento, CA.  
Refer to Specification Section 01 46 00.00 06**

**1.0 General:**

This Submittal covers the functions and requirements of the Commissioning Agent as defined in Section 01 46 00.00 06 “Commissioning of HVAC Systems”. Commissioning Agent responsibilities, activities, tasks and deliverables are outlined below and specified in Section 01 46 00.00 06 of the Project Specifications “Commissioning of HVAC Systems”.

**2.0 Qualifications: Commissioning Agent: Paragraph 1.1 of the Specifications**

Harold Cullick’s resume is attached to this submittal as the basis for meeting the requirements for the Commissioning Agent. Harold will serve as Commissioning Agent for this project. Harold is a Professional Engineer with over 20 years of design experience and registered in California, Colorado, Oregon, Arizona and Louisiana. His commissioning experience includes startup and checkout for many projects. The most recent of these projects includes acting as the base build commissioning manager for the Intel Fab 24 project in Ireland in 2002 – 2003. This project consisted of all the support facilities for the new microelectronics manufacturing facility as well as several support buildings. Overall project cost was over \$750 million US.

Harold also served as base build commissioning manager for Intel Fab 32 project in Israel in 2007 and 2008. This project consisted of a large chiller plant (over 13000 tons), boiler plant, clean dry compressed air generation, backup power generation, industrial/chemical waste treatment systems as well as support utilities and buildings. Overall project cost was over \$1.1 billion US.

Harold has worked on numerous small projects including startup/commissioning support for a backup power generation facility, data centers, central utility plants, assembly/test manufacturing facilities and office buildings.

571 Stanislaus Avenue, Suite E  
P.O. Box 152  
Angels Camp, CA 95222

 : 209-736-4880  
 : 209-729-4440  
 : [harold@dylanmechanical.com](mailto:harold@dylanmechanical.com)  
 : [www.dylanmechanical.com](http://www.dylanmechanical.com)

### **3.0 Commissioning Team Paragraph 1.1 and 3.1 of the Specifications**

Team Members will include:

- a. CA: Commissioning Agent Harold Cullick
- b. QA: Contracting Officer's Quality Assurance Representative: Kimberly Woolf
- c. QC: Contractor's Quality Control Representative: Richard Surynt
- d. Design Agent's Representative: Mason and Hanger
- e. HVAC Contractor Representative: Ken Seastrom
- f. Testing and Balancing Contractor Representative: Circo Testing and Balancing
- g. Mechanical Contractor Representative: Ken Seastrom
- h. HVAC Controls Contractor Representative: L&H Airco Steve Schneider
- i. Owner/Contracting Agent Representative: TBD
- j. Using Agent's Sustaining Operations and Maintenance Representative: TBD
- k. Equipment Manufacturers' representatives for startup assistance and training sustaining personnel, if required:
  1. Chiller
  2. Boiler
  3. AHU
  4. VAV Terminals
  5. DX Air Cooled Condensing Unit and DX Fan Coil
  6. HVAC Systems Controls
  7. Exhaust Fan

### **4.0 Test Procedures Paragraph 1.1 of the Specifications**

See Attached Checklists for Pre Commissioning and Functional Acceptance Tests.

### **5.0 Commissioning Agent Responsibilities Paragraph 1.2 of the Specifications**

#### **Project Execution Plan**

HVAC Systems included in the HVAC Systems Commissioning Plan:

1. Packaged Air Cooled Chilled Water System
2. Heating Water System



**Dylan Mechanical Construction Services, Inc**

3. Air Handling Systems
4. VAV Terminals
5. DX Air Cooled Condensing Units
6. Unit Heaters
7. Exhaust Fans
8. HVAC System Controls

Specific reference is made to Paragraph 1.2 of the Commissioning Specification, “Commissioning Agent Responsibilities”. This section outlines the specific tasks required of the commissioning agent.

**Design Review:** The project specifications and drawings will be reviewed including the sequences of operation. The project submittals will be reviewed for compliance with the project specifications and capabilities to meet the project functional requirements. The purpose of this review is to thoroughly understand the systems and components and to vet out potential startup and functional issues. The design review report will be issued within 14 days of notice to proceed and receipt of or access to all documents required for the review. The review meetings with the Contracting Officer and the Designer will follow to clarify any issues and questions raised during the review.

**TBD: Review Meeting with Contracting Officer and the Designer**

**Commissioning Plan:**

The Commissioning Plan will include the list of systems and components included in the HVAC Commissioning. The commissioning documents produced during this activity will be used for the construction complete checklists, operational testing and functional acceptance testing. This includes making commissioning folders for each system and equipment component with the associated pre commissioning and functional acceptance test check lists, documented functional acceptance test procedures, sequence of operation, and other required information for that particular component or system.

The schedule will be integrated with the overall project schedule to meet completion dates. Each system and component will have scheduled milestones for construction complete, pre commissioning test complete and functional testing complete at a minimum. Projected durations for each of these activities will be put in the schedule for

571 Stanislaus Avenue, Suite E  
P.O. Box 152  
Angels Camp, CA 95222

 : 209-736-4880  
 : 209-729-4440  
 : [harold@dylanmechanical.com](mailto:harold@dylanmechanical.com)  
 : [www.dylanmechanical.com](http://www.dylanmechanical.com)



**Dylan Mechanical Construction Services, Inc**

coordination and agreement of all the contractors and representative involved in the commissioning activities.

**Construction Activities:**

The submittals and shop drawings for the HVAC systems will be reviewed for compliance and functional capabilities to meet the project requirements. The construction progress will be reviewed periodically to verify compliance with drawings and specifications as well as progress against the pre commissioning check lists.

**TAB Verifications:**

Verification of at least 15% of all readings made by the TAB agency will be witnessed as required in the Project Specifications. The TAB reports will be reviewed and checked to meet all project testing requirements. Any deviations will be noted and the TAB agency will retest as required until all test reports have been checked, verified and issued.

**Functional Performance Tests:**

Lead and witness the functional performance testing with the contractors providing the testing functions per the written procedures and project requirements. The Using Agency's representative or sustaining personnel should be actively involved in witnessing and performing these tests to facilitate familiarity with the equipment and systems.

Each checklist in Appendices A and B will be completed during the commissioning testing. Signoff sheets for acceptance of the tests by each commissioning team member will be required as a condition to acceptance of the test.

**Training:**

Schedule, supervise and video tape all required training sessions for the Owner's personnel by the equipment and system suppliers and factory reps. The video tapes will be turned over to the Owner with the final Commissioning Report to facilitate training of future personnel.

**Operating and Maintenance Manuals Turn-over:**

Assist in the review of the O&M manuals to verify that the documentation is complete, comprehensive and includes the submittals, installation instructions, O&M instructions, sequence of operation, test reports and Warranties.

**Turn-Over Instructions:**

571 Stanislaus Avenue, Suite E  
P.O. Box 152  
Angels Camp, CA 95222

 : 209-736-4880  
 : 209-729-4440  
 : [harold@dylanmechanical.com](mailto:harold@dylanmechanical.com)  
 : [www.dylanmechanical.com](http://www.dylanmechanical.com)



**Dylan Mechanical Construction Services, Inc**

After all commissioning and training activities are complete, one final meeting will be scheduled with the operation and maintenance personnel and the HVAC engineer, installing contractors and major suppliers. The purpose of this meeting is a final review of the systems, contact information for emergency repair and warranty work, and review of spare parts requirements and programmed maintenance schedules.

**Final Commissioning Report:**

Issue the final commissioning report that will include all pre commissioning checklists, functional commissioning checklists, and substantiating information. The final report will include a Summary section that lists any outstanding issues, deficiencies identified during the testing, the corrective actions and any historical information regarding equipment operation, warranties, and construction details.

**8.0 Summary:**

Commissioning Agent scheduled activities will be integrated with the Testing and Balancing and the Direct Digital Control Systems for HVAC Contractor. Many of the activities of the specifications sections for HVAC Commissioning, Direct Digital Control and Testing and Balancing overlap and will be coordinated to save time and effort.

The Commissioning Process includes these distinct activities and milestones:

1. Construction Completion by the Contractors. Documentation of construction complete test reports including pressure and leak tests. Documentation of operational testing to verify basic point to point operation of sensors, actuators, transmitters, valves, dampers, etc.
2. Completion and Signoffs of the Pre-Commissioning Activities and Checklists.
3. Completion of BACNet Testing and TAB Reports.
4. Issue O&M manuals, documented operating procedures and control sequences of operation.
5. Completion of the Functional Performance Testing for each system and equipment component. Signoffs of the Test Reports and Checklists.
6. Training of Sustaining Operating and Maintenance Personnel.
7. Turnover of functioning systems to sustaining operating and maintenance personnel.
8. Final Commissioning Report

571 Stanislaus Avenue, Suite E  
P.O. Box 152  
Angels Camp, CA 95222

 : 209-736-4880  
 : 209-729-4440  
 : [harold@dylanmechanical.com](mailto:harold@dylanmechanical.com)  
 : [www.dylanmechanical.com](http://www.dylanmechanical.com)