

Design-Build Division 01

Section 010000

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## SECTION 012100 – ALLOWANCES

### PART 1 – GENERAL

**OMIT THIS SECTION IF ALLOWANCES ARE NOT INCLUDED IN THE CONTRACT.**

#### 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. **Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;**
  - 2. **Additional Divisions and Sections for specific requirements of the Work in those Sections.**

#### 1.2 SUMMARY

- A. The specific allowances for this project are as follows:
- B. **(Insert Allowance #1 description)**

#### 1.3 UNUSED MATERIALS

- A. Return unused materials purchased under an Allowance to manufacturer or supplier for credit to Judicial Council of California, after installation has been completed and accepted.
- B. If requested, prepare and deliver unused material for storage by Judicial Council of California when it is not economically practical to return the material for credit. If directed, deliver unused material to Judicial Council of California's storage space. Otherwise, disposal of unused material is Design Build Entity's responsibility.

**PART 2 - PRODUCTS (EDIT AS NEEDED)**

**PART 3 - EXECUTION (EDIT AS NEEDED)**

**END OF SECTION  
012100**

## COORDINATION AND PROJECT MEETINGS

## SECTION 013100 - COORDINATION AND PROJECT MEETINGS

## 1.1 RELATED DOCUMENTS AND PROVISIONS:

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document.
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Sections.
- B. SECTION INCLUDES
  - 1. General Responsibilities
  - 2. Project Kickoff Meeting
  - 3. Design Meetings
  - 4. Preconstruction Conference.
  - 5. Progress Meetings.
  - 6. Pre-Installation Conferences.
  - 7. Post Construction Dedication.
- C. GENERAL RESPONSIBILITIES OF THE DESIGN BUILD ENTITY
  - 1. Design Build Entity shall develop and maintain a web-based project management information system and website to service the project. Access and use shall be provided for the Judicial Council's project management and inspection team.
  - 2. Design Build Entity shall establish a Big Room for the duration of the Pre-GMP and Post-GMP phases. Refer to 01 50 00 Temporary Facilities and Controls for requirements. All design review meetings shall be scheduled at this location unless an alternate location is approved by the Judicial Council. Design Build Entity will coordinate location of Big Room with Judicial Council. Design Build Entity shall facilitate communications and management of the design process.
  - 3. Design Build Entity shall make arrangements for all project meetings, prepare agendas, preside at meetings, and shall record minutes and distribute copies within two (2) business days of meetings.
- D. PROJECT KICKOFF MEETING
  - 1. Design Build Entity will schedule a project kickoff meeting immediately after execution of the Pre-GMP Phase Agreement.
- E. DESIGN MEETINGS
  - 1. Design Build Entity shall establish smaller cross-discipline design groups within the Big Room in accordance with Target Value Design principles.

*[Text in red to be edited by Design Build Entity.]*

#### COORDINATION AND PROJECT MEETINGS

These smaller groups should be made up of cross-functional project team members, including the Judicial Council of California's Representative(s), Design Build Entity contractor's team, Design Build Entity design team, and subcontractors. Design Build Entity will work with Judicial Council to ensure there is stakeholder representation within each group as needed.

2. Design group meetings will be held at a frequency necessary to keep the design development process on schedule and designing to target costs established within the Target GMP. Cross-group coordination and report out meetings should be held as necessary to keep information coordinated and communicated among groups.

#### F. PRECONSTRUCTION CONFERENCE

1. Design Build Entity will schedule a conference immediately after execution of amendment finalizing GMP.
2. Mandatory Attendance: Construction Manager, Judicial Council Project Manager, Project Inspector, Design Build Entity's Architect, Design Build Entity's Project Manager, and Design Build Entity's Job/Project Superintendent.
3. Optional Attendance: Design Build Entity's consultants and utility company representatives.

#### G. PROGRESS MEETINGS

1. Design Build Entity, CM, Judicial Council of California Project Manager shall schedule and administer meetings throughout progress of the Work at a minimum of every week.
2. Attendance Required: Superintendent, Design Build Entity Project Manager, CM, Project Engineer(s), Project Inspector, Architect, and Subcontractors and Suppliers as appropriate to agenda topics for each meeting.

#### H. PRE-INSTALLATION CONFERENCES

1. When required in individual specification section, Design Build Entity shall convene a pre-installation conference prior to commencing work of the section. Refer to individual specification section for timing requirements of conference.
2. Design Build Entity shall require its Subcontractors and suppliers directly affecting, or affected by, work of the specific section to attend.
3. Notify the Judicial Council of California Project Manager, CM, and Project Inspector four (4) days in advance of meeting date.
4. The pre-installation conference may coincide with a regularly scheduled progress meeting.
5. The purpose of the meeting will be to review Contract Documents, conditions of installation, preparation and installation procedures, and coordination with related work and manufacturer's recommendations.

*[Text in red to be edited by Design Build Entity.]*

COORDINATION AND PROJECT MEETINGS

6. Pre-installation Schedule: As a minimum, Work being installed under the Contract Documents technical sections will require pre-installation conferences. Design Build Entity shall develop the technical specifications and add all additional requirements for pre-installation meetings contained in those sections.

I. POST CONSTRUCTION DEDICATION

1. Design Build Entity shall work with the Judicial Council to mutually establish the date, agenda, and refreshments of the Dedication ceremony.

**END OF SECTION 013100**

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## SECTION 013120 – DOCUMENTATION REQUIREMENTS

**PART 1 - GENERAL****1.1. RELATED DOCUMENTS**

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
1. *Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;*
  2. *Additional Divisions and Sections for specific requirements of the Work in those Section.*

**1.2. RESPONSIBILITIES**

Design Build Entity shall use common file name convention and format for document. Design Build Entity shall review the naming convention with Judicial Council for acceptance and coordination.

Service Manuals	* PDF	CSI#####_Name_SM.pdf	"Manual"
			Technical Specifications "## ## ##.##"
RFIs	* PDF	RFI_####_rev##_yyyymmdd Name.pdf	"RFI #"
Approved Submittals	* PDF	_CSI#####_yyyymmdd Name_pkg# Final.pdf	Technical Specifications "## ## ##.##"
Warranty / Licensing Documents	* PDF	CSI#####_Name_warranty.pdf	* Document Type - "Warranty"
		CSI#####_Name_license.pdf	Technical Specifications "## ## ##.##"
			* Expiration Date MMDDYYYY
Certificates (Fire, Elevator, Generator AQMB, etc.)	* PDF	CSI#####_Name_permit.pdf	None

Key Schedule	* Excel	CSI#####_Name.pdf	None
Record Photographs	* JPG	yyyymmdd_(level)_(location).jpg	None

**1.3. CLOSEOUT SUBMITTAL PROCESS**

All documents from the construction phase, including both informational and action submittals, are to be turned over to the Judicial Council of California per the process and procedures established by the Judicial Council of California in Section 01 33 00. Design Build Entity shall certify that the documents listed above meet the required standards set forth herein.

**1.4. FORMAT**

A. All documents must be submitted in an electronic format unless specified otherwise.

**END OF SECTION 013120**

**SECTION 01 32 16**

**CONSTRUCTION SCHEDULE – NETWORK ANALYSIS**

**1. GENERAL**

**1.1. RELATED DOCUMENTS AND PROVISION**

Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

- 1.1.1. General Conditions;
- 1.1.2. Coordination and Meetings
- 1.1.3. Submittals; and
- 1.1.4. Price And Payment Procedures
- 1.1.5. General Conditions, Article 15

**1.2. PERFORMANCE REQUIREMENTS**

- 1.2.1. Ensure adequate scheduling during design and construction activities so Work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.
- 1.2.2. Ensure coordination of Design Build Entity and Subcontractors at all levels.
- 1.2.3. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of Products, materials and equipment.
- 1.2.4. Ensure on-time delivery of JUDICIAL COUNCIL furnished Products, materials and equipment.
- 1.2.5. Ensure coordination of jurisdictional reviews.
- 1.2.6. Prepare applications for payment.
- 1.2.7. Monitor progress of Work.
- 1.2.8. Prepare proper requests for changes to Contract Time.
- 1.2.9. Prepare proper requests for changes to Contract Schedule.
- 1.2.10. Identify and detect schedule delays; identify any corrective actions.

**1.3. QUALIFICATIONS**

**1.3.1. Scheduler:**

- 1.3.1.1. Design Build Entity shall retain a construction scheduler to work in enough capacity to perform all of the Design Build Entity's requirements to prepare the Contract Schedule including detailed construction activities. The Scheduler shall not be the Project Manager, Project Engineer, Foreman, or the Superintendent. Scheduler shall plan, coordinate, execute, and monitor a



Critical Path Method (CPM) schedule as required for Project.

- 1.3.1.2. Scheduler will cooperate with Judicial Council and shall be available on site as needed for monitoring, maintaining and updating schedules in a timely manner.
- 1.3.1.3. Judicial Council has the right to reject the Scheduler based upon a lack of experience as required by this Document or based on lack of performance and timeliness of schedule submittals/fragnets on current project. Design Build Entity shall within seven (7) calendar days of JUDICIAL COUNCIL's rejection, propose another scheduler who meets the experience requirements stated above.

#### **1.4. SUBMITTALS**

- 1.4.1. Upon Award of Contract, immediately commence development of the Initial Contract Schedule. Initial Contract Schedule shall be submitted within thirty (14) calendar days of the Effective Date and authorization for Pre-GMP Services. The Initial Contract Schedule shall provide a fully detailed set of activities for Pre-GMP services. The Initial Contract Schedule shall contain a limited number of activities for the remainder of the project, including all contractual milestones.
- 1.4.2. No more than Ninety (14) calendar days after Notice to Proceed (NTP) for Post-GMP Services, Design Build Entity shall submit the updated Contract Schedule for all Work of the Project, including Post-GMP Services and construction. The Contract Schedule should be based on the submitted Preliminary Schedule, the Initial Contract Schedule, and incorporate all review comments provided by the Judicial Council during Pre-GMP services. Show sequence and interdependence of all activities required for complete performance of all Work, beginning with NTP for Pre-GMP Services and concluding with date of final completion of Post-GMP Services.
- 1.4.3. The Contract Schedule shall be based on and incorporate all milestone and completion dates specified in Contract Documents. Only the Final Contract Completion date shall have a hard constraint.
- 1.4.4. Submit Short Interval Schedule weekly, directly derived from project CPM construction schedule, one day prior to each project progress meeting.
- 1.4.5. Notify Judicial Council of a potential Time Impact within seven (7) calendar days of the date that the Design Build Entity becomes aware of any delay impacting the critical path in completing the Work.
- 1.4.6. The Design Build Entity shall prepare a requested time adjustment schedule in accordance with 1.10 of this section and submit along with any Proposed Change Order (PCO) and a Time Impact Analysis (TIA) which includes both a written narrative and a schedule diagram depicting how the changed work may affect the progress of work and other schedule activities. The schedule diagram shall show how the Design Build Entity proposes to incorporate the changed work in the schedule, and how it impacts the current updated schedule and critical path. Failure to include a TIA with the PCO shall constitute a waiver of the right to later claim any adjustment in time based upon changed or unforeseen Work.
- 1.4.7. Submit recovery schedules in accordance with 1.11 as required for timely completion of Work or when requested by the Judicial Council.
- 1.4.8. Submit job cost reports with each monthly schedule update, or when requested by the Judicial Council.

- 1.4.9. Submit one (1) native electronic copy, (1) electronic PDF file in submitted format, and two (2) hard copies of each schedule and cost report.

## **1.5. REVIEW AND EVALUATION**

- 1.5.1. Design Build Entity shall participate in joint review of Contract Schedule and any reports with Judicial Council or representatives as requested.
- 1.5.2. Within seven (7) calendar days of receipt of Judicial Council comments, Design Build Entity shall provide satisfactory revision to Contract Schedule or adequate justification for activities in question.
- 1.5.3. In the event that an omission or error is not detected by Judicial Council review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.
- 1.5.4. Acceptance by Judicial Council of corrected Contract Schedule shall be a condition precedent to making any progress payments.
- 1.5.5. The basis for determining progress payments will be the progress assigned to the Schedule of Value items for the associated work and shall be verified by progress of the associated CPM schedule activities. Actual Start and Finish dates from the construction schedule will be referenced to the job cost report.
- 1.5.6. Review and acceptance by Judicial Council of the Initial Contract Schedule or updated Contract Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, manpower, or equipment loading stated or implied on schedules.

## **1.6. FORMAT**

- 1.6.1. Prepare Critical Path Method (CPM) Schedule, diagrams and supporting mathematical analyses using Precedence Diagramming Method (PDM), under concepts and methods outlined in AGC Construction Planning and Scheduling Manual, or other method pre-approved by Judicial Council.
- 1.6.2. Submit electronic files and hard copies to Judicial Council on a monthly basis on the preset dates agreed to by the Design Build Entity and JUDICIAL COUNCIL.
- 1.6.3. Unless otherwise specified, the terms “day” or “days” are meant to be working days – not including weekends or recognized non-workdays, such as holidays.

## **1.7. COST AND SCHEDULE REPORTS**

- 1.7.1. **Activity Tabular Report:** Tabulate each activity of network diagram and identify for each activity:
  - 1.7.1.1. Activity ID Number.
  - 1.7.1.2. Description.
  - 1.7.1.3. Predecessor and Successor Activity ID numbers.

- 1.7.1.4. Original Duration.
- 1.7.1.5. Remaining Duration.
- 1.7.1.6. Earliest start date.
- 1.7.1.7. Earliest finish date.
- 1.7.1.8. Actual start date.
- 1.7.1.9. Actual finish date.
- 1.7.1.10. Latest start date.
- 1.7.1.11. Latest finish date.
- 1.7.1.12. Total and free float.
- 1.7.1.13. Identification of critical path activity.
- 1.7.1.14. Schedule of Values code.
- 1.7.1.15. Work Package ID number.
- 1.7.1.16. Responsibility.
- 1.7.1.17. Percentage complete based on Planned Duration.
- 1.7.1.18. Finish Variance in positive or negative duration.

1.7.2. **Job Cost Report**

- 1.7.2.1. Prepare a Cost Report listing each activity and its associated cost, percentage of Work accomplished, total earned value to date, and previous payments and amount earned prior to the update period, and current amount earned this update period.
- 1.7.2.2. Produce a projected cash flow report of actual costs and projected costs using the Schedule of Values:
  - The latest versions of Oracle's Primavera P6, Microsoft Project or Excel are recommended software programs to be utilized.
  - Each line item in the Schedule of Values will be represented in the Cash flow as a single line and provide the ability to summarize by either CSI Division or bid package (subcontractor).
  - Each line item shall have a start and finish date that correspond to the latest schedule update and work shall be continuous throughout its duration.
  - The original baseline, planned expected, and actual costs for each SOV item should be summarized on a monthly unit basis for the duration of the project.
  - The cashflow report should show monthly totals, and accumulated costs for the duration of the project.
- 1.7.2.3. Produce an updated cash flow with each monthly update:
  - The cash flow projection shall be updated on a monthly basis
  - Actual Earned Value for each line item will be input on a monthly basis
  - Projected billings of future months, or estimate to complete each item

- will be adjusted accordingly
- Projected and Actual Start and Finish dates on each cash flow item will be adjusted accordingly
- Corresponding monthly progress schedule should include a summary of activities that made progress that month and should be broken down by SOV code so that the staff can easily identify the corresponding SOV items that should have actual cost associated with them in that month.
- Update the Schedule of Values to include all executed change orders with projected or actual start and finish dates.

1.7.3. **Required Sorts:** If requested by the JUDICIAL COUNCIL, provide a listing of the activities in the following sorts or groups:

1.7.3.1. By the Design Build Entity's Work Breakdown Structure (WBS).

1.7.3.2. By CSI Divisions.

1.7.3.3. By Work Packages (subcontract).

1.7.3.4. By Schedule Of Values code.

## 1.8. CONSTRUCTION SCHEDULING

1.8.1. By execution of the Contract, the Design Build Entity represents they have analyzed the Work, the materials and methods involved, the systems of the building, availability of qualified labor, restrictions of the Project Site, constraints imposed, their own workload and capacity to perform the Work, and agrees that the specified times presented in the Preliminary Schedule are reasonable considering the existing conditions prevailing in the locality of the Work, including weather conditions, and other factors, with reasonable allowance for variations from average or ideal conditions.

1.8.2. Design Build Entity shall develop and submit an activity coded schedule of construction (or Contract Schedule) as required by this Document and the Contract Documents. It shall be submitted in computer generated network format and shall be organized by Activity Codes, representing the major CSI Divisions and Bid Package associated with each activity. The Contract Schedule shall include activities such as design timelines, design review, permitting, utility coordination, mobilization, preparation of design submittals, specified review periods, procurement items, fabrication items, milestones, and a summary of construction activities.

1.8.3. Upon Judicial Council's acceptance of the Contract Schedule, Design Build Entity shall update the accepted Contract Schedule until Design Build Entity's schedule of construction activities is fully developed and accepted. Since updates to the Contract Schedule support the SOV which is the basis for payment to Design Build Entity, submittal and acceptance of the Contract Schedule and updates shall be a condition precedent to making of monthly payments, as indicated in the General Conditions.

1.8.4. Failure to submit an adequate or accurate Contract Schedule, or updates thereto or failure to submit on established dates, will be considered a cause for withholding payment, or partial payments, until a revised or subsequently updated Contract Schedule is submitted, reviewed and accepted by Judicial Council.

1.8.5. Failure to include any activity shall not be an excuse for completing all Work by required Completion Date.

- 1.8.6. Reference the date identified in the Notice to Proceed for Pre-GMP Services as Day "1," the start of the Contract Time.
- 1.8.7. The Contract Schedule shall comply with and include the following:
  - 1.8.7.1. Provide a written narrative describing Design Build Entity's approach to mobilization, procurement, and construction during the first thirty (30) calendar days including crew sizes, equipment and material delivery, Site access, submittals, and permits.
  - 1.8.7.2. Shall comply with all requirements set forth in Article 15, Schedules / Submittals Required of Design Build Entity
  - 1.8.7.3. Treat each story or separate area as a separate numbered activity for each principal element of the Work.
  - 1.8.7.4. With the exception of contract completion milestones, the use of constraints that override the Master Project Schedule's calculated early or late dates will not be allowed
  - 1.8.7.5. The Contract Schedule shall include all non-workdays on which the Design Build Entity anticipates Work will not be performed, including any selected Holidays, Labor Union non-workdays, and adverse weather days that are anticipated to occur within the workday calendar. Testing periods and days for training Judicial Council staff shall not include Holidays, based on the Judicial Council's calendar. Submit with the schedule a list of anticipated non-workdays, such as weekends, holidays, labor union agreements, and potential adverse weather days that are anticipated to occur within the workday calendar for the duration of the Contract. Normal and anticipated non-workdays, included an average annual amount of "Inclement weather" days shall not be considered a cause of a lost working day.
- 1.8.8. **Activity.** An activity shall meet the following criteria:
  - 1.8.8.1. Any portion or element of Work, action, or reaction that is precisely described, readily identifiable, and is a function of a logical sequential process.
  - 1.8.8.2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.
  - 1.8.8.3. Responsibility shall be identified with a single performing entity.
  - 1.8.8.4. Each activity must have a single corresponding Schedule of Values (SOV) code. The sum of all activities with the same SOV code shall correlate with the total value of the SOV item.
  - 1.8.8.5. Additional codes shall identify building, floor, bid item and CSI classification.
  - 1.8.8.6. Activities labeled start, continue or completion are not allowed.
- 1.8.9. **Equipment and Materials.** For equipment and materials on or near (within 10 workdays) of the critical path, or having a long lead time (requiring greater than 45 calendar days for fabrication and delivery) show a sequence of activities including:
  - 1.8.9.1. Preparation of shop drawings and sample submissions.

- 1.8.9.2. Review of shop drawings and samples.
- 1.8.9.3. Finish and color selection.
- 1.8.9.4. Fabrication and delivery.
- 1.8.9.5. Erection or installation.
- 1.8.9.6. Testing.
- 1.8.10. Include a minimum of thirty (30) calendar days prior to Completion Date for completion of punch list work and clean up. No other activities shall be scheduled during this period.

## **1.9. SHORT INTERVAL SCHEDULE**

- 1.9.1. The Four-Week Rolling Schedule shall be based on the most recent JUDICIAL COUNCIL updated Contract Schedule. It shall include weekly updates to all construction, submittal, fabrication/procurement, and separate Work Contract activities. Design Build Entity shall ensure that it accurately reflects the current progress of the Work.
- 1.9.2. Shall be fully developed horizontal bar-chart-type schedule based on corresponding Construction Schedule.
- 1.9.3. Prepare schedule on sheet of sufficient width to clearly show data.
- 1.9.4. Provide continuous heavy vertical line identifying first day of week.
- 1.9.5. Provide continuous subordinate vertical line identifying each day of week.
- 1.9.6. Identify activities by same activity number and description as Contract Schedule.
- 1.9.7. Show each activity in proper sequence.
- 1.9.8. Indicate graphically sequences necessary for related activities.
- 1.9.9. Indicate activities completed or in progress for previous one (1) week period.
- 1.9.10. Indicate activities scheduled for succeeding three (3) week period.
- 1.9.11. Further detail may be added if necessary, to monitor schedule.
- 1.9.12. Indicate critical and near critical path activities.
- 1.9.13. Indicate additional issues or potential impacts to the start or finish of contract activities.

## **1.10. REQUESTED TIME ADJUSTMENT SCHEDULE**

- 1.10.1. An updated Contract Schedule shall not show a Contract Completion Date later than the Contract Time, subject to any time extensions processed as part of a Change Order.
- 1.10.2. If Design Build Entity believes that the Work has been impacted at no fault by the Design Build Entity such that the project completion date will be delayed, the Design Build Entity must submit proof demonstrating the delay to the critical path. Any submitted proof, must be in conformance with the requirements set forth in Article



## 19, CHANGES IN THE WORK.

- 1.10.3. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of Work.
- 1.10.4. Extension request shall include forecast of Project Completion date and actual achievement of any dates listed in Contract Documents.
- 1.10.5. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.
- 1.10.6. Schedule shall be a time-scaled network analysis.
- 1.10.7. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.
- 1.10.8. An "As-Built/Impacted vs. As-Planned" time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time and event time computation of all affected activities. Event times shall be those as shown in latest updated and approved Contract Schedule.
- 1.10.9. Activity delays shall not automatically constitute an extension of Contract Time.
- 1.10.10. Failure of Subcontractors shall not be justification for an extension of time.
- 1.10.11. Float is not for the exclusive use or benefit of any single party. Float time shall be apportioned according to needs of project, as determined by the JUDICIAL COUNCIL.
- 1.10.12. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall not be allowed.
- 1.10.13. When a delay to the project as a whole can be avoided by revising preferential sequencing, resource restraints, or logic, and the Design Build Entity chooses not to implement the revisions, the Design Build Entity shall not be entitled to a time extension and no compensation for extended overhead.
- 1.10.14. Extensions will be granted only to extent that time adjustments to activities exceed total positive float of the critical path and extends Completion date.
- 1.10.15. JUDICIAL COUNCIL shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements are complied with.
- 1.10.16. JUDICIAL COUNCIL shall not be responsible or liable for any construction acceleration due to failure of JUDICIAL COUNCIL to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirement of Contract for time extension requests.
- 1.10.17. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within ten (10) days after commencement of a delay it is mutually agreed that delay does not require a Contract Time extension.

**1.11. RECOVERY SCHEDULE**

- 1.11.1. Should a Contract Schedule update show the projected project completion date more than fourteen (14) Days later than current Contract completion date, prepare and

submit a recovery schedule prior to the next monthly schedule update.

- 1.11.2. Design Build Entity shall prepare and submit to the JUDICIAL COUNCIL a Recovery Schedule within seven (7) calendar days of being requested by the JUDICIAL COUNCIL, at no cost to the JUDICIAL COUNCIL, including but not limited to when:
  - 1.11.2.1. Delay in completion of any critical activity or group of activities indicates an overrun of the Contract Time or milestone dates by ten (10) Working Days.
  - 1.11.2.2. When delays in submittals, deliveries, or work stoppages are encountered making necessary the re-planning or rescheduling of activities.
  - 1.11.2.3. When Contract modification necessitates schedule revision, submit schedule analysis of change order work with cost proposal.
- 1.11.3. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule and to complete the Work by the Completion Date.
- 1.11.4. Create a separate submittal for Recovery Schedule. Do not submit recovery provisions with or as a Schedule Update.
- 1.11.5. Upon acceptance, the Recovery Schedule shall become the current Construction Schedule.

## 1.12. UPDATING SCHEDULES

- 1.12.1. Review and update schedule at least five (5) days prior to submitting an Application for Payment.
- 1.12.2. Maintain Contract Schedule weekly to record actual prosecution and progress.
- 1.12.3. Prepare schedule updates in accordance with Article 15, Schedules/Submittals Required of Design Build Entity.
- 1.12.4. Activities representing additional or changed work in accordance with approved Change Orders shall be identified as separate new activities. Use appropriate detail and logic to properly represent the complexity of the Change Order work.
- 1.12.5. Change Orders of less than \$5,000.00 value or less than three (3) days duration, and do not impact the critical path of work, need not be shown with corresponding logic ties to contract work.
- 1.12.6. **Written Narrative Report:** Design Build Entity shall include a written report to explain the monthly schedule update, and any recovery schedule. The narrative shall, at a minimum include the following headings with appropriate discussions of each topic:
  - 1.12.6.1. Activities or portions of activities completed during previous reporting period.
  - 1.12.6.2. Actual start dates for activities currently in progress.
  - 1.12.6.3. Deviations from critical path in days ahead or behind.
  - 1.12.6.4. Progress analysis describing problem areas, referenced to associated Field Instructions, RFIs, Proposed Change Orders, Change Orders, etc.
  - 1.12.6.5. Current and anticipated delay factors and their impact.



1.12.6.6. Proposed corrective actions and logic revisions for recovery schedule.

1.12.6.7. Modifications, additions, deletions, and changes in logic of the Contract Schedule.

1.12.6.8. In updating the Contract Schedule, Design Build Entity shall not modify activity ID numbers, schedule calculation rules/criteria, or the activity coding structure required.

1.12.7. The Contract Schedule update shall correspond to the Schedule of Values which will form basis upon which progress payments will be made.

1.12.8. JUDICIAL COUNCIL will not be obligated to review or process Application for Payment until schedule and Progress Report have been submitted.

### **1.13. DISTRIBUTION**

1.13.1. Following joint review and acceptance of updated schedules, distribute electronic and hard copies to JUDICIAL COUNCIL, representatives, and all other concerned parties.

1.13.2. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedule.

## **2. PRODUCTS**

### **2.1. SCHEDULING SOFTWARE**

2.2. Design Build Entity shall utilize Primavera P6 Project Management® software (latest version) by Oracle, or JUDICIAL COUNCIL-approved equivalent scheduling software to employ the Critical Path Method (CPM) in the development and maintenance of the Construction Schedule. It shall be capable of generating time-scaled logic diagrams, bar charts, layouts and reports with any and/or all activity detail.

### **2.3. ELECTRONIC DATA**

Provide scheduling files in both the electronic native format and in PDF by electronic media. The electronic P6 files shall be saved in “.XER” type format.

**END OF SECTION**

## SECTION 013300 – SUBMITTALS

### PART 1 - GENERAL

#### 1.3 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. *Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;*
  - 2. *Additional Divisions and Sections for specific requirements of the Work in those Section.*

#### 1.4 DEFINITIONS

- A. Architect of Record: Refers to Architect and or Design Engineer of Record that is responsible for review and approval of all submittals within their respective discipline.
- B. Submittal Registry: Comprehensive list of all required submittals for the Project developed by the Design Build Entity and submitted to Judicial Council.
  - a Design Build Entity is required to provide JCC with a comprehensive list of all Submittals for review and approval **within twenty (20) days of issuance of NTP.**
- C. ActionSubmittals:
  - 1. Written and graphic information that requires JCC's review and response.
    - a Action submittals require the JCC's approval
    - b Refer to the attached **Action Submittal Distribution List** template included in Section XX below.
- D. Informational Submittals
  - 1. Written and graphic information that does not require JCC's response.action. Submittals may be rejected for not complying with Performance Criteria or other applicable Project requirements.

#### 1.5 SUBMITTAL PROCEDURES – USE OF PRE-APPROVED PROGRAM

- A. Design Build Entity shall utilize for the submittal process a project / document management software program pre-approved by the Judicial Council of California.
- B. All submittals must be transmitted to the JCC.
- C. Design Build Entity shall transmit each submittal in conformance with requirements of this Document. For each submittal, Design Build Entity shall:
  - 1. Sequentially number the transmittal forms. Resubmitted submittals must have the original number with an alphabetic suffix;
  - 2. Identify Judicial Council of California's project number, Subcontractor or

- supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate;
3. Apply Design Build Entity's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without Design Build Entity's stamp and signature will be returned without review.
  4. Coordinate preparation and processing of submittals with performance of Work. Transmit each submittal sufficiently in advance of performance of Work to avoid delay.
  5. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  6. Coordinate transmittal of different types of submittals for related parts of Work so processing will not be delayed because of the need to review submittals concurrently for coordination.
- D. Judicial Council of California reserves the right to withhold action on an informational submittal requiring coordination with other submittals until related submittals are received.
- E. Comply with Contract Documents for list of submittals and time requirements for scheduled performance of Work.
- F. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect of Record and/or Judicial Council sufficiently in advance of the Work to permit processing.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. Provide space for Design Build Entity, Architect of Record, and Judicial Council review stamps.
- I. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- J. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- K. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.
- L. Deviations from Contract Documents require specific written acceptance by the Architect of Record and Judicial Council of California of the noted deviation and clear indication on the submittal.

#### 1.6 SHOP DRAWINGS

- A. Prepare Project-specific information, drawn accurately to scale. Do not reproduce Contract Documents or copy standard information as the basis of shop drawings. Standard information prepared without specific reference to the Project is not a shop drawing.
- B. Do not use or allow others to use Shop Drawings which have been submitted

and have been rejected.

- C. Preparation: Fully illustrate requirements in Contract Documents. Include the following information, as applicable:
  - 1. Dimensions.
  - 2. Identification of products.
  - 3. Fabrication and installation drawings.
  - 4. Roughing-in and setting diagrams.
  - 5. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
  - 6. Shopwork manufacturing instructions.
  - 7. Templates and patterns.
  - 8. Schedules.
  - 9. Design calculations.
  - 10. Compliance with specified standards.
  - 11. Notation of coordination requirements.
  - 12. Notation of dimensions established by field measurements.
  - 13. Relationship to adjoining construction clearly indicated.
  - 14. Seal and signature of a Professional Engineer if specified.
  - 15. Wiring Diagrams: Differentiate between manufacturer-installed and field installed wiring.
  - 16. All deviations from the Contract Documents clearly indicated.
  - 17. Copy of letter indicating acceptance of deviations indicated on the submittal.
- D. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
- E. Do not use Shop Drawings without an appropriate final stamp from the Design Build Entity and Architect of Record indicating action taken in connection with construction.
- F. Deviations from Contract Documents require specific written acceptance by the Architect of Record and Judicial Council of California of the noted deviation and clear indication on the submittal.
- G. All Shop Drawings shall be submitted as .pdf documents and shall comply with the formatting and numbering requirements of the document "Documentation Requirements."

## 1.7 ELECTRONIC SUBMITTAL PROCESS

- A. Submittal Procedure for Large Format shop drawings.
  - 1. Design Build Entity shall upload/post one (1) electronic copy of the large format Shop Drawings directly to the Architect of Record, and one (1)

electronic copy to the Judicial Council of California. ~~and the Construction Manager (CM).~~ Design Build Entity will upload/post an electronic transmittal (with a detailed description of the submittal including the subject, specification number and number of drawings).

2. Design Build Entity shall verify that the Schedule of Submittals and all submittal log(s) are accurate and up to date.
3. The Architect of Record or Judicial Council of California will review and markup each Submittal and provide changes to Design Build Entity for Design Build Entity's incorporation into the Submittal.
4. This process will continue until the Design Build Entity has provided a Submittal that is acceptable to the Judicial Council of California and the Architect of Record.
5. Once a Submittal is accepted and returned, the **Construction Manager** ~~(CM) will provide a final accepted Submittal to the Design Build Entity~~ and the Design Build Entity will utilize that submittal as intended.

B. Product Data, Calculations and Small Format Drawings

1. Design Build Entity shall upload/post one (1) electronic copy (from manufacturer's website or pre-scanned) of the product literature, data, calculations, and/or small format shop drawings with a Transmittal (with a detailed description of the submittal) directly to the Design Build Entity Architect of Record and/or Judicial Council.
2. The Design Build Entity Architect of Record and Judicial Council of California will review and markup each Submittal received and provide changes to Design Build Entity for Design Build Entity's incorporation into the Submittal.
3. This process will continue until the Design Build Entity has provided a Submittal that is acceptable to the Judicial Council of California and the Design Build Entity Architect of Record.
4. Once a Submittal is accepted and returned, ~~the Construction Manager (CM) will provide a final accepted Submittal to the Design Build Entity~~ and the Design Build Entity will close out that one Submittal.

C. Sample Submittal Procedure – (Product / Assembly Samples)

1. Design Build Entity shall provide physical samples directly to the Design Build Entity Architect of Record and to the Judicial Council of California ~~and the CM.~~ Design Build Entity will upload/post an electronic transmittal (with a detailed description of the submittal including the subject, specification number and number of drawings).
2. The JCC will review and markup each Submittal and provide changes to Design Build Entity for Design Build Entity's incorporation into the Submittal. ~~A copy will be made available to the JCC.~~
3. This process will continue until the Design Build Entity has provided a Submittal that is acceptable to the Judicial Council and the Architect of Record.
4. Once a Submittal is accepted, ~~the Construction Manager (CM) will~~

~~provide a final accepted sample submittal to the Design Build Entity and the Design Build Entity will closeout that one Submittal. The Design Build Entity shall retain one sample (at minimum) onsite for reference during construction.~~

D. Submittal Review Timeline

1. Initial Review: Allow fifteen (15) days for initial review of each action submittal unless the Judicial Council notifies the Design Build Entity in writing that a response will take longer. The fifteen (15) days will begin to accrue when the submittal is received by the Judicial Council. Submittals received after 4PM on any business day will be considered as received on the next business day.
2. Allow additional time if coordination with subsequent submittals is required. ~~Architect will advise Contractor when a submittal being processed must be delayed for coordination.~~
3. Resubmittal Review: Allow fifteen (15) days for review of each resubmittal.

1.8 PRODUCT DATA

- A. In addition to the above requirements, mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- B. After review, distribute in accordance with the above provisions and provide copies for Record Documents described in the Contract Documents.

1.9 SAMPLES

- A. In addition to the above requirements, submit samples to illustrate functional and aesthetic characteristics of the Product in accordance with this Document, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Where specific colors or patterns are not indicated, provide materials and products specified in the full range of color, texture and pattern for selection by the Architect of Record **and review by Judicial Council**. Range shall include standard stocked color/texture/pattern, standard color/texture/pattern not stocked but available from manufacturer, and special color/ texture/pattern available from manufacturer as advertised in product data and brochures. ~~Unless otherwise indicated in individual specification sections, Judicial Council of California may select from any range at no additional cost to Judicial Council of California.~~
- C. Include identification on each sample, with full Project information.
- D. Submit the number of samples that Design Build Entity requires, plus one that will be retained by Judicial Council of California.
- E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.10 MANUFACTURER'S INSTRUCTION

- A. When specified in individual specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and



finishing, in quantities specified for Product Data.

- B. Identify conflicts between manufacturers' instructions and Contract Documents.

#### 1.11 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Architect of Record for review in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to **Architect of Record.**

#### 1.12 MOCK-UP

- A. **Within twenty (20) days after NTP, Design Build Entity shall provide JCC with a comprehensive list of all Mockups to be completed at the Project. JCC will review and approve this list.**
- B. Reference Section **014339** in addition to these requirements.
- C. ~~Where indicated, provide mock-ups as required. Mock-ups shall be prepared per the specifications and shall accurately and reasonably represent the quality of construction the Design Build Entity will provide. If the mock-up or portions thereof do not adequately represent the quality of the work specified, the Design Build Entity shall modify the mock-up as needed.~~
- D. ~~Once completed to the Judicial Council of California's satisfaction, the mock-up shall serve as the standard of quality for the work.~~
- E. ~~All mock-ups, at Judicial Council of California's option, shall remain the property of the Judicial Council of California. If not required by the Judicial Council of California, Design Build Entity shall remove and dispose of the mock-up.~~
- F. ~~Where indicated, onsite mock-ups, if accepted, may be integrated into the Work.~~

#### 1.13 DEFERRED APPROVAL REQUIREMENTS

- 1.14 Installation of deferred approval items shall not be started until detailed plans, specifications, and engineering calculations have been accepted and signed by the Architect or Engineer in general responsible charge of design and signed by a California registered Architect or Professional Engineer who has been delegated responsibility covering the work shown on a particular plan or specification and approved by the agency having authority (e.g., Corrections Standards Authority, State Fire Marshall, Division of the State Architect of the Department of General Services, gas company, electrical utility company, water district, etc.). Deferred approval items for this Project are as indicated on sheet AE001-Volume 2A.

- A. ~~Unless otherwise indicated in the Contract Documents or if Judicial Council of California provides written approval of a longer time period, Design Build Entity shall submit all deferred approval items for approval within thirty (30) days of the notice to proceed with the Construction Phase.~~
- B. ~~Deferred approval drawings and specifications become part of the approved documents for the Project when they are submitted to and approved by the agency having authority.~~

- ~~C. Submit material using electronic submittal process as defined above.~~
- ~~D. Identify and specify all supports, fasteners, spacing, penetrations, etc., for each of the deferred approval items, including calculations for each and all fasteners.~~
- ~~E. Submit documents to Architect for review prior to forwarding to the agency having authority.~~
- ~~F. Documents shall bear the stamp and signature of the Structural, Mechanical, or Electrical Engineer licensed in the State of California who is responsible for the work shown on the documents.~~
- ~~G. Architect and its subconsultants will review the documents only for conformance with design concept shown on the documents. The Architect will then forward the Submittal to agency having authority for approval.~~
- H. Design Build Entity shall respond to review comments made by agency having authority and revise and resubmit submittal to the Architect for re-submittal to agency having authority for final approval.

**END OF SECTION 013300**



## SECTION 013554 - BUILDING INFORMATION MODELING (BIM) FOR DB

## RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. DBE shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Section

## 1.02 SUMMARY

- A. The requirements of this Section provide the framework for the Judicial Council, the Project Design-Build Entity (DBE), and Construction Manager (CM) to utilize Building Information Modeling (BIM) technology and its best practices on all phases of the Project. The intent is to have a shared master 3D model that contains all of the building and/or site information together (including all design attribute information), enabling the Judicial Council to utilize BIM as a facility management tool at the conclusion of construction.
- B. The DBE shall develop and submit for approval a Federated Model (Fed Model) of the Project utilizing a Building Information Modeling (BIM) system as defined by this Section.
  - 1. The DBE shall develop their design and construct the project in compliance with the Contract Documents including by reference the requirements of the Judicial Council's Design Criteria Consultant.
  - 2. The DBE shall:
    - a. Submit as a minimum a Level of Development (LOD) 300 Federated Model to the Judicial Council's representative for review and approval prior to start of construction.
    - b. Use the Fed Model to facilitate the construction methods and means.
    - c. Update the Fed Model progressively throughout the construction period to incorporate all construction actions so that the Fed Model shall be developed to LOD 500 As-built Fed Model including:
      - 1) Shop Drawings:
      - 2) Approved Change Orders
      - 3) Fabrication, assembly and detailing
      - 4) Field Modifications
    - d. Submit the Fed Model to the Judicial Council for review and approvals upon fixed, mutually agreed milestones.
    - e. Create and submit a BIM Execution Plan (BEP) as described.
    - f. Provide and support a BIM Share Site.
  - 3. The Judicial Council and Construction Manager shall be entitled to use or

add to the design model during the design and construction process as well as after project completion. This includes any model produced by the efforts of either the design team or the DBE.

4. The BIM model will be a deliverable to the Judicial Council, for their exclusive use, after construction completion.
5. DBE to deliver an As-Built model including the appropriate data suitable for use and implementation into a BIM Facilities Management system to be determined.

## 1.02 DEFINITIONS AND ACRONYMS

### A. Definitions and Acronyms shall be defined and used throughout the BIM Requirements.

1. As-Built Fed Model: A Federated Model incorporating all construction phase modifications to a LOD 300 or better.
2. BIM: Building Information Modeling is a process of generating and managing building data (3D geometry, dimensions, nomenclature, element specifications, material, equipment type, etc.) utilizing a modeling software that is a fully object-based, parametric, database.
3. BIM Manager: The individual responsible for managing the Design-Build Entity's (DBE) modeling and coordination process, including managing the Design-Build Entity's BIM Staff and all other aspects of the DBE's BIM requirements.
4. BIM Share Site: The server or web-based system where all models and pertinent data shall be hosted for sharing and storing during the Work of the Project.
5. Design Criteria Consultant: The architects and/or engineers retained by the Judicial Council to develop the performance criteria for the Project, and for review and evaluation of the DBE's work.
6. Federated Model: The Federated Model combines the various discipline Native Models, and their modeled elements or assemblies, to become a virtual representation of the entire Project. The Federated Model can be assembled to a specified LOD at any stage in the Project's design and construction phases. The process of linking the various discipline model files from their native platforms maintains their native properties.
7. Level of Development (LOD): The term used to describe the fullness and definitiveness of the Model. The LOD definition is based on the AIA G 202 – 2013 document and expanded in this document.
8. Linking Files: A process of externally referencing a Native Model into the Federated Model.
9. Model: The term used to describe the 3D virtual representation of a Project and its Objects.
10. Model Element: A Model Element is a portion of the BIM representing a

component, system or assembly within a building or building site.

11. Model Element Author: The Model Element Author (MEA) is the primary party who shall develop the content of a specific Model Element to the LOD listed for a particular phase of the project.
12. Native Model: A Model created in a specific 3D parametric modeling software platform. For example, a model made in Revit.
13. Nomenclature: This is a term that applies to a system of principles, procedures and terms related assignment of a location, object or property.
14. Object: The term used to describe the 3D virtual representation of each of the separate sub-parts of Model such as doors, walls, equipment etc. If an Object is, in itself, comprised of several sub-elements, the sub-elements shall be grouped into one virtual representation of that Object.
15. Room: The term used to describe any space within the enclosing walls of the building. The space may be rectangular or more complex.

### 1.03 USE OF THE FEDERATED MODEL

- A. The Fed Model shall be developed for finalizing the design, engineering analysis, trade coordination, and as-built construction. The Fed Model shall be a reference source for communication and collaboration throughout each phase of the Project.
- B. The Fed Model may vary in level of detail for individual elements, but at a minimum shall include sufficient data to support use and analysis of:
  1. Functional and visual representation of all spaces.
  2. Constructability review of DBE's documents.
  3. Clash detection and correction of all major systems.
  4. Construction scheduling.
  5. Energy and Sustainability analysis
  6. Cost estimating.
  7. As-built documentation and modeling.
  8. Identification labeling of all components and equipment in compliance.
- C. The Construction Documents (drawings and specifications) shall be derived information from the Fed Model described herein. If any or all of the Judicial Council's Design Criteria Consultant's own models are available for use by the DBE in developing the Fed Model, such usage shall be for reference only.
  1. The Contract Documents are not intended to be modified by the Fed Model. If the DBE through development and/or use of the Fed Model identifies any potential changes that the DBE thinks should be reflected in changes to the Contract Documents, the DBE shall notify the Judicial Council of a potential Change Order(s) and have the issue(s) resolved prior to making any such changes.
  2. The DBE shall work with the Judicial Council's Design Criteria Consultant

regarding questions, clarifications and interpretations of their documents in accordance with the Project RFI process.

3. Any changes to the Fed Model, once Construction Documents have been approved shall be archived in the Judicial Council's Project-defined file storage system.
  4. All changes to the Fed Model, subsequent to completion of the work, including additional modeling by others, shall be solely the responsibility of the entity providing the changes or additions.
- E. At the completion of the Work, the Fed Model shall be turned over to the Judicial Council. The Judicial Council shall have exclusive rights to the model for their use as:
1. Editable models for future expansion or remodel projects.
  2. As a 3D user interface and source of data in operating and maintaining the facility.

#### 1.04 Uniformat II

- A. Uniformat II is a format for classifying building elements and related sitework. Uniformat II is a reference system that shall serve as the foundation upon which information is transferred between the construction and facility operations phases.
- B. The DBE shall include the appropriate Uniformat II in the list of attributes.

#### 1.05 LEVEL OF DEVELOPMENT (LOD)

- A. The American Institute of Architects (AIA) document *G202- 2013*, has developed a Level of Development (LOD) system which serves as the basis for the Project with Project-specific modifications as shown in the following definitions:
1. LOD 100: This is the "programming" level. Buildings and/or structures shall be modeled as masses indicative of area, height, volume, spatial location, and orientation.
  2. LOD 200: This is the "planning" level. Buildings and/or structures including major architectural, structural, mechanical, electrical, and plumbing objects shall be modeled as generalized systems or assemblies with approximate quantities, approximate configuration, spatial location, and orientation. Each enclosed space shall be identified as a unique Room with associated parameters.
  3. LOD 300: This is the "design" level. Buildings and/or structures including all objects shall be modeled as specific systems or assemblies with accurate quantities, recognizable configuration, spatial location, and orientation. Each enclosed space shall be identified as a unique Room with associated

parameters.

4. LOD 400: This is the “construction” level. Buildings and/or structures including all objects shall be modeled as specific systems or assemblies with accurate quantities, recognizable configuration, spatial location, and orientation, with complete fabrication, assembly, and detailing information. Each enclosed space shall be identified as a unique Room with associated parameters.
5. LOD 500: This is the “as-built” level. Buildings and/or structures including all objects shall be modeled as constructed systems or assemblies with accurate quantities, shape, spatial location, and orientation. All model elements previously modeled to a LOD 300 or LOD 400 must include any quantity or configuration changes made during construction to achieve a LOD 500. Each enclosed space shall be identified as a unique Room with associated parameters.

#### 1.06 BIM MANAGER and STAFF

- A. The DBE shall provide qualified BIM Manager and staff to manage the BIM process and develop the required BIM Execution Plans (BEP). The DBE BIM Manager shall be responsible for overseeing development of all submittals generated from BIM data, and managing the coordination process including:
  1. Managing the information of the DBE and subcontractor’s responsible for creating models, analyzing “clashes” and resolving coordination issues.
  2. “Gap” modeling of all design elements and building systems, that may occur between systems discipline models, as necessary for design clarity and coordination of the work.

#### 1.07 BIM WORK ROOM / CONFERENCE ROOM

- A. The DBE shall provide a BIM Work Room / Conference Room on-site, sized to provide work space for BIM modelers and function as a collaborative conference room for design reviews, presentations and BIM coordination work sessions. The BIM Work Room shall accommodate trade subcontractors, the DBE’s design team, the DBE’s BIM staff, plus representatives from the Judicial Council.
- B. The DBE shall:
  1. Provide hardware to support BIM modeling, presentations and coordination work sessions.
  2. Provide projectors and large interactive viewing screens or large flat panel monitor for reviewing and/or modifying BIM models.
  3. Provide web and voice conferencing capabilities for the duration of the Project and allow for greater than fifteen (15) concurrent participants.

**1.08 BIM SHARE SITE**

- A. The DBE shall provide and maintain a BIM Share Site to host all BIM models and files. Models on this shared site shall be fully accessible on-line to all members of the Project team, including the Judicial Council and the Design Criteria Consultant. The DBE BIM Manager shall:
1. Assign site users and passwords.
  2. Submit updates to the site per the BEP.
  3. Coordinate and approve the BIM information that is updated into the shared site.
  4. Monitor usage and ensure capacity and function of this system.
  5. Administer read/write rights and hierarchy to support revision control.
  6. Comply with all requests from the Judicial Council and/or the Judicial Council's representative.

**1.09 BIM DATA SECURITY**

- A. The DBE shall establish a data security protocol to prevent any possible data corruption, virus "infections", data lose, misuse or deliberate damage by users of the BIM Share Site. The protocol shall include:
1. 24 hours, 7 days a week operation and support.
  2. Full capacity backup on a nightly basis at a remote server.
  3. Adequate user access rights to prevent data loss or damage.
  4. A narrative description of the data security protocol for Judicial Council acceptance as part of the final draft of the BEP.

**1.10 SUBMITTALS**

- A. Submit under provisions of Section 013300 "Submittal Procedures"
- B. Provide a BIM Execution Plan within (14) days of the notice to proceed in accordance with the requirements of this section
- C. BIM Submittals identified in BIM Execution Plan
- D. DBE must provide As-Built documentation in accordance with the requirements in this section.

**PART 1 PRODUCTS****2.01 MINIMUM, ACCEPTABLE MODEL SOFTWARE REQUIREMENTS**

- A. The Native Model(s) shall be developed to include parametric components of major building and site elements as defined in this Section. All discipline Native Models shall be linked to the Architectural Native Model.
- B. The Fed Model and each of its Native Models shall be developed to dimensional

accuracy of at least 1/4".

1. Object configuration shall be modeled to visually represent the intended size and shape. For LOD 300 and above, this is further defined as:
    - a. Manufactured Objects shall be modeled to show actual exterior configuration in all model views. Internal components are not required, but if necessary to indicate spatial, visual, or functional relationship to other Objects, or the manufacturer has modeled the internal components of their Objects, then those Objects should have internal components modeled to the extent necessary. Example: a toilet of one manufacturer shall show its exterior configuration such that it is discernable from another type or manufacturer's unit.
    - b. Field-built assemblies shall be modeled to show actual composition of the assembly, including all primary components in all model views. Example: a non-bearing wall assembly (partition) shall be modeled to show structural cavity and all layers of applied materials including wainscoting. Light-gage metal framing is not required to be modeled, however if it is modeled for construction coordination, then the metal framing Native Model shall be included. Blanket Insulation in the structural cavity is not required to be modeled but the symbol should be drafted in all details.
- C. BIM application(s) and software(s) for reviewing the Fed Model shall:
1. Use the current version of Autodesk® Navisworks software.
  2. Utilize Navisworks software (Manage, Simulate or Freedom) for scheduling analysis.
  3. Use Autodesk BIM 360 Design, Coordinate, and Ops or similar products for BIM Model Management and FM (Facilities Management) purposes.
- D. The preferred Native Model software is listed in the following matrix. The selection of software other than the preferred listed shall be reviewed and approved by the Judicial Council and its BIM consultants. Any software submitted for use must support the BIM Requirements listed in this document and the resulting functions of the BEP.

Suggested Native Model Software Matrix		
Discipline	ive Model Software	Comments
Structural		
Electrical, Mechanical, and Equipment		Is to stationary items only
Plumbing		
	Autodesk MEP & AutoCAD MEP	
Engineering	Autodesk MEP	

	Pipe	
Protection	PRINKâ	
cal	AD MEP	
ty Electronics	AD MEP	
	AD Civil 3D â	
cape	AD	

## 2.02 OBJECT IDENTIFICATION – NOMENCLATURE

- A. Every Object in the Model shall have a Unique Identification (UID) and a Common Name attached to it in the Native Model.
1. The UID may be in the form of alpha, numeric, or alpha-numeric.
    - a. If the UID form is alpha-numeric, it shall be a consistent string format for all Objects, within its discipline, and shall be readable by any commonly available database. The UID is an “Instance” parameter. It is acceptable to utilize the Revit GUID for all objects automatically created for all objects in Revit.
    - b. If the Native Model software is not a full object-based, parametric, database platform, such as some of the 3D CAD programs, the UID shall be attached to the Object manually, if necessary, so that it can be read by the user without additional software applications.
    - c. The UID can be automatically generated or manually assigned and shall adhere to pre-established nomenclature.
  2. A “Common Name” naming convention shall be a parameter in the Native Models. Examples of a Common Name include: door, window, toilet, VAV Box, etc. Typically, the Common Name requirement is satisfied within Revit by the naming conventions for ‘Family’ or ‘Type’ names, but if it is not clear, it shall be input manually in the Native Model. The Common Name is an Object “Type” parameter.

## 2.03 OBJECT PARAMETRIC ATTRIBUTES – MINIMUM REQUIREMENTS

- A. The following attributes shall be attached to each maintainable or serviceable Object: If a required attribute is not automatically generated by Native Model software, it shall be manually input in the Native Model, or provided in an Excel or Access document that includes the UID.
1. Unique Identification (auto generated in Revit - GUID)Common Name
    - a. Type



- b. Description
- 2. Unifmat II Classification Code levels 1, 2, and 3
- 3. Manufacturer (where applicable)
- 4. Model Number (where applicable)

## 2.05 SYSTEM DISCIPLINE MODELS

- A. Civil Systems: The Civil Systems Model shall be a sub-system model linked to the Architectural System Model and serve as the basis for project shared coordinates through which the position of building elements on the site shall be coordinated such as:
- a. Topography:
    - a. Existing natural and/or graded contours
    - b. New grades and finish contours.
  - b. Planting:
    - a. Existing major landscaped areas,
    - b. Existing trees to remain
    - c. New landscaped areas
    - d. New trees
    - e. Irrigation lines over 2" diameter.
  - c. Surface Improvements:
    - a. Pavements
    - b. Curbs and gutters
    - c. Retaining walls
    - d. Exterior non-building structures such as pools, shade structures etc.
  - d. Existing Structures:
    - a. All buildings within the project area intended to remain
    - b. Buildings intended to be demolished.
    - c. All existing structures may be modeled exterior surface only, interior elements are not required.
  - e. Storm Water and Sanitary Sewers:
    - a. Existing lines (over 3" diameter), boxes and structures within project area,
    - b. All new lines, boxes and structures
    - c. Existing public lines, boxes and structures beyond the project area but serving as points of connection for the project.
  - f. Utilities:
    - g. Existing domestic and fire water main and branch lines (2" and larger diameter) within project area
    - h. All new domestic and fire water lines
    - i. Existing electrical overhead and underground lines within project area, all new electrical lines outside buildings

- j. Existing telephone and data lines within project area
- k. All new telephone and data lines outside buildings
- l. Existing gas lines within project area
- m. All new gas lines outside buildings.
- n. Roads and Parking:
  - a. All necessary roadways and parking lots or parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.
- o. Other requirements:
  - a. Quantities: data to reflect accurate quantities of the above elements.
  - b. Schedules: data for installation of the above elements.

B. Architectural Systems: The Architectural Systems Model shall be the primary model to which others are linked and provide for the following:

- 1. Spaces:
  - a. Net square footage of all occupied spaces
  - b. Gross constructed floor area
  - c. Room names and numbers
  - d. Floor, base, wall, and ceiling finishes. NOTE: Model room names and numbers shall match the Judicial Council's Architectural Program space names and numbers.
- 2. Exterior Walls and Curtain Walls:
  - a. Type and composition
  - b. Height, length, and width
  - c. Thermal, acoustic, fire, and security ratings.
- 3. Partitions:
  - a. Type and composition
  - b. Height, length, and width
  - c. Thermal, acoustic, fire, and security ratings.
- 4. Floors:
  - a. Type and material
  - b. Thickness
  - c. Finishes with manufacturer's name and product numbers. Link floor structure to the Structural Systems Model.
- 5. Ceilings:
  - a. Type and composition
  - b. Height, length, and width
  - c. Thermal, acoustic, fire, and security ratings.
- 6. Access Panels
  - a. Type and composition
  - b. Height, length, and width

- c. Thermal, acoustic, fire, and security ratings.
  - d. Location
- 7. Roof Coverings and Openings:
  - a. Configuration
  - b. Drainage system
  - c. Penetrations for modeled building components.
- 8. Exterior Doors, Windows, and Louvers:
  - a. Type and material
  - b. Height, width, and thickness
  - c. Thermal, acoustic, fire, and security rating
  - d. Location
  - e. Hardware elements or group.
- 9. Interior Doors, Windows, and Louvers:
  - a. Type and material
  - b. Height, width, and thickness
  - c. Thermal, acoustic, fire, and security rating
  - d. Location
  - e. Hardware elements or group.
- 10. Stairs and Ramps:
  - a. Stairs and railings
  - b. Ramps and railings
  - c. Handrails and guardrails.
- 11. Elevators and Escalators:
  - a. Elevator cabs and doors
  - b. Elevator hoist-way doors and trim
  - c. Elevator machinery and equipment
  - d. Escalator belts and railings
  - e. Escalator machinery and equipment.
- 12. Casework and Counters:
  - a. Type and material
  - b. Height, width, and depth
  - c. Location
  - d. Hardware.
- 13. Systems Furniture
  - a. Type and material
  - b. Height, width, and depth
  - c. Location
  - d. Hardware.
  - e. Link Systems Furniture to Electrical Systems Model.
- 14. Detention Furnishings
  - a. Type and material
  - b. Height, width, and depth
  - c. Location
  - d. Hardware.
- 15. Plumbing Fixtures:

- a. Type and material
- b. Location
- c. Trim
- d. Finishes.
- e. Link fixtures and trim to the Mechanical Systems Model.

16. HVAC Grills and Registers:

- a. Type and material
- b. Location
- c. Trim
- d. Finishes.
- e. Link fixtures and trim to the Mechanical Systems Model.

17. Electrical Fixtures and Equipment:

- a. Type and material
- b. Bulb type and wattage
- c. Location
- d. Trim
- e. Finishes.
- f. Link fixtures and trim to the Electrical Systems Model.

18. Security Electronics:

- a. Type and material
- b. Camera and Cabling Types
- c. Access control
- d. Location and view
- e. Trim
- f. Finishes.
- g. Link fixtures and trim to the Electrical Systems Model.

19. Miscellaneous Fittings:

- a. Toilet partitions
- b. Toilet room accessories
- c. Grab bars
- d. Personal storage lockers
- e. Display cases
- f. Other surface applied quasi-permanent items such as mirrors etc.

20. Other requirements:

- a. Quantities: data to reflect accurate quantities of the above elements.
- b. Schedules: data for installation of the above elements.

C. Structural Systems: The Structural Systems Model shall be a sub-system model and provide for the following:

- 1. Foundations and footings:
  - a. Type and configuration

- b. Depth, length, and width.
  - 2. Slab(s) on-grade:
    - a. Type and configuration
    - b. Under-slab base and waterproofing
    - c. Recesses, curbs, pads, closure pours
    - d. Major penetrations.
  - 3. Basement Walls:
    - a. Type and composition
    - b. Height, length, and width
    - c. Thermal, acoustic, fire, and security ratings.
  - 4. Elevated Floors:
    - a. Columns and beams
    - b. Primary and secondary framing members
    - c. Bracing
    - d. Connections
    - e. Framed, composite, and/or slab decks.
  - 5. Roofs:
    - a. Columns and beams
    - b. Primary and secondary framing members
    - c. Bracing
    - d. Connections
    - e. Framed, composite, and/or slab decks.
  - 6. Joints:
    - a. Expansion and/or contraction
    - b. Seismic.
  - 7. Stairs and Ramps:
    - a. Openings and framing
    - b. Railing supports.
  - 8. Shafts and Pits:
    - a. Openings and framing
    - b. Railing supports.
  - 9. Other requirements:
    - a. Quantities: include data to reflect accurate quantities of the above elements.
    - b. Schedules: data for installation of the above elements.
    - c. Fireproofing: Fireproofing is not to be included in the BIM but clash detection studies shall include definition of tolerances for conflict detection.
    - d. Color Code: color code structural steel from other elements.
- D. Mechanical: The Mechanical Systems Model shall be a sub-system model and provide for the following:
- 1. Heating, Ventilating, and Air Conditioning:
    - a. All heating, ventilating, air-conditioning, exhaust fans,

- and specialty equipment,
  - b. Air supply, return, ventilation and exhaust ducts, including space-consuming elbows and transitions
  - c. Fire dampers with ratings
  - d. Mechanical piping
  - e. Registers, diffusers, grills and hydronic baseboards.
  - f. Coordinate and link fixtures and trim to the Architectural Systems Model.
2. Plumbing:
- a. All domestic plumbing piping and fixtures
  - b. Floor and area drains
  - c. Valves (regardless of pipe size)
  - d. Related equipment.
  - e. Piping larger than 1 .5" diameter shall be modeled.
3. Roof Drainage:
- a. All piping and fixtures
  - b. Related equipment.
  - c. Piping larger than 1 .5" diameter shall be modeled.
4. Other requirements:
- a. Quantities: data to reflect accurate quantities of the above elements.
  - b. Schedules: schedule data for installation of the above elements.
  - c. Equipment Clearances: Clearances for major equipment and all M/E/P Equipment and Architecturally Significant Specialty Equipment, as model objects for conflict detection and maintenance access requirements.
  - d. Color Code: separate color code for each type element.
- E. Electrical: The Electrical Systems Model shall be a sub-system model and provide for the following:
1. Interior Electrical Power and Lighting:
- a. All interior electrical components
  - b. Lighting, receptacles, special and general purpose power receptacles
  - c. Lighting fixtures
  - d. Panel-boards and control systems
  - e. Conduit and cable trays.
  - f. Individual conduit larger than 1 .5" diameter shall be modeled.
  - g. Groups or clusters runs, and cable trays of conduit of all sizes shall be modeled.
2. Exterior Building Lighting:

- a. All exterior electrical components
  - b. Lighting, receptacles, special and general purpose power receptacles
  - c. Lighting fixtures
  - d. Panel-boards and control systems, and transformers
  - e. Utility connection and equipment.
  - f. Individual conduit larger than 1 .5" diameter shall be modeled.
  - g. Grouped or clustered runs of conduit of all sizes shall be modeled.
3. Telephone, Data, Television, and Other Low Voltage:
- a. All interior low voltage components
  - b. Outlets, receptacles, special and controls
  - c. Fixtures
  - d. Panel-boards, equipment racks, and control systems
  - e. Conduit and cable trays.
  - f. Individual conduit larger than 1 .5" diameter shall be modeled.
  - g. Groups or clusters runs of conduit of all sizes shall be modeled.
4. Security Electronics
- a. All security electronics components
  - b. Outlets, receptacles, special and controls
  - c. Cameras and views
  - d. Access Controls
  - e. Panel-boards, equipment racks, and control systems
  - f. Conduit and cable trays.
  - g. Individual conduit larger than 1.25" diameter shall be modeled.
  - h. Groups or clusters runs of conduit of all sizes shall be modeled.
5. Other requirements:
- a. Quantities: data to reflect accurate quantities of the above elements.
  - b. Schedules: schedule data for installation of the above elements.
  - c. Equipment Clearances: Clearances for major as model objects for conflict detection and maintenance access requirements.
  - d. Color Code: separate color code for each type element.
- F. Fire Suppression: The Fire Suppression Systems Model shall be a sub-system model and provide for the following:
- 1. Fire Suppression System:

- a. Valves and risers
    - b. All main, branch, and drains lines
    - c. Sprinkler heads, and fittings
    - d. Pumps.
  - 2. Fire Alarms:
    - a. Alarm and notification devices
    - b. Detection systems.
  - 3. Smoke Evacuation System:
    - a. Alarm and notification devices
    - b. Detection systems.
  - 4. Other requirements:
    - a. Quantities: data to reflect accurate quantities of the above elements.
    - b. Schedules: schedule data for installation of the above elements.
    - c. Equipment Clearances: Clearances for major equipment as model objects for conflict detection and maintenance access requirements.
    - d. Color Code: separate color code for each type element.
- G. Specialty Equipment: The Specialty Equipment Model shall be a sub-system model. Specialty Equipment include medical equipment and systems, security equipment and systems, conveyance equipment and systems, manufacturing equipment and systems, etc. and provide for the following:
- 1. Specialty Equipment:
    - a. Equipment
    - b. Related mechanical, plumbing, and electrical requirements.
    - c. Quantities: data to reflect accurate quantities of the above elements.
    - d. Schedules: schedule data for installation of the above elements.
    - e. Equipment Clearances: equipment clearances as model objects for conflict detection and maintenance access requirements.

## PART 2 EXECUTION

### 3.01 BIM EXECUTION PLAN (BEP)

- A. The DBE shall submit for approval a BIM Execution Plan (BEP) as part of the required BIM services.
- B. Draft BEP: the draft BEP shall include:



1. Proposed BIM staff for the DBE's design team and the designated subcontractors. Subsequent iterations shall include additional subcontractors as Project progresses.
  2. Software selections as defined in this document.
  3. Schedule of BIM activities.
  4. Schedule of submittal milestones during design and construction.
  5. File Folder structure.
  6. File Naming system.
  7. Hardware and Software for access BIM Share Site.
  8. Define the responsibilities of DBE's BIM staff.
  9. Methodology for validating As-Built Models.
    - a. The origin point for the Project. All models shall be in the correct location in 3D Space (x, y, and z coordinates). This includes correct floor elevation(s).
    - b. Modeling minimum Level of Development (LOD) as required by this document.
- NOTE: The Draft BEP may be required to be submitted as part of the RFP requirements. If not, the Draft BEP shall be developed and submitted within 20 days of the Notice to Proceed.

- C. Final BEP: based on acceptance of the Draft BEP, the DBE shall develop its Final BEP and submit it to the Judicial Council for review and written approval. Final approvals of BEP must be completed within 30 days of the Notice to proceed.

NOTE: If the Draft BEP is required to be submitted as part of the RFP requirements, the Final BEP shall be submitted within 20 days of the Notice to Proceed.

### 3.02 DEVELOPMENT AND SUBMITTAL OF THE MODELS DURING DBE's DESIGN PHASE

- A. The DBE shall develop the Fed Model and its discipline systems Native Models in compliance with the Agreement Documents and the following:
1. The DBE shall meet on a regular basis with Judicial Council, its designated facility users, and the CM to finalize the design of the Project. The meetings shall be working sessions optimizing BIM's collaboration, visualization, and information technology through "live" model utilization.
  2. The DBE shall provide copies of their Fed Model to Judicial Council for review and acceptance at specified schedule milestones as follows:
    - a. 100% completion of Design Development phase.
    - b. 100% completion of Working Drawings phase.
    - c. 100% completion finalized Construction Documents including pickups and corrections of Fire Marshall review and back-check, and Judicial Council's constructability reviews.
  3. Develop and submit all of the discipline systems Native Models concurrently with the Fed Model. Qualified deferred approvals may be submitted

separately.

4. Submit updated discipline systems Native Models complying with final approved shop drawing submittals.

### 3.03 UPDATING THE MODELS DURING CONSTRUCTION PHASE

- A. The Fed Model and all of its Native Models shall be routinely updated to keep current with construction activity, as follows:
  1. Routine updates resultant from subcontractor and trade approved changes shall be incorporated into the Native Models and uploaded to the BIM Share Site within 24 hours of each update or revision.
  2. Progress updates for Judicial Council reviews shall occur on a quarterly basis and uploaded to the BIM Share Site. The Fed Model and its Native Models shall include Judicial Council-required data sheets.
- A. The Fed Model and coordinated subcontractor and trade Native Models shall be used as the basis of weekly Project meetings for scheduling and coordinating Work means and methods, and shall be used for manufacturing and prefabrication.
  1. The DBE shall coordinate the Work with installer and representatives of manufacturers and fabricators who are involved in or affected by such Work prior to installation.
  2. Review fully coordinated Native Models for progress of other Work and preparation for particular Work under consideration.
- B. Continuously update the various models to record all as-built conditions. The fully updated Navisworks files(.nwd) and Native Models shall be uploaded to the BIM Share Site as part of Project close-out.

### 3.04 SUBMITTAL OF FINAL AS-BUILT MODELS

- A. The final, approved updated and revised LOD 500 Fed Model and all its discipline systems Native Models shall be submitted to the Judicial Council as part of the Project close-out submittals. The models shall be:
  1. The latest as-built versions. Including changes made by change orders or RFI's which effect the model.
  2. In the agreed organized file folder structure.
  3. Linked to all the appropriate Native Models that make up the Fed Model.

### 3.05 SUBMITTAL OF FINAL AS-BUILT .DWG files

- A. DBE shall provide a complete set of .dwg files for each sheet which makes up the overall As-Built/ Record set of drawings for all disciplines.

### 3.06 SUBMITTAL OF OPERATIONS AND MAINTENANCE (O&M) DOCUMENTS

- A. Sections 01 33 00, Submittals and 01 78 23 Operation and Maintenance Data govern the work of this Paragraph, with additional requirements contained herein.
- B. Electronic O&M Documents: In addition to the submission of hard copy (paper) documents, the DBE shall provide all required O&M documents in individual Portable Document Format (PDF) files. The O&M documents shall include at a minimum:
1. Object Identification: The object tag (for example,AHU-1) or Common Name.
  2. Manual: Product data, installation, maintenance, and operating instructions.
  3. Shop Drawings: Item data, installation, and maintenance instructions.
  4. Warranty: Manufacturer's warranty, Subcontractor's warranty.
  5. Training: special instructions for maintenance work.
- C. Organization of O&M Documents: The documents shall be organized to match the As-Built Fed Model Objects.
1. Common Name: Each O&M document shall be assigned a PDF file name that corresponds to the Object's classification.
  2. Individual Documents: O&M documents, relating to each classification of Object, shall be organized and submitted as individual documents, not as parts of a larger group document. For example: a "toilet" Object and its related elements and components shall have a stand-alone O&M PDF document, not as a part of the whole group of "plumbing".
  3. Bookmarking PDF's: All PDF documents shall be bookmarked for quick reference to individual objects.
  4. Quality PDFs: All PDF documents shall be high quality, clean, straight, high contrast documents. Documents shall be created directly from the origin software or document. Copies of copies are not acceptable.

### 3.06 FACILITIES MANAGEMENT SYSTEM

- A. DBE shall deliver a model which can be integrated with a Facility Asset Management System: The digital interface shall have the ability to link all close out documents including: O&Ms, Submittals, Warranties, and Record Drawings to the as Built model.
1. Specific requirements to be developed within the BIM Execution Plan in collaboration with the Judicial Council and Construction Manager.
  2. Existing Facility Management system used by the Judicial Council is CAFM, DBE shall verify with the Judicial Council for any changes or upgrades to their existing Facility Management System.

**END OF DOCUMENT**

DRAFT

## SECTION 014000 - QUALITY REQUIREMENTS

### 1.1 GENERAL

#### A. RELATED DOCUMENTS

Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:

1. *Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;*
2. *Additional Divisions and Sections for specific requirements of the Work in those Sections*

### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Design Build Entity of responsibility for compliance with the Contract Document requirements.
  1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  2. Specified tests, inspections, and related actions do not limit Design Build Entity's other quality-control procedures that facilitate compliance with the Contract Document requirements.
  3. Requirements for Design Build Entity to provide quality-control services required by Judicial Council of California, Judicial Council of California's Consultants, or authorities having jurisdiction are not limited by provisions of this Section.

## PART 2 - DEFINITIONS

- A. **Quality-Control Services:** Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements. Services do not include contract enforcement activities performed by Judicial Council of California or their Consultants.
- B. **Quality-Assurance Services:** Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.
- C. **Mockups:** Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or

operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL (National Recognized Testing Laboratory), an NVLAP (National Voluntary Laboratory Accreditation Program), or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Installer/Applicator/Erector: Design Build Entity or another entity engaged by Design Build Entity as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades-people of the corresponding generic name
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

## 2.2 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Judicial Council of California for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Judicial Council of California for a decision before

proceeding.

## 2.3 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Control" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following: Specification Section number and title.
  - 1. Description of test and inspection.
  - 2. Identification of applicable standards, codes or regulations.
  - 3. Identification of test and inspection methods.
  - 4. Number of tests and inspections required.
  - 5. Time schedule or time span for tests and inspections.
  - 6. Entity responsible for performing tests and inspections.
  - 7. Requirements for obtaining samples.
  - 8. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.
  - 13. Recommendations on retesting and reinspecting.
- D. Test reports shall include a description of deficiencies noted, and corrective action undertaken to resolve such deficiencies. Deficiencies

observed shall immediately be brought to the attention of the Contractor's field superintendent, and trade foreman. In the event deficiencies are not corrected, or if an interpretation of the Contract Documents is required, the Testing Agency shall immediately notify the Judicial Council of California and applicable Consultant, Architect, or Engineer.

- E. The Testing Agency shall maintain a deficiency list of all items not corrected and shall reinspect the area after the deficiency has been corrected.
  - 1. The list shall include a description of the deficiency, the date and time the deficiency was observed, who was notified, the date of reinspection and description of corrective action taken.
  - 2. Distribute the deficiency list at least once per month.
- F. At the end of the project, the Testing Agency shall submit a final signed report stating whether the work tested and inspected conforms to the contract documents.
- G. Permits, Licenses, and Certificates:
  - 1. For Judicial Council of California's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

### PART 3 - QUALITY CONTROL

#### 3.1 Mockups:

- A. Reference section 01 43 39 Visual Mockups and Benchmarks for specific mockup requirements.
- B. Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Judicial Council of California or their Consultant.
  - 2. Notify Judicial Council of California and their Consultants seven (7) days in advance of dates and times when mockups will be constructed.
  - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 4. Obtain Judicial Council of California's and their Consultant's approval of mockups before starting work, fabrication, or construction.
  - 5. Allow seven (7) days for initial review and each re-review of each mockup.



6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work. Demolish and remove mockups when directed, unless otherwise indicated.
- 3.2 Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.
- 3.3 Retesting/Reinspection: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspection, for construction that replaced Work that failed to comply with the Contract Documents.
- 4.1 TESTS AND SPECIAL INSPECTIONS
  - A. Judicial Council of California will engage a qualified testing agency to conduct tests and special inspections required by authorities having jurisdiction, including but not limited to, as follows:
    1. (Design Build Entity Architect to develop list as plans are developed.)
  - B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
    1. (Design Build Entity Architect to develop list as plans are developed.)

#### TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
  1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Judicial Council of California.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Judicial Council of California's reference during normal working hours.

**END OF SECTION 14000**

## SECTION 014339 - VISUAL MOCK-UPS AND BENCHMARKS

## 1.1 RELATED DOCUMENTS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  2. Additional Divisions and Sections for specific requirements of the Work in those Sections.
- B. Visual Mock-Ups: Special construction used to illustrate materials and workmanship, which will not be part of the finished construction.  
(Modify where scope is applicable)
1. Site Concrete:
    - a. Flatwork: Construct 6'-0" x 6'-0" mock-up for each concrete type and finish. Paving Module: Construct a mock-up of one special paving module, including banding, 12'-0" x 12'-0".
  2. Unit Pavers:
    - a. Mockups for each form and pattern of unit pavers required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
  3. Building Facade: Scope as indicated on Drawings. Provide evaluation mock-up at location as directed by Judicial Council of California to illustrate erection, anchorage of aluminum curtain wall system, precast concrete panels, sealants, glass, glazing, and finishes.
    - a. Design Concept: Mock-up requirements shown on the Drawings are intended to establish general configuration and scope. Design the mock-up as a complete and independent structure, including required structural supports. Design Build Entity shall make necessary additions and modifications to the details as may be required to comply with aesthetic requirements while maintaining the design.
    - b. Evaluation mock-up shall be built of the same materials, components and using the construction procedures and subcontractors proposed for the Work.
    - c. Modifications to the Work, if needed, to obtain the quality of workmanship and finish required in the finished structure shall be made during construction of the mock-up.
  4. Courtroom Bench Mockup: After approval of shop drawings for the judge/clerk/witness bench mock-up, Design Build Entity shall prepare the visual mock-up prior to and obtain approval prior to proceeding with final shop drawings for the courtroom casework.
    - a. Build mock-up to comply with the following requirements:

- b. Location: At location designated by Judicial Council of California.
  - c. Include Judge; clerk and witness stations, work surfaces, built in casework and rail at spectator seating.
  - d. Judicial/Witness Bench shall be fabricated complete and with all finished components proposed for the Project. Install the ballistic protection sheet behind the finished panels.
  - e. Construct an elevated floor for support of benches to simulate the actual conditions that will exist in the Courtroom.
  - f. Portion of the Judges/Clerk Bench and Witness Stand shall utilize the same materials proposed for the Project; construct mock-up in sections as planned for the final work; employ a method of joining individual front panel and transaction counter sections which will enable disassembly and possible reuse, while demonstrating joint design and tightness. All wood veneers and solid stock shall be finished to match previously approved samples.
  - g. Fabricate and erect mock-up utilizing the same craftspeople as that intended to be used for the actual Work. Should field installation be accomplished by a firm other than the fabricator, the firm responsible for the field installation must be present during all phases of shop assembly of the mock-up.
  - h. Provide a minimum of twenty (20) days notice to Judicial Council of California of time when mock-up will be available for evaluation.
  - i. Mock-up will be examined to ascertain quality of the Work and conformity to AWI (Architectural Woodwork Institute) quality standards and specification requirements. Approved mock-up shall serve as a standard of comparison for all remaining casework with respect to workmanship, design, materials, finish, joining, and tolerances.
  - j. Provide additional materials and labor if required to obtain approval of mock-up at no additional cost to Judicial Council of California.
  - k. Design Build Entity may reuse as much of the approved mockup as is practical, when approved by the Judicial Council of California; the decision as to methods employed in constructing mock-up to maximize its reuse shall rest with the fabricator. Fabricator shall not be entitled to additional compensation if it is determined upon disassembly that all, or a portion of the approved mock-up is not acceptable for reuse within the building.
5. Other Mockups: **To be edited or removed as applicable**
- a. Cement-Based Underlayment: Architect will select one area or surface to represent surfaces and conditions for application on each substrate required. Mockups shall demonstrate qualities of materials and execution.
  - b. Unit Masonry Assemblies: Sample panels of Brick, approximately 32 inches (800 mm) wide by 48 inches (1200 mm) high by full thickness. Use materials proposed for the Work,

including typical field units and mortar, to verify selections made under sample submittals and to demonstrate aesthetic effects. Approval required prior to work on visual mockup for building façade.

- c. Water Repellents:
  - i. Use visual mock-up specified to establish actual application rates necessary to meet Project requirements. At no time shall the rate of coverage be less than that recommended by the manufacturer's printed data sheets.
  - ii. Apply water repellent to mockup, for full coverage as directed, before proceeding with installation. Comply with installation requirements of this Section.
- d. Firestopping (Field Sample):
  - i. Penetration of Fire Rated Partitions:
  - ii. Install a mock-up of each type of floor and wall penetration firestop to show materials used and quality of workmanship. All trades that penetrate a fire rated partition shall be included in the mock-up including components such as the fire damper and ductwork, fire sprinkler piping, electrical conduit, and cabling. Prior to construction, obtain the State Fire Marshal's approval of mock-up locations, size, components, material, etc.
  - iii. No Firestopping work shall commence until mock-ups are approved by the **Judicial Council**. Remove mock-ups that are not approved and provide additional mock-ups, at the same location, as necessary to obtain approval.

## 1.2 BENCHMARKS

- A. Benchmarks are first construction of assemblies to be repeated throughout. Approved benchmarks are intended to serve as a standard of quality during construction. Protect from damage to ensure they are undisturbed at time of Completion and may become part of the completed Work.
- B. Build benchmark mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution and set quality standards for fabrication and installation.
- C. Approval of mockups is also for other material and construction qualities specifically approved by Judicial Council of California in writing.
- D. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Judicial Council of California in writing.
- E. Benchmark Mock-ups: **Modify selection to suit Project requirements**
  - 1. Interior Architectural Woodwork:
    - a. Elevator Lobbies: One complete set of wall panels at Elevator Lobby front.
    - b. First transaction / cashier counter.

- c. First audience rail.
  - d. First jury box and rail, with fixed seating installed.
- 2. Door Hardware, Hollow Metal (Steel) Doors and Frames, and Flush Wood Doors:
  - a. First 180-degree opening door assembly.
  - b. First opening assembly from public corridor to courtroom entry vestibule.
  - c. First opening assembly from courtroom entry vestibule to courtroom.
- 3. Toilet Rooms:
  - a. Complete first Toilet Room.
  - b. Acoustical Panel Ceilings:
    - 1. Two structural bays long by full width complete ceiling including cut outs for fixtures.
  - c. Toilet Compartments:
  - d. Typical and disabled access.
  - e. Toilet Accessories:
    - 1. First toilet room, complete with required toilet accessories.
  - f. Toilet Room Benchmark: Finish one First Floor core toilet room completely before beginning work on any others. Benchmark shall include all fixtures, lighting and interior finishes and will be evaluated for any required modifications.
- 4. Detention Cell
  - a. All surfaces in detention cells shall be smooth, with no blemishes that would permit contraband or deleterious materials to be secreted.
  - b. Detention cells surfaces must be durable and resistant to defacing.
  - c. Install all fixed detention furnishings and accessories. Grind smooth any sharp edges to inhibit injury.
  - d. Utilize "no pick" security caulk to seal gaps that would allow items to be secreted or where materials could be introduced to cause damage to anchors.

## PART 2 - EVALUATION

- 2.1 Completed mock-ups and benchmarks as accepted by the Judicial Council of California shall be maintained in good condition during the Work as standards of workmanship and appearance for the completed Project.
- 2.2 Mock-ups shall not be disassembled until Judicial Council of California provides notice to Design Build Entity that its evaluation and use of the mock-ups is complete.

**END OF SECTION 014339**

## SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

### 1.1 GENERAL

#### A. RELATED DOCUMENTS AND PROVISIONS

1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document.
2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

#### B. TEMPORARY UTILITIES

1. Electric Power and Lighting:
  - a. Design Build Entity will furnish and pay for power during the course of the work. DBE shall be responsible for providing temporary facilities required on the Project Site to point of intended use.
  - b. Design Build Entity shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work.
  - c. Design Build Entity shall be responsible for maintaining existing lighting levels in the Project vicinity should temporary outages or service interruptions occur.
  - d. Design Build Entity shall be responsible for the payment of all utility costs for temporary facilities and new building until the date of Beneficial Use.
2. Heat and Ventilation:
  - a. Design Build Entity shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions and per manufacturers' requirements for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions.
  - b. Design Build Entity shall provide temporary temperature and humidity sensors on all floors/ Quantity and coverage shall be per manufacturer's recommendations to provide adequate coverage on each floor. The temporary system shall monitor and graphically display the relative humidity and temperature over time - and not just record a static, isolated data point.
  - c. Design Build Entity shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.



- d. Design Build Entity shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.
3. Use of Permanent Heating System for Temporary Heat:
  - a. Agreement for Use: Permanent heating system shall not be used for temporary heat until it has undergone commissioning and operational testing and is approved by the Judicial Council of California. No demand shall be made by Design Build Entity for use of permanent heating system for temporary heat, except with consent of Judicial Council of California and by agreement in writing for use mutually acceptable to Judicial Council of California and Design Build Entity.
  - b. Operation and Maintenance: Provide operator, maintain permanent heating system, and continue to do so during entire time temporary heat is required, and until entire Work of this Contract is accepted by Judicial Council of California. Maintenance shall include replacement of filters and other dispensable items.
4. Refer to technical specifications for requirements relating to replacement of filters and other items used for temporary heating.
- C. Payment for Use: Cost of fuel, operators, and maintenance for permanent heating system shall be borne by Design Build Entity until acceptance of building by Judicial Council of California.
  1. Water:
    - a. Design Build Entity will furnish and pay for water during the course of the work. Design Build Entity shall be responsible for providing temporary facilities required.
    - b. Design Build Entity shall make potable water available for human consumption.
  2. Site Security: Design Build Entity will be responsible for site security during the course of the work until Project Completion
  3. Sanitary Facilities:
    - a. Design Build Entity shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Judicial Council of California of California or DBE completes all Work.
  4. Fire Protection:
    - a. Design Build Entity shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with

all requirements of the California Fire, State Fire Marshall and/or its designee.

- b. Where on-site welding and burning of steel is unavoidable, Design Build Entity shall provide protection for adjacent surfaces.

5. Cleaning and Trash Removal:

- a. Design Build Entity shall provide trash removal on a timely basis from all Site Offices and throughout the Site.
- b. Design Build Entity shall be responsible for professional cleaning services of all Site Offices. Offices shall be cleaned once a week at a minimum.

D. TEMPORARY FACILITIES:

- 1. In addition, unless otherwise indicated in the Contract Documents, Design Build Entity E shall provide the following facilities, trailers, offices, furniture, and services for the Design Build Entity and Judicial Council of California's use:
  - a. PM and DBE to define Big Room requirements during design and other Site Office requirements.
  - b. The Design Build Entity must provide adequate office space, furniture, at a minimum for the Construction Manager Representative(s), Inspectors, Judicial Council PM, and OSFM if applicable.

E. BARRIERS AND ENCLOSURES

- 1. Design Build Entity shall obtain Judicial Council of California of California's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.
- 2. Design Build Entity shall provide and maintain for the duration of construction, a six (6) foot high, chain link perimeter fence with posts driven into the ground and fabric screen as a security barrier around construction area. Design Build Entity shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises. Design Build Entity shall remove temporary fence, barriers and enclosure upon Completion of the Work.
- 3. Design Build Entity shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.

F. SECURITY

- 1. Design Build Entity shall secure all construction equipment, machinery and vehicles, park and store only within fenced area, and render inoperable during nonwork hours. Design Build Entity is responsible for ensuring that no construction materials, tools, equipment,



machinery or vehicles can be used for unauthorized entry or other damage or interference to activities and security of existing facilities adjacent to and in the vicinity of the Project Site. Make good all damages to work and loss of materials due to vandalism or theft, within this responsibility.

G. CONSTRUCTION MONITORING WEB-BASED WIRELESS CAMERAS

1. Before any construction activity takes place onsite, Design Build Entity shall install and provide **four** web-based wireless cameras including a web-based interface and software that provides construction progress for the entire construction duration. System will archive one time-lapse snapshot per camera every 5 minutes and include 24/7 live view and progress reports for duration of project. Design Build Entity shall mount each camera on a 35-foot-high pole. Locate cameras' poles at opposite corners for cameras to view two full different building elevations. Cameras shall be connected to a website with capability to pan, tilt, and zoom with monitoring accessible on a webpage via passwords.
2. Internet Connection: Provide dedicated T1 connection for cameras with separate static or dynamic IP addresses.

1.2 TEMPORARY CONTROLS

A. Noise Control:

1. Design Build Entity acknowledges that adjacent facilities may remain in operation during all or a portion of the Work, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
2. Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to CM or Judicial Council of California of California a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration:

1. Equipment and impact tools shall have intake and exhaust mufflers.
2. Design Build Entity shall cooperate with Judicial Council of California of California to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt:

1. Design Build Entity shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
2. Design Build Entity shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.

3. Design Build Entity shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.

4. Design Build Entity shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water:

1. Design Build Entity shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Design Build Entity shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution:

1. No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.

2. Design Build Entity shall comply with applicable regulatory requirements and antipollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting

1. If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.3 JOB SIGN(S)

A. General:

1. Design Build Entity shall provide, maintain and locate a project identification sign with the design, text, and colors designated by Judicial Council of California.

2. Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the Judicial Council of California.

B. Materials:

1. Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.

2. Sign Surface: Minimum 3/4-inch exterior grade plywood.

3. Rough Hardware: Galvanized.

4. Paint: Exterior quality, of type and colors selected by the Judicial Council of California.

C. Fabrication:

1. Design Build Entity shall fabricate to provide smooth, even surface for painting.

2. Size: 4'-0" x 8'-0", unless otherwise indicated.
3. Design Build Entity shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
4. Text and Graphics: As indicated.

#### 1.4 PUBLICITY RELEASES

- A. Design Build Entity shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s).

**END OF SECTION 015000**

## SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

## 1.1 GENERAL

## A. RELATED DOCUMENTS AND PROVISIONS

1. DBE shall coordinate all Contract Documents with applicable provisions related to the provisions in this document.
2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

## B. DEFINITIONS

1. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
2. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
3. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
4. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
5. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
6. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

## C. PERFORMANCE REQUIREMENTS

1. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of seventy-five percent (75%) by weight of total construction and demolition material waste generated by the Work. Diverted materials must include at least four material streams.
2. Salvage/Recycle Requirements: Judicial Council of California's goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible including the following materials:
  - a. Demolition Waste; and
  - b. Construction Waste.
3. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle one hundred percent (100%) of the following uncontaminated packaging materials:
  - a. Paper
  - b. Cardboard
  - c. Boxes

- d. Plastic sheet and film
- e. Polystyrene packaging
- f. Wood crates
- g. Plastic pails

D. SUBMITTALS

1. Waste Management Plan: Submit three (3) copies of plan within thirty (30) calendar days after the starting date on the Notice to Proceed.
2. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three (3) copies of report. Include separate reports for Demolition and Construction Waste. Include the following information:
  - a. Material category
  - b. Generation point of waste
  - c. Total quantity of waste in tons
  - d. Quantity of waste salvaged, both estimated and actual in tons
  - e. Quantity of waste recycled, both estimated and actual in tons
  - f. Total quantity of waste recovered (salvaged plus recycled) in tons
  - g. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste
3. Waste Reduction Calculations: Before request for final inspection, submit three (3) copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
4. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
5. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
6. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
7. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
8. LEED Submittal: Submit LEED letter template for Credit MR 2.1 and/or 2.2 (as applicable), signed by DBE, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met. Use Judicial Council of California approved format for documentation

## E. QUALITY ASSURANCE

1. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council.
2. Refrigerant Recovery Technician Qualifications: Certified by EPA approved certification program.
3. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
4. Waste Management Conference: Conduct conference at Project Site to comply with requirements in Document "Coordination and Project Meetings." Review methods and procedures related to waste management including, but not limited to, the following:
  - a. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
  - b. Review requirements for documenting quantities of each type of waste and its disposition.
  - c. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  - d. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  - e. Review waste management requirements for each trade.

## F. WASTE MANAGEMENT PLAN

1. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume but use same units of measure throughout waste management plan.
2. Waste Identification: Indicate anticipated types and quantities of demolition, site clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
3. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
  - a. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
  - b. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
  - c. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their

names, addresses, and telephone numbers.

- d. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
  - e. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  - f. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project Site where materials separation will be located.
4. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
- a. Total quantity of waste
  - b. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste
  - c. Total cost of disposal (with no waste management)
  - d. Revenue from salvaged materials
  - e. Revenue from recycled materials
  - f. Savings in hauling and tipping fees by donating materials
  - g. Savings in hauling and tipping fees that are avoided
  - h. Handling and transportation costs. Include cost of collection containers or each type of waste
  - i. Net additional cost or net savings from waste management plan

**END OF SECTION 017419**

## SECTION 017700 - CONTRACT CLOSEOUT AND FINAL CLEANING

## 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document.
  2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

## 1.2 PRELIMINARY PROCEDURES

- A. Before requesting inspection for determining date of Completion, complete the following items. Identify items below that are incomplete in request.
1. Prepare a final list of items to be completed and corrected (punch list).
  2. Advise Judicial Council of California of pending insurance changeover requirements.
  3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit completed LEED Action Plan Materials Log.
  5. Obtain and submit releases permitting Judicial Council of California unrestricted use of the Work and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases, if required.
  6. Prepare and submit Project Record Documents, operation and maintenance manuals, Completion construction photograph prints and electronic files, damage or settlement surveys, property surveys, and similar final record information.
  7. Deliver tools, spare parts, extra materials, and similar items to location designated by Judicial Council of California. Label with manufacturer's name and model number where applicable
  8. Make final changeover of permanent locks and deliver keys to Judicial Council of California. Advise Judicial Council of California's personnel of changeover in security provisions.
  9. Complete startup testing of systems
  10. Submit test/adjust/balance records.
  11. Terminate and remove temporary facilities from Project Site, along with mockups, construction tools, and similar elements.
  12. Advise Judicial Council of California of changeover in utilities.
  13. Submit changeover information related to Judicial Council of California's occupancy, use, operation, and maintenance.



14. Complete final cleaning requirements, including touchup painting.
15. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

### 1.3 COMPLETION

#### A. Preliminary Procedures:

1. Before requesting inspection for determining date of Completion, complete the following:
  - a. Submit a final Application for Payment according to the Contract Documents.
  - b. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  - c. Submit pest control final inspection report and warranty.
  - d. Instruct Judicial Council of California's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
  - e. Submit demonstration and training videos where required.
  - f. Inspection: Submit a written request for inspection.

### 1.4 LIST OF ITEMS IN NEED OF CORRECTION (PUNCH LIST)

- A. When Design Build Entity believes the construction Work is substantially complete, Design Build Entity (including their Architect and Engineers) shall create a list of any remaining corrective work from the rolling punch list. Design Build Entity shall then notify Judicial Council and schedule an initial walkthrough to be attended by Judicial Council Representative(s), Project Inspector, and other project stakeholders as needed to determine whether and to what extent the Construction Work is complete.
- B. Punch list shall be hosted within the project management software, visible to all stakeholders and available for input. Judicial Council and its representatives and consultants may add omitted or missing items as work is being completed. This punch list is intended to be a live document, updated continuously and collaboratively to make the closeout process more efficient. Design Build Entity to follow the punch list requirements outlined in Article 24 of the General Conditions (Closeout, Final Completion, Final Payment & Release of Retention).
- C. Design Build Entity shall comply with Punch List procedures as provided herein and consistent with Article 24 of the General Conditions and maintain the presence of a Project Superintendent and Project Manager until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Design Build Entity demobilize its forces prior to completion of the Punch List. Upon receipt of Design Build Entity's written notice that all of the Punch List items have been fully completed and the Work is ready for final inspection and acceptance, Judicial Council of California and its Representatives will inspect the Work and shall submit to Design Build Entity a final inspection report noting the Work, if any, required in order to complete in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist

of the Punch List items not yet satisfactorily completed.

- D. Punch List shall be considered complete only upon the Judicial Council of California's determination that all items on the Punch List, and all updates to the Punch List, are complete.

#### 1.5 ATTIC STOCK

- A. Design Build Entity to summarize all required attic stock requirements in this section during the Pre GMP Phase of Work. Collaborate with Owner during the design deliverable phase to validate these requirements. Do not provide a separate attic stock requirement in individual specification sections. All requested attic stock shall be located in this specification section.

- B.

Material	Material % or Amount	Manufacturer

#### 1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Judicial Council of California for designated portions of the Work where commencement of warranties other than date of Completion is indicated.
- B. Organize warranty documents into an orderly sequence as required by Section 017836 "Warranties".

#### 1.7 FINAL CLEANING

- A. Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Design Build Entity shall use cleaning methods and procedures that reduce the overall impact on human health and the natural environment by reducing the amount of disposed waste, pollution and environmental degradation. If Project is subject to LEED certification, Design Build Entity shall ensure compliance with the applicable LEED requirements for final cleaning of the Site.
- B. Design Build Entity shall employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program.
1. Complete the following cleaning operations before requesting final inspection:
- a. Clean Project Site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

- b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
- c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
- d. Remove tools, construction equipment, machinery, and surplus material from Project Site.
- e. Remove snow and ice to provide safe access to building.
- f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- g. Clean all surfaces and other work in accordance with recommendations of the manufacturer.
- h. Remove spots, mortar, plaster, soil, and paint from ceramic tile, stone, and other finish materials.
- i. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- j. Sweep concrete floors broom clean in unoccupied spaces.
- k. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
- l. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- m. Remove labels that are not permanent.
- n. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- o. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- p. Replace parts subject to unusual operating conditions.
- q. Clean ducts, blowers, and coils if units were operated without filters during construction.
- r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

- s. Leave Project Site clean and ready for occupancy.
- 2. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests.
- 3. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Judicial Council of California's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project Site and dispose of lawfully.

**END OF SECTION 017700**

DRAFT

## SECTION 017823 OPERATION AND MAINTENANCE DATA

## PART 1 GENERAL

## 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. DBE shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. DBE shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

## 1.2 QUALITY ASSURANCE

- A. DBE shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

## 1.3 FORMAT

- A. All documents required herein shall be submitted in compliance with the formatting and numbering requirements of Section 013120 "Documentation Requirements."
- B. DBE shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
  - 1. Binders: DBE shall use commercial quality, 8 1/2 by 11 inch, three side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, DBE shall correlate data into related consistent groupings approved in advance by Judicial Council.
  - 2. Cover: DBE shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
  - 3. DBE shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
  - 4. DBE shall provide tabbed fly leaf for each separate Product and system, with typed description of Product and major component parts of equipment.
  - 5. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 lb paper.
- C. In addition to the physical copies of warranty information described above, one copy of these documents will be provided in digital format, transferred to the Judicial Council's CM either on portable media or via File Transfer Protocol.
- D. Drawings: DBE shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

#### 1.4 CONTENTS, EACH VOLUME

- A. Table of Contents: DBE shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and DBE with name of responsible parties; and schedule of Products and systems, indexed to content of the volume.
- B. For Each Product or System: DBE shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: DBE shall mark each sheet to clearly identify specific Products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: DBE shall supplement Product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. DBE shall not use Project Record Documents as maintenance drawings.
- E. Text: The DBE shall include any and all information as required to supplement Product data. DBE shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

#### 1.5 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: DBE shall include Product data, with catalog number, size, composition, and color and texture designations. DBE shall provide information for reordering custom manufactured Products.
- B. Instructions for Care and Maintenance: DBE shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: DBE shall include Product data listing applicable reference standards, chemical composition, and details of installation. DBE shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: DBE shall include all additional requirements as specified in the Specifications.
- E. DBE shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.6 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System:
  - 1. DBE shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. DBE shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.
- B. Panelboard Circuit Directories:
  - 1. DBE shall provide electrical service characteristics, controls, and

communications.

- C. DBE shall include color coded wiring diagrams as installed.
- D. Operating Procedures:
  - 1. DBE shall include startup, break-in, and routine normal operating instructions and sequences. DBE shall include regulation, control, stop ping, shutdown, and emergency instructions. DBE shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements:
  - 1. DBE shall include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
  - 2. DBE shall provide servicing and lubrication schedule, and list of lubricants required.
  - 3. DBE shall include manufacturer's printed operation and maintenance instructions.
  - 4. DBE shall include sequence of operation by controls manufacturer.
  - 5. DBE shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
  - 6. DBE shall provide control diagrams by controls manufacturer as installed.
  - 7. DBE shall provide DBE's coordination drawings, with color coded piping diagrams as installed.
  - 8. DBE shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
  - 9. DBE shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
  - 10. Additional Requirements: DBE shall include all additional requirements as specified in Specification(s).
  - 11. DBE shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.7 SUBMITTAL

Concurrent with the Schedule of Submittals as indicated in the General Conditions and Section 013300 "Submittals", DBE shall submit to the Judicial Council of California for review two(2) copies of a preliminary draft of proposed formats and outlines of the contents of the Manual.

- A. For equipment, or component parts of equipment put into service during construction and to be operated by Judicial Council of California, DBE shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- B. On or before the DBE submits its final application for payment, DBE shall submit two (2) copies of a complete Manual in final form. The Judicial Council of California will provide comments to DBE and DBE must revise the content of the Manual as required by Judicial Council of California prior to Judicial Council of

California's approval of DBE's final Application for Payment.

- C. DBE must submit two (2) copies of revised Manual in final form within ten (10) days after receiving Judicial Council of California's comments. Failure to do so will be a basis for the Judicial Council of California withholding funds sufficient to protect itself for DBE's failure to provide a final Manual to the Judicial Council of California.

**END OF SECTION 017823**

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## SECTION 017836 - WARRANTIES

### 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Section.

### 1.2 FORMAT

- A. All documents required herein shall be submitted in compliance with the formatting and numbering requirements of the document "Documentation Requirements."
- B. Binders: Design Build Entity shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two-inch maximum ring size.
- C. Cover: Design Build Entity shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- D. Table of Contents: Design Build Entity shall provide title of Project; name, address, and telephone number of Design Build Entity and equipment supplier, and name of responsible principal. Design Build Entity shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the Product or work item is specified.
- E. Design Build Entity shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Design Build Entity shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).
- F. In addition to the physical copies of warranty information described above, one copy of these documents will be provided in digital format, transferred to the Judicial Council's CM either on portable media or via File Transfer Protocol.
- G. In addition to all warranty documentation and information required herein, Design Build Entity shall provide its Guarantee as required by the Contract Documents.

### 1.3 PREPARATION

- A. Design Build Entity shall obtain warranties, executed in duplicate by each applicable and/or responsible Subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with Judicial Council of California's permission, Design Build Entity shall leave date of beginning of time of

warranty until the date of completion is determined.

- B. Design Build Entity shall verify that warranties are in proper form, contain full information, and are notarized, when required.
- C. Written warranties, except manufacturer's standard printed warranties, shall be on Contractor's, subcontractor's, material supplier, or manufacturer's own letterhead, addressed to the Judicial Council.
- D. Design Build Entity shall co-execute submittals when required.
- E. Design Build Entity shall retain warranties until time specified for submittal.

#### 1.4 TIME OF SUBMITTALS

- A. Schedule of Warranties. Design Build Entity shall provide Judicial Council of California with a schedule of warranties with the submittal register as required by the technical specifications and outlined in the California Trial Court Facilities Standards. This will provide Judicial Council of California the opportunity to review the anticipated warranties and extended warranty periods the Judicial Council of California may require. \_
- B. For equipment or component parts of equipment put into service during construction with Judicial Council of California's permission, Design Build Entity shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- C. On or before the Design Build Entity submits its final application for payment, Design Build Entity shall submit all warranties and related documents in final form. Design Build Entity shall indicate any warranty related work that is being performed and incomplete at the time it submits its final application for payment. The Judicial Council of California will provide comments to Design Build Entity and Design Build Entity must revise the content of the warranties as required by Judicial Council of California prior to Judicial Council of California's approval of Design Build Entity's final Application for Payment.
- D. For items of Work that are not completed until after the date of Completion, Design Build Entity shall provide an updated warranty for those item(s) of Work within ten (10) days after the item is put into service, listing the date of acceptance as start of warranty period.

**END OF SECTION  
017836**

## SECTION 017839 - RECORD DOCUMENTS

### 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

### 1.2 GENERAL

- A. All documents required herein shall be submitted in compliance with the formatting and numbering requirements of the document "Documentation Requirements."
- B. "Record Documents" may also be referred to in the Contract Documents as "As- Built Drawings."
- C. Design Build Entity shall maintain at each Project Site one (1) set of marked-up Drawings and shall transfer all changes and information to those marked-up Drawings, as often as required in the Contract Documents, but in no case less than once each month. Design Build Entity shall submit to the Project Inspector one set of the Project Record Documents ("As-Built") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Built shall be available at the Project Site. The Design Build Entity shall submit reproducible documents at the conclusion of the Project following review of the blue-line prints. At the conclusion of the project, one set of reproducible documents will be submitted, and one digital file, .pdf or dwg format, of that set will be prepared and submitted.
  - 1. Label and date each Record Document "RECORD DOCUMENT" in legibly printed letters.
  - 2. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by Change Orders, RFI's, and Addenda, shall be accurately and legibly recorded by Design Build Entity.
  - 3. Locations and changes shall be done by Design Build Entity in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.
- D. Design Build Entity shall produce one (1) set of annotated ("red-lined") Performance Criteria Documents indicating all changes or deviations as agreed to by the Judicial Council of California.
- E. Maintain Record Documents in a clean, dry, legible condition and in good order. Design Build Entity shall not use Record Documents for construction

purposes.

### 1.3 RECORD DOCUMENT INFORMATION

- A. Design Build Entity markups shall record, but are not limited to, the following information:
  - 1. Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
  - 2. Actual numbering of each electrical circuit.
  - 3. Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Drawings.
  - 4. Locations of all items, not necessarily concealed, which vary from the Contract Documents.
  - 5. Installed location of all cathodic protection anodes.
  - 6. Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
  - 7. Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
  - 8. Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.
- B. In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.
- C. Design Build Entity shall provide additional drawings as necessary for clarification.
- D. Design Build Entity shall provide in an electronic format (.pdf or .dwg format) as indicated in the Contract Documents, a copy of the Drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."
- E. Submittal of Final As-Built BIM drawings in (.dwg format) as identified in Section 01 35 54.
- F. Design Build Entity shall provide in an electronic format a copy of the permitted Technical Specifications annotated to indicate any changes.
- G. Design Build Entity shall provide in an electronic format a copy of the annotated Performance Criteria Documents.

**END OF SECTION 017839**

## SECTION 017900 - DEMONSTRATION AND TRAINING - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Design Build Entity (DBE) shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. DBE shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

### 1.2 SUMMARY

- A. This Document includes administrative and procedural requirements for on-site instruction of Judicial Council of California's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training videos.

### 1.3 SUBMITTALS

- A. Instruction Program: Submit three (3) copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
  - 1. At completion of training, submit two (2) complete sets of training manual(s) for Judicial Council of California's use (hard copy and electronic files).
- B. Attendance Record: For each training module, submit list of participants and length of instruction time.
- C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.
- D. Demonstration and Training videos: Submit two (2) copies to Judicial Council of California within seven (7) days of the end of each training module. Coordinate with Judicial Council on the preferred format.
  - 1. Identification: For each copy, provide an applied label or accompanying transmittal with the following information:
    - a. Name of Project and Judicial Council of California Project

Number.

- b. Name and address of videographer.
- c. Name of Judicial Council of California's Representative.
- d. Name of DBE.
- e. Date video was recorded.

2. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video file. Include name of Project and date of video on each page.

#### 1.4 COORDINATION

- A. Coordinate training schedule with Judicial Council of California. Adjust schedule as required to minimize disrupting Judicial Council of California's operations. Notify at least fourteen (14) days in advance.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Judicial Council of California.

#### 1.5 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master.

#### 1.6 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual complete with a table of contents.
- B. Set up instructional equipment at instruction location.

#### 1.7 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between DBE and

Judicial Council of California for number of participants, instruction times, and location.

- B. Engage qualified instructors to instruct Judicial Council of California's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Judicial Council of California will furnish DBE with names and positions of participants.
- D. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Judicial Council of California, with at least fourteen (14) days' advance notice.
- E. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

**END OF SECTION 017900**



## GENERAL COMMISSIONING REQUIREMENTS

*[Text in red to be edited by Design Build Entity. Design Build Entity must coordinate with Judicial Council's Commissioning Agent to finalize this section.]*

## SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

## 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Design Build Entity shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. *Design Build Entity shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;*
  - 2. *Additional Divisions and Sections for specific requirements of the Work in those Section.*

## 1.2 SUMMARY

- A. Commissioning is a systematic process of verifying that the building systems perform interactively according to the construction documents and the Judicial Council of California's operational needs. The commissioning process shall encompass and coordinate the system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training. Commissioning during the construction and post-occupancy phases is intended to achieve the following specific objectives according to the contract documents:
  - 1. Verify that the applicable equipment and systems are installed in accordance with the contract documents and according to the manufacturer's recommendations.
  - 2. Verify and document proper integrated performance of equipment and systems.
  - 3. Verify that Operations & Maintenance documentation is complete.
  - 4. Verify that all components requiring servicing can be accessed, serviced and removed without disturbing nearby components including ducts, piping, cabling or wiring.
  - 5. Verify that the Judicial Council of California's operating personnel are adequately trained to enable them to operate, monitor, adjust, maintain, and repair building systems in an effective and energy-efficient manner.
  - 6. Document the successful achievement of the commissioning objectives listed above.
- B. Various sections of the project specifications require equipment startup, testing, and adjusting services. Requirements for startup, testing, and adjusting services specified in the technical sections of these specifications are intended to be provided in coordination with the commissioning services and are not intended to duplicate services. The Design Build Entity shall coordinate the



## GENERAL COMMISSIONING REQUIREMENTS

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work required by individual specification sections with the commissioning services requirements specified herein.

- C. The commissioning process does not take away from or reduce the responsibility of the Design Build Entity to provide a finished and fully functioning product.

### 1.3 DEFINITIONS

- A. Basis of Design (BoD) document: A document that records concepts, calculations, decisions, and product selections used to meet the Performance Criteria and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- B. Commissioning: A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated and maintained to meet the Performance Criteria requirements.
- C. Control System: A component of environmental, HVAC, security and fire systems for reporting, monitoring and issuing of commands.
- D. Deficiency or Commissioning Issue: A condition identified by the Commissioning Agent or other member of the Commissioning Team that adversely affects the commissionability, operability, maintainability, or functionality of a system, equipment, or component. A condition that is in conflict with the Contract Documents and/or performance requirements of the installed systems and components.
- E. CxA: Commissioning Authority. The entity identified by the Judicial Council of California who leads, plans, and schedules and coordinates the commissioning team to implement the commissioning process.
- F. Functional Testing: Generally, refers to testing of a complete system and demonstrates control of equipment and the interaction of equipment or systems. Performed by the contractor and witnessed by the CxA.
- G. Installation Verification: Observations or inspections that confirm the system or component has been installed in accordance with the contract documents and to industry accepted best practices.
- H. Integrated System Testing: Integrated Systems Testing procedures entail testing of multiple integrated systems performance to verify proper functional interface between systems. Typical Integrated Systems Testing includes verifying that building systems respond properly to loss of utility, transfer to emergency power sources, re-transfer from emergency power source to normal utility source; interface between HVAC controls and Fire Alarm systems for equipment shutdown, interface between Fire Alarm system and elevator control systems for elevator recall and shutdown; interface between Fire Alarm System

## GENERAL COMMISSIONING REQUIREMENTS

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and Security Access Control Systems to control access to spaces during fire alarm conditions; and other similar tests as determined for each specific project.

- I. Issues Log: A formal and ongoing record of problems or concerns and their resolution that have been raised by members of the commissioning team during the course of the commissioning process. Maintained by the CxA.
- J. Owner: Judicial Council of California or designated representative.
- K. Issues Log: A formal and ongoing record of problems or concerns and their resolution that have been raised by members of the commissioning team during the course of the commissioning process. Maintained by the CxA.
- L. Pre-functional Checklists (PFC): Refers to checklists prepared by the CxA and provided to the contractor to document the complete installation of equipment or systems. Pre-functional checklists are completed by the contractors prior to start-up.
- M. Pre-Functional Test (PFT): An inspection or test that is done before functional testing. PFT's include installation verification and system and component start up tests.
- N. Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment.
- O. Seasonal Performance Tests: Functional Tests that are deferred until the system(s) will experience conditions closer to their design conditions.
- P. Site Observation Visit: On-site inspections and observations made by the Commissioning Agent for the purpose of verifying component, equipment, and system installation, to observe contractor testing, equipment start-up procedures, or other purposes.
- Q. Start-up: The initial starting or activating of dynamic equipment or the initial energization and programming of control systems.
- R. Systems, Subsystems, and Equipment: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, and equipment.
- S. TAB: A systematic process or service applied to heating, ventilating and air-conditioning (HVAC) systems and other environmental systems to achieve and document air and hydronic flow rates. The standards and procedures for providing these services are referred to as "Testing, Adjusting, and Balancing" and are described in the Procedural Standards for the Testing, Adjusting and Balancing of Environmental Systems, published by NEBB or AABC.
- T. Training Plan: A written document that details the expectations, schedule and deliverables of commissioning process activities related to training of project operating and maintenance personnel, users and occupants.

## GENERAL COMMISSIONING REQUIREMENTS

*[Text in red to be edited by Design Build Entity. Design Build Entity must coordinate with Judicial Council's Commissioning Agent to finalize this section.]*

- U. Trending: The monitoring by a building management system or other electronic data gathering equipment and analyzing of the data gathered over a period of time to verify proper equipment or systems sequence of operations.
- V. Warranty Phase Commissioning: Commissioning efforts executed after a project has been completed and accepted by the Judicial Council of California. Warranty Phase Commissioning includes follow-up on verification of system performance, measurement and verification tasks and assistance in identifying warranty issues and enforcing warranty provisions of the construction contract.
- W. Warranty Visit: A commissioning meeting and site review where all outstanding warranty issues and deferred testing is reviewed and discussed.

#### 1.4 COMMISSIONING TEAM

- A. A project team created to coordinate the commissioning effort that coordinates and communicates with the rest of the project team, attend meetings, and solve problems. This team may include representatives from the Design Build Entity, subcontractors, Judicial Council, Project Inspection team, and Criteria Architect.
- B. The Design Build Entity shall in addition to their representative also appoint a representative from each subcontractor involved in commissioned systems including mechanical, electrical, controls, Test and Balance, plumbing, building envelope, low voltage systems,
- C. With these fundamental practices in mind, the commissioning process described herein has been developed to recognize that, in the execution of the Commissioning Process, the Commissioning Agent must develop effective methods to communicate with every member of the construction team involved in delivering commissioned systems while simultaneously respecting the exclusive contract authority of the Construction Project Manager (CMA). Thus, the procedures outlined in this specification must be executed within the following limitations:
  - 1. No communications (verbal or written) from the Commissioning Agent shall be deemed to constitute direction that modifies the terms of any contract between the Judicial Council of California and the Design Build Entity.
  - 2. Commissioning Issues identified by the Commissioning Agent will be delivered to the Judicial Council Representative and copied to the designated Commissioning Representatives for the Design Build Entity and subcontractors on the Commissioning Team for information only in order to expedite the communication process. These issues must be understood as the professional opinion of the Commissioning Agent and as suggestions for resolution.
  - 3. All parties to the Commissioning Process shall be individually responsible for alerting the Judicial Council Representative of any issues that they deem to constitute a potential contract change prior to acting on these

## GENERAL COMMISSIONING REQUIREMENTS

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issues.

## 1.5 JUDICIAL COUNCIL RESPONSIBILITIES

- A. Participate in resolution of issues that may occur as a result of the commissioning process.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities including, but not limited to, the following:
  - 1. Coordination meetings.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Testing meetings.
  - 4. Demonstration of operation of systems, subsystems, and equipment.

## 1.6 CONTRACTOR'S AND SUBCONTRACTOR'S RESPONSIBILITIES

- A. Provide utility services required for the commissioning process.
- B. Design Build Entity is responsible for construction means, methods, job safety, or management function related to commissioning on the job site.
- C. Design Build Entity designers of record are responsible for developing the construction contract documents and clarifying the design intent during the construction phase of the project.
- D. Design Build Entity shall assign representatives with expertise and authority to act on behalf of the Design Build Entity and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
  - 1. Participate in construction-phase commissioning meetings including controls coordination meeting to review and resolve any issues with the sequence of operations.
  - 2. Participate in maintenance orientation and inspection.
  - 3. Participate in operation and maintenance training sessions.
  - 4. Certify that Work is complete, and systems are operational according to the Contract Documents, including calibration of instrumentation and controls.
  - 5. Perform quality control of all work and certify it is complete prior to request for inspection.
  - 6. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.

## GENERAL COMMISSIONING REQUIREMENTS

*[Text in red to be edited by Design Build Entity. Design Build Entity must coordinate with Judicial Council's Commissioning Agent to finalize this section.]*

- E. Design Build Entity shall integrate all commissioning activities into Design Build Entity's master construction schedule.
- F. Design Build Entity shall provide a means to effectively commission the BMS system including the following at minimum; schedule the controls contractor that was an integral part of programming the building BMS to run the tests, provide a table with chairs, and provide a 17" 1080p monitor with cables for connection to the controls contractor's laptop.
- G. Subcontractors shall assign representatives with expertise and authority to act on behalf of subcontractors and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
  - 1. Participate in construction-phase coordination meetings.
  - 2. Participate in maintenance orientation and inspection.
  - 3. Complete pre-functional checklists for all equipment. Submit completed forms with start-up reports immediately after start up.
  - 4. Schedule and perform duct air leakage testing as specified in the technical specification sections with CxA as witness.
  - 5. Provide flushing plans, disinfection reports and water treatment reports to the CxA for review.
  - 6. Participate in pre-TAB meeting and jobsite inspections to verify TAB readiness.
  - 7. Provide draft completed TAB report to CxA for review. CxA will identify up to **20% of TAB report** for TAB contractor to demonstrate compliance to the completed TAB report.
  - 8. Participate in procedures meeting for testing.
  - 9. Perform point-to-point, calibration and checkout of the building automation system and provide completed report to the CxA for review.
  - 10. Participate in final review at acceptance meeting.
  - 11. Provide schedule for operation and maintenance data submittals, equipment startup, and testing to CxA for incorporation into the commissioning plan. Update schedule on a weekly basis throughout the construction period.
  - 12. Provide information to the CxA for developing construction-phase commissioning plan.
  - 13. Participate in training sessions for operation and maintenance personnel.
  - 14. Verify that all systems function correctly by testing each mode of operation, alarm and system function.
  - 15. Gather and submit operation and maintenance data for systems, subsystems, and equipment to the CxA, as specified.

## GENERAL COMMISSIONING REQUIREMENTS

*[Text in red to be edited by Design Build Entity. Design Build Entity must coordinate with Judicial Council's Commissioning Agent to finalize this section.]*

16. Perform quality control of all work and certify it is complete prior to request for observation and or testing.
17. Complete and sign Systems Functional Testing Readiness Certification and Notification Letter for Commissioning and provide to CxA (See EXHIBIT B of this specification section).
18. Provide technicians who are familiar with the construction and operation of installed systems and who shall develop specific test procedures and participate in testing of installed systems, subsystems, and equipment.
19. Perform seasonal testing, at the direction of the CxA, to prove functional performance of the HVAC and controls in the opposite season.

#### 1.7 CXA'S RESPONSIBILITIES

- A. Organize and lead the commissioning team.
- B. Prepare a Commissioning Plan. Collaborate with design team, owner, contractor and subcontractors to develop test and inspection procedures. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
- C. Work with the Design Build Entity to schedule commissioning activities. The Design Build Entity shall integrate all commissioning activities into the master construction schedule. All parties will address scheduling issues in a timely manner in order to expedite the commissioning process.
- D. Review and comment on submittals for compliance with the approved project documents and identify any potential conflicts.
- E. Conduct commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. The CxA shall prepare and distribute minutes to commissioning team members and attendees within five (5) workdays of the commissioning meeting.
- F. At the beginning of the construction phase, conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for permanent power; operation and maintenance data submittals; operation and maintenance training sessions; TAB Work; and Project completion.
- G. Periodically observe and inspect construction and report progress and deficiencies. In addition to compliance with the Contract Documents, inspect systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.
- H. Prepare Project-specific pre-functional checklists and functional test procedures checklists.



## GENERAL COMMISSIONING REQUIREMENTS

*[Text in red to be edited by Design Build Entity. Design Build Entity must coordinate with Judicial Council's Commissioning Agent to finalize this section.]*

- I. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- J. Review and comment on operation and maintenance documentation for compliance with the Contract Documents.
- K. Review Design Build Entity's operation and maintenance training program.
- L. Prepare commissioning status reports.
- M. Assemble the final commissioning documentation, including the Commissioning Report including applicable Project Record Documents.

## 1.8 COMMISSIONING DOCUMENTATION

- A. Commissioning Plan: A document, prepared by CxA, that outlines the process, schedule, allocation of resources, and documentation requirements of the commissioning effort, and shall include, but is not limited to the following:
  - 1. Description of the organization, layout, and content of commissioning documentation to be provided along with identification of responsible parties.
  - 2. Identification of systems and equipment to be commissioned.
  - 3. Description of the level of commissioning for each system
  - 4. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
  - 5. Identification of items that must be completed before the next operation can proceed.
  - 6. Description of responsibilities of commissioning team members.
  - 7. Description of observations to be made.
  - 8. Description of requirements for operation and maintenance training, including required training materials.
  - 9. Provide a schedule for commissioning activities with specific dates coordinated with overall construction schedule.
  - 10. Define the process for completing pre-functional and startup checklists for systems, subsystems, and list of specific equipment requiring these checklists.
  - 11. Include Step-by-step procedures for Functional testing systems, subsystems, and equipment with descriptions for methods of

## GENERAL COMMISSIONING REQUIREMENTS

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verifying relevant data, recording the results obtained, and listing parties involved in performing and verifying tests.

- B. Pre-Functional Checklists: CxA shall develop pre-functional checklists for all equipment to be commissioned. Pre-Functional Checklists shall be completed and signed by the Design Build Entity, verifying that systems, subsystems, equipment, and associated controls are ready for testing. The Commissioning Agent may spot check Pre-Functional Checklists to verify accuracy and readiness for testing. Inaccurate or incomplete Pre-Functional Checklists shall be returned to the Design Build Entity for correction and resubmission.
- C. Site Visit Reports: CxA shall record test data, observations, and measurements on site visit forms. Updated Issues Log, photographs and other means appropriate for the application shall be included with Report.
- D. Start-Up Reports: Design Build Entity/Manufacturer created forms that document that factory start-up procedures have been followed for all equipment and systems to be commissioned. Provided by sub-contractors.
- E. Functional Performance Testing: CxA shall develop functional performance test procedures for all equipment and systems to be commissioned. Site Visit Reports: CxA shall record test data, observations, and measurements on site visit forms. Photographs and other means appropriate for the application shall be included with data.
- F. Test and Inspection Reports: CxA shall compile test and inspection reports and test and inspection certificates and include them in Systems Manual and commissioning report.
- G. Commissioning Schedule: CxA shall review and provide input to the master project and construction schedules for commissioning activities.
- H. Issues Log: CxA shall prepare and maintain an issues log that describes installation, and performance issues that are at variance with the Contract Documents. CxA will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.
  - 1. Creating an Issues Log Entry:
    - a. Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.
    - b. Assign a descriptive title of the issue.
    - c. Identify issue date.
    - d. Identify test number of tests being performed at the time of the observation, if applicable, for cross-reference.
    - e. Identify system, subsystem, and equipment to which the issue applies.
    - f. Identify location of system, subsystem, and equipment.



## GENERAL COMMISSIONING REQUIREMENTS

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- g. Include information that may be helpful in diagnosing or evaluating the issue.
  - h. Note recommended corrective action.
  - i. Identify commissioning team member responsible for corrective action.
  - j. Identify expected date of correction.
  - k. Identify person documenting the issue.
- 2. Documenting Issue Resolution:
  - a. Log date correction is completed or the issue is resolved.
  - b. Describe corrective action or resolution taken. Include description of diagnostic steps taken to determine root cause of the issue, if any.
  - c. Identify changes to the Contract Documents that may require action, if any.
  - d. State that correction was completed and system, subsystem, and equipment are ready for retest, if applicable.
  - e. Identify person(s) who corrected or resolved the issue.
  - f. Identify person(s) documenting the issue resolution.
- I. Commissioning Report: CxA shall document results of the commissioning process including performance of systems, subsystems, equipment and issues. The commissioning report shall indicate whether systems, subsystems, and equipment have been completed and are performing according to the Performance Criteria, BoD and Contract Documents. The commissioning report shall include, but is not limited to, the following:
  - 1. Discussion of performance of commissioned systems including any variance from Performance Criteria, BoD and the Contract Documents; record of conditions; and, if appropriate, recommendations for resolution. This report shall be used to evaluate systems, subsystems, and equipment and shall serve as a future reference document during Judicial Council occupancy and operation. It may also include a recommendation for accepting or rejecting systems, subsystems, and equipment.

## GENERAL COMMISSIONING REQUIREMENTS

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2. Commissioning Plan.
3. Testing plans and reports.
4. Issues log.
5. Completed test checklists.
6. Listing of off-season test(s) not performed and a schedule for their completion.

J. Systems Manual: CxA shall gather required information and compile Systems Manual. Systems manual shall include, but is not limited to, the following:

1. As-built system narratives, schematics, and list of installed equipment
2. Operation and maintenance data

#### 1.9 CXA SUBMITTALS

- A. Commissioning Plan: CxA shall submit a draft commissioning plan. Deliver one copy to Design Build Entity and one to Judicial Council. Present submittal in sufficient detail to evaluate data collection and arrangement process. One copy, with review comments, will be returned to the CxA for preparation of the final commissioning plan.
- B. Prefunctional Checklists: CxA shall submit sample checklists and forms to Design Build Entity and subcontractors for review, comment and approval. Design Build Entity completed prefunctional checklists are required to be submitted for review and approved prior to proceeding with functional performance testing.
- C. Functional Test Plan: CxA shall submit draft Functional Test Plan and checklists for comment. The final Functional Test Plan will be submitted and used for functional testing.
- D. Site visit reports: CxA shall submit site visit reports as they are created.
- E. Final Commissioning Report: CxA shall submit the draft commissioning report. One copy, with review comments, will be returned to the CxA for preparation of final submittal. The final report submittal must address previous review comments.
- F. The CxA will provide appropriate contractors with a specific request for the type of submittal documentation the CxA requires facilitating the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum the request will include the manufacturer and model number, the manufacturer printed installation and detailed start-up procedures, sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details. In addition, the factory

## GENERAL COMMISSIONING REQUIREMENTS

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checkout sheets or field technicians shall be submitted for review

## 1.10 COORDINATION

- A. Scheduling: The Design Build Entity shall work with the Commissioning Agent to incorporate the commissioning activities into the construction schedule. The Commissioning Agent will provide sufficient information (including, but not limited to, tasks, durations and predecessors) on commissioning activities to allow the Design Build Entity to schedule commissioning activities. All parties shall address scheduling issues and make necessary notifications in a timely manner in order to expedite the project and the commissioning process. The Design Build Entity shall update the Master Construction schedule as directed by the Judicial Council of California.
- B. Coordinating Meetings: CxA shall conduct coordination meetings of the commissioning team as needed to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
- C. Pretesting Meetings: CxA shall conduct pretest meetings with the commissioning team to review startup reports, coordinate controls sequence of operations, review pretest inspection results, review testing and balancing procedures, review testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.
- D. Testing Coordination: CxA shall coordinate with the Judicial Council and Design Build Entity to plan the sequence of testing activities to accommodate required quality- assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

## PART 2 - PRODUCTS

PART 3 – EXECUTION *(To be developed by the Judicial Council PM in conjunction with the selected Commissioning Agent)*

**END OF SECTION 019113**

## SECTION 019119 – BUILDING ENCLOSURE COMMISSIONING REQUIREMENTS

### 1.1 RELATED DOCUMENTS AND PROVISIONS

- A. Judicial Council Project Manager to determine actual Building Enclosure Commissioning requirements on a project by project basis during the Pre-GMP Phase. Some projects may not require the full scope outlined in this document.
- B. DBE shall review all Contract Documents for applicable provisions related to the provisions in this document, including without limitation:
  - 1. DBE shall coordinate all Contract Documents with applicable provisions related to the provisions in this document;
  - 2. Additional Divisions and Sections for specific requirements of the Work in those Sections.

### 1.2 SUMMARY

- A. Enclosure Commissioning
  - 1. A systematic process of ensuring that all building envelope systems perform interactively according to the Designer's Basis of Design (BOD) and Owner's **Performance Criteria** and specific Project requirements. This is to be achieved through actual verification of systems performance during the construction period.
- B. This Section includes building envelope environmental separation commissioning procedures, including substructure, superstructure, exterior enclosure, and roofing construction and associated components, assemblies, and sub-assemblies that protect climate-controlled interior spaces from unconditioned spaces and the exterior environment, as follows:
  - 1. Below-grade construction including foundations and slab-on-grade that functions as part of the building envelope system but excluding structural systems and components.
  - 2. Superstructure floor, wall, and roof construction that functions as part of the building envelope system.
  - 3. Exterior building envelope construction, above grade, including exterior opaque walls, windows and doors, including sheathing, framing, and insulation, and interior finish materials attached to the exterior wall.
  - 4. Roofing, including roofing system, roofing insulation, and skylights, hatches, penetrations, and other roof openings.
  - 5. Waterproofing, including waterproofing system, penetrations, hatches, and other associated openings.

### 1.3 GENERAL REQUIREMENTS

- A. The requirements of this Section shall in no way relieve the DBE and other parties to

this project of their respective contractual obligations to the Owner for meeting the specified performance levels in the design and construction of this project.

- B. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation or suggestion occurs in the referenced standards, such recommendation or suggestion shall be considered mandatory. In the event of a conflict between referenced standards, this specification or within themselves, the more stringent standard or requirement shall govern.

#### 1.4 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Section 019113 "General Commissioning Requirements."
- C. Division 01, 03, 06, 07, and 08 specification sections for requirements related to the building enclosure.
- D. Enclosure Commissioning Plan (ECP) and Commissioning Plan.
- E. The Designer's BOD comprising information from the following documents:
  - 1. 100% Design Development Report: Facade Design, prepared by Thornton Tomasetti dated 6 December 2017 and issued by NBBJ.
  - 2. 100% Design Development Report: Waterproofing Design, prepared by Morrison Hershfield dated 17 August 2017 and issued by NBBJ.
- F. Performance Criteria comprising information from the following document:
  - 1. California Trial Court Facility Standards 2020 by the Judicial Council of California.

#### 1.5 SCOPE OF WORK

- A. This Section includes the following requirements for nonstructural commissioning of the building enclosure, including, but not limited to, the following:
  - 1. Roofing systems, fenestration systems, facade systems, below-grade and horizontal waterproofing, and all materials and components forming a part of these systems and interfaces with accessory systems, including, but not limited to, plumbing, electrical, and mechanical equipment.
  - 2. Interface conditions including flashing, expansion joints, and sealant joints installed as part of the work outlined in the Contract Documents.
- B. The materials, components, systems, and assemblies installed as part of the work outlined in the Contract Documents that comprise the building enclosure will be evaluated and performance tested as outlined in this Section and related sections. All testing specified herein shall be in accordance with each of the Technical Sections associated with the design and construction of the building enclosure. Discrepancies between this Section and other Technical Sections shall be brought to the attention of the Designer of Record and Building Enclosure Commissioning Provider.

- C. Testing and other work specified herein do not replace, reduce, or alter the scope of similar requirements specified in other specification sections.
- D. An Enclosure Commissioning Plan will be created and managed by the Building Enclosure Commissioning Provider. The Enclosure Commissioning Plan will include all requirements for commissioning of the building enclosure work.
- E. Related Work: Refer to other Sections of these Specifications to determine the type and extent of work therein affecting the work of each trade whether or not such work is specifically mentioned in this Section.

#### 1.6 BUILDING ENCLOSURE COMMISSIONING TEAM

- A. A representative of each of the following parties shall be designated as a member of the Building Enclosure Commissioning Team:
  1. Owner
  2. Owner's Project Manager (OPM)
  3. Construction Manager (CM)
  4. General Contractor (GC)
  5. Exterior Enclosure Subcontractors
  6. Designer of Record (DOR) / Architect of Record (AOR)
  7. Mechanical/Electrical/Plumbing (MEP) Engineer
  8. LEED Consultant
  9. MEP Commissioning Provider (CxP)
  10. Building Enclosure Commissioning Provider (BECxP)
  11. Testing Agent (TA)

#### 1.7 DEFINITIONS AND ABBREVIATIONS

- A. Performance Criteria: Documents that detail the functional requirements and building design standards of a project and the expectations of how it will be used and operated. These include, but are not limited to, project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- B. Basis of Design (BOD): A document or documents that records concepts, calculations, decisions, and product selections used to meet the Performance Criteria including but not limited to the current version of the California Trial Court Facilities Standards and any supplementary information. and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- C. Building Enclosure, Building Envelope, Exterior Enclosure, or Exterior Envelope: Materials, components, systems, and assemblies collectively intended to provide shelter or environmental separation between interior and exterior, or between two or more environmentally distinct interior spaces in a building.
- D. Building Enclosure Commissioning (BECx): The process that endeavors to confirm the exterior enclosure and those elements intended to provide environmental separation within a building or structure meet or exceed the expectations of the Owner as defined

in the Performance Criteria.

- E. Building Enclosure Commissioning Provider (BECxP): An individual or firm retained by the Owner to develop, manage, and be in responsible charge of the BECx process.
- F. Building Enclosure Commissioning Issue: A condition in the installation or operation of a commissioned component, assembly, or system that does not comply with the Contract Documents or Performance Criteria.
- G. Water Leakage: Uncontrolled water penetrating assemblies, water appearing on assemblies' normally exposed interior surfaces, water that is not contained and drained to the exterior, or water that may damage materials or interior finishes.

#### 1.8 REFERENCED STANDARDS

- A. Comply with all applicable building codes, such as the California Building Code, California Energy Code, and California Green Building Code, the Contract Documents, and the applicable provisions and recommendations of the following standards, except as modified herein:
  - 1. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE): Guideline 0: The Commissioning Process, 2013 Edition.
  - 2. ASHRAE Standard 202 – The Commissioning Process for Buildings and Systems.
  - 3. American Society for Testing and Materials (ASTM): E2813: Standard Practice for Building Enclosure Commissioning, 2012e1 Edition.
  - 4. Leadership in Energy and Environmental Design (LEED): Version 4, 2013.
  - 5. National Institute of Building Sciences (NIBS): Guideline 3: Exterior Enclosure Technical Requirements for the Commissioning Process, 2012 Edition.

#### 1.9 SUBMITTALS

- A. All technical submittals and shop drawings related to the building enclosure shall be forwarded by the DOR to the BECxP for review and comment after the GC and DOR's initial review. The DOR shall review and address and/or respond to all BECxP comments during their final review process, before return to the Contractor.
- B. Submit a systems manual that includes all test reports, inspection reports and certificates, manufacturer operation instructions for all operable elements of the building enclosure, and recommended maintenance frequency and maintenance requirements for each major building exterior enclosure system.

#### 1.10 ROLES AND RESPONSIBILITIES

- A. Owner's Project Manager BECx Responsibilities
  - 1. Facilitate and support the commissioning process and provide final approval for the commissioning work, including authorizing the BECxP to participate in meetings, conduct BECx project meetings, or conduct site visits. Any changes to the Contract Documents arising out of the commissioning plan or process must be submitted, reviewed, and accepted in writing by the OPM.

B. General Contractor's BECx Responsibilities

1. Coordinate and lead a construction kick-off meeting to discuss construction sequencing, trade coordination, and the General Contractor's site-specific Quality Control program, to be implemented during construction of the building enclosure.
2. Provide submittals required herein and by other divisions of the Specifications.
3. Participate in all BECx project meetings with the various members of the design and construction teams, including, but not limited to, the Owner, OPM, DOR, BECxP, suppliers, manufacturer technical representatives, and enclosure subcontractors. BECx requirements and progress shall be included on the agenda at each BECx project meeting. The Contractor, with the appropriate subcontractors in attendance, shall review, update, and discuss any issues and concerns identified during the previous week by the DOR, the BECxP, the Owner, or the OPM.
4. Coordinate and lead pre-installation conferences with the building enclosure subcontractors to discuss field installation procedures, details, construction sequencing, coordination, standards, and commissioning activities. Subcontractor/installer site superintendents and/or foreman shall attend.
5. Cooperate with the BECxP including, but not limited to, providing access to work, conducting periodic site visits with the BECxP and DOR, providing an adequate schedule for the commissioning tasks, and assisting with commissioning tasks as specified.
6. Coordinate and verify appropriate subcontractor attendance at BECx project meetings, building enclosure site observations, and other commissioning tasks as specified.
7. Provide all quality control testing and documentation outlined in the technical Specification Sections unless otherwise noted (testing to be performed by qualified testing third party testing agency). Refer to other divisions of the Specifications to determine the type and extent of work therein affecting the work of the BECx Requirements, whether or not such work is specifically mentioned in this Specification Section or the Building Enclosure Commissioning Plan.
8. Following a failed test, if any, investigate cause of the failure and submit a proposed plan for follow-up, repair, or corrective action as necessary to meet the design intent. Plan shall be submitted to the DOR and Owner for review and approval.
9. Provide a systems manual that includes all test reports, inspection reports and certificates, manufacturer operation instructions for all operable elements of the building enclosure, and recommended maintenance frequency and maintenance requirements for each major building exterior enclosure system.

C. BECxP Responsibilities

1. Review and comment on the building enclosure-related sections of the Performance Criteria and BOD documents.
2. Review project drawings and specifications for continuity of the air, water, thermal, and vapor control layers, as well as for general constructability, performance, and building envelope conformance with the Performance Criteria.
3. Review and provide comments on technical submittals and shop drawings related to the building enclosure, concurrent with DOR review, for conformance



to the design intent, Performance Criteria, and industry standards. DOR shall review and consolidate all submittal comments made by the BECxP prior to distribution to the Contractor.

4. Conduct periodic BECx project meetings, as directed by the Owner, with the various members of the design and construction teams, including, but not limited to, the Owner, OPM, DOR, BECxP, suppliers, and manufacturer's technical representatives. BECx requirements and progress shall be included on the agenda at each BECx project meeting.
5. Participate in or lead one pre-installation conference with the OCP, GC, and building enclosure subcontractors to discuss field installation procedures, details, construction sequencing, coordination, standards, and commissioning activities as directed by the Owner.
6. Conduct periodic site visits as directed by the Owner to review the progress of the Work and evaluate its compliance with the Contract Documents, Owner's Project Requirements, and industry standards. The BECxP will identify noncomplying work items, report them to the OPM and the DOR, and provide a summary report of observations. The summary report will include a list of noncomplying work items to serve as an ongoing construction issues log, which will be updated after each site visit. BECx coordination meetings, project meetings, and pre-installation conferences shall be coordinated with and conducted in conjunction with site visits whenever possible.
7. Witness or review enclosure commissioning testing as specified herein, as directed by the Owner. For all tests, the Third Party Testing Agent shall provide a testing report that includes a summary of testing procedures, parameters, and results.
8. Prepare a commissioning report by providing information pertinent to the exterior enclosure systems as developed throughout the course of the project.

D. Designer of Record's BECx Responsibilities

1. Review and approve submittals, substitutions, change requests, and other Contract Documents that affect the scope of the work. The DOR shall review and respond to BECxP comments on all submittals prior to issuing to the Contractor. The DOR shall provide copies of all approved submittals, change orders, amendments, or other Contract Documents affecting the scope of the work to the BECxP.
2. Attend periodic BECx project meetings with the various members of the design and construction teams, including, but not limited to, the Owner, OPM, DOR, BECxP, suppliers, and manufacturer technical representatives. BECx requirements and progress shall be included on the agenda at each BECx project meeting.
3. Conduct periodic site visits with the BECxP to review the progress of the work and evaluate its compliance with the Contract Documents, Owner's Project Requirements, and industry standards.
4. Provide final resolution of issues and noncomplying work items noted by the BECxP.

E. LEED Consultant's BECx Responsibilities

1. Verify that the BECx scope outlined within the Contract Documents and this Specification meets the requirements for any LEED points solicited for Envelope

- Commissioning.
- 2. Complete any reports or forms required to fulfill the Envelope Commissioning LEED criteria.

#### 1.11 COMMISSIONING DOCUMENTATION

- A. Provide the following information to the BECxP for inclusion in the Final BECx Report:
  - 1. Submittals, information for systems manuals, and other required documents and reports.
  - 2. Identification of installed building envelope components, assemblies, systems, and equipment, including design changes that occurred during the construction phase, including systems manuals.
  - 3. Test and inspection reports and certificates.
  - 4. Corrective action documents.
- B. The BECxP will provide regular reports to the Owner and distribute to other parties as requested by the Owner, as construction commissioning progresses.
- C. A final summary report (including back-up documentation) will be provided by the BECxP to the Owner upon completion of building envelope construction and resolution of unaddressed non-compliant items. All acquired documentation, logs, minutes, reports, deficiency lists, communications, findings, unresolved issues, etc., will be compiled in appendices and provided with the summary report.

#### 1.12 QUALITY ASSURANCE

- A. Quality Assurance and Control: Specific commissioning quality assurance and quality control requirements for individual construction activities are specified in the Sections that specify those activities. Specified commissioning tests, inspections, and related actions do not limit Contractor's other quality assurance and quality control procedures that facilitate compliance with the Contract Documents requirements.

#### 1.13 BUILDING ENCLOSURE TEST PROCEDURES AND STANDARDS

- A. AAMA 501.2 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems. Testing at opaque enclosure areas (as applicable) shall be performed after installation of all air and water barrier penetrations (facade panel attachments, clips, girts, etc.) but prior to installation of exterior insulation and cladding/panel systems.
  - 1. Acceptance Criteria: No water leakage.
- B. AAMA 501.4 – Recommended Static Test Method for Evaluating Window Wall, Curtain Wall and Storefront Systems Subjected to Seismic and Wind-Induced Inter-Story Drift.
  - 1. Service level displacement: Reference SG001 and 084400, Glazed Framing Systems.
  - 2. Design level displacement: Reference SG001 and 084400, Glazed Framing Systems.
- C. AAMA 501.7 – Recommended Static Test Method for Evaluating Windows, Window Wall, Curtain Wall and Storefront Systems Subjected to Vertical Inter-Story

Movements.

1. Displacement: Reference SG001 and 084400, Glazed Framing Systems.
- D. ASTM C794 – Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants. Contractor shall allow a minimum of 21 days or the time period required by the manufacturer, whichever is less, for the sealant to cure fully, then perform sealant adhesion testing.
- E. ASTM C1521 – Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints: Destructive “Tail” Procedure Method A (7.3.2). Contractor shall allow a minimum of 21 days or the time period required by the manufacturer, whichever is less, for the sealant to cure fully, then perform sealant adhesion testing.
1. Acceptance Criteria: Cohesive failure of sealant after an elongation of at least twice the manufacturer's reported design elongation shall be acceptable. Cohesive failure prior to an elongation of at least twice the manufacturer's reported design elongation or adhesive failure at any elongation shall constitute a failure.
- F. ASTM D4541 – Standard Test Method for Pull-off Strength for Coatings Using Portable Adhesion Testers. Contractor shall allow the time period required by the manufacturer for the membrane to cure fully prior to testing. Perform adhesion testing after air and water performance testing.
1. Acceptance Criteria: Measured air barrier adhesion strength shall not be less than 30 psi. The TA shall record the pull-off strength of the membrane for each substrate per ASTM D4541 and provide a written report documenting the results of the testing.
- G. ASTM D5957 – Standard Guide for Flood Testing Horizontal Waterproofing Installations. Perform localized flood testing and provide temporary containment assemblies and plug or dam drains, flood with potable water, and let stand for a minimum of 48 hours at roof and overflow drain locations. Contractor shall notify Owner, DOR, and BECxP a minimum 7 days prior to the start of testing and coordinate for access and review by the DOR, BECxP, and/or Owner's representative after the 48 hours has passed but prior to draining. Contractor and TA shall monitor the interior of the building for water leakage throughout the test. Water leakage observed at any point throughout testing shall constitute a failure of the test. If any leakage occurs, the Contractor shall make permanent repairs to the plaza waterproofing or flashing and repair or replace any material that was damaged or became wet as a result of the leakage. The TA shall provide a written report documenting the results of the testing.
1. Flood Testing of Horizontal Waterproofing Systems: Flood drain sumps and areas around penetrations with potable water to a minimum 1 in., maximum 4 in. height following the procedures outlined in ASTM D5957.
- H. ASTM D7877 – Standard Guide for Electronic Methods for Detecting and Locating Leaks in Waterproof Membranes. Perform electronic leak detection testing of new low-slope roofs and waterproofing systems following the procedures outlined in ASTM D7877. The testing shall include, but is not limited to, the actual electronic lead detection testing and verification test cuts to evaluate potential breaches, anomalies, and defects in the roofing and waterproofing systems.

1. Acceptance Criteria: Roofing or waterproofing materials with moisture content above allowable limits provided by the product/roofing manufacturer, or that are visually or tactilely wet, damp, or otherwise defective shall be considered unacceptable. Contractor shall remove all wet or defective materials and replace with new, dry materials in accordance with the specifications at no additional cost to the owner.
- I. ASTM E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen (laboratory test) and ASTM E783 – Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors (field test). Test shall be conducted with a differential pressure of 6.24 psf for fixed glazing and 1.57 psf for operable glazing. For fixed glazing, the chamber may be positively or negatively pressurized. For operable sashes, the chamber shall be pressurized or depressurized to cause compression of the operable gaskets. Systematically mask enclosure components to provide air leakage values for individual systems.
    1. Acceptance Criteria: Individual systems shall not allow more leakage than prescribed in Section 1.13.B.
  - J. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  - K. ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference (laboratory static test), ASTM E1105 – Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference (field static test), and AAMA 501.1 – Standard Test Method for Water Penetration of Windows, Curtain walls and Doors Using Dynamic Pressure (lab or field dynamic test). Perform tests at pressures prescribed in Section 1.13.B; no one-third reduction in test pressure shall be allowed. Air pressure chambers on fenestration systems shall be installed such that water leakage through the window perimeter condition is evaluated with the test. Include testing before and after cladding installation as indicated in Section 3.
    1. Acceptance Criteria: No water leakage.
- 1.14 ENCLOSURE PERFORMANCE REQUIREMENTS
- A. Reference performance criteria specified herein, as well as the performance criteria specified in each related specification noted above.
  - B. The performance criteria summary below applies to all mockup and field testing of exterior enclosure components.

Component	Performance Criteria	
	Air	Water

<b>Glazed Framing Systems (Fixed Glazing)</b>	ASTM E283 / ASTM E783 – Maximum air leakage of 0.06 cfm/sq ft at a static air pressure differential of 6.24 psf.	ASTM E331 / ASTM E1105 / AAMA 501.1 – No water leakage when tested at an applied pressure differential of 20% of positive wind load design pressure, but not less than 15 psf.
<b>Aluminum-Framed Entrances (Operable Glazing)</b>	ASTM E283 / ASTM E783 – Maximum air leakage of 0.3 cfm/sq ft for single doors and 1.0 cfm/sq ft for pairs of doors at a static air pressure differential of 1.57 psf.	ASTM E331 / ASTM E1105 / AAMA 501.1 – No water leakage when tested at an applied pressure differential of the greater of 10 psf, 20% of positive wind load design pressure, or 20% of the positive wind tunnel recorded pressure.
<b>Weather Barriers (Behind Metal Wall Panels) and Precast Architectural Concrete Walls</b>	ASTM E283 / ASTM E783 – Maximum air leakage of 0.06 cfm/ft at an air pressure differential of 6.24 psf.	ASTM E331 / ASTM E1105 / AAMA 501.1 – No water leakage when tested at an applied pressure differential of the greater of 15 psf, 20% of positive wind load design pressure, or 20% of the positive wind tunnel recorded pressure.
	ASTM E1186 (4.2.6) – No major air leaks. Allowable levels of air infiltration shall be determined by the Commissioning Team members during the first instance of testing.	
	ASTM E1186 (4.2.7) – No bubbles observed in the leak detection liquid (applicable to weather barriers only).	AAMA 501.2 – No water leakage when tested under a calibrated water spray at 30 psi.
<b>Low-Slope Roofing Systems</b>	N/A	Electronic Leak Detection Testing: ASTM D7877.
<b>Horizontal Waterproofing Systems</b>	N/A	ASTM D5957 – No water leakage after 48 hrs of 2.5 in. ponded water at drain sump and penetrations.  Electronic Leak Detection Testing: ASTM D7877

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.1 BECX COORDINATION MEETING / PRE-INSTALLATION CONFERENCE

- A. The contractor shall coordinate and participate in a building enclosure coordination meeting/pre-installation conference prior to start of the building enclosure construction. The purpose of this meeting will be to coordinate technical building enclosure details and transitions identified by the design team, as well as discuss performance and testing requirements. This meeting does not replace requirements for the Contractor to submit, for review, fully coordinated shop drawings from individual trades.
- B. The BECxP, Owner and/or OPM, DOR, Building Enclosure Construction Manager, and a qualified representative (foreman, site superintendent, and/or project manager) from each building enclosure subcontractor shall attend the BECx Coordination Meeting/pre-installation conference. Suppliers and manufacturer technical representatives related to the building enclosure work are also required to attend.

### 3.2 BECX SITE OBSERVATIONS

- A. The BECxP will conduct periodic site visits to review the progress of the work and evaluate its compliance with the Contract Documents, Owner's Project Requirements, and industry standards. Contractor shall coordinate and provide access for the BECxP to review the work.
  - 1. The BECxP will identify noncomplying work items, report them to the OPM and the DOR, and provide a summary report of observations. The summary report will include a list of noncomplying work items to serve as an ongoing construction issues log updated after each site visit. The DOR shall review and provide direction regarding all noncomplying work items.
- B. The Contractor shall notify the DOR and the BECxP immediately after any remedial work is completed and before the work is covered for review of the remediated work. Photographic documentation of remediated conditions shall only be acceptable if previously approved by the DOR and the BECxP.

### 3.3 BUILDING ENCLOSURE PERFORMANCE TESTING

- A. General Building Enclosure Testing Requirements
  - 1. The Contractor shall coordinate and/or provide the following:
    - a. Have a site superintendent or foreman from each trade and/or subcontractor associated with installing the system present during building enclosure performance testing. The Contractor is responsible for labor, materials, and cost for the testing and testing diagnostics by any means and methods to address the requirements herein.
    - b. Provide a written protocol and a timeline for repair of any deficiencies noted during the performance testing and/or a written report from the third-party agency performing the tests indicating what repairs are required.

- c. Provide a repair and remediation protocol for any failures, identified by the performance testing and diagnostic investigative testing performed by the contractor, including a timeline for repair of all affected elements. Repaired elements shall not be covered without review by the BECxP and DOR.
- 2. If a specimen fails testing, the failed specimen shall be remediated, and that specimen shall be tested for compliance with the specification. Additionally, implement repairs to all elements of similar construction and for each failed specimen test a minimum of two additional specimens of similar installation for compliance with the specification. All repair, remediation, retesting, and BECxP costs associated with communication, review, and observations and reporting of repairs and retesting shall be at the contractor's expense.
- 3. The contractor shall assume responsibility of all testing outlined below and as identified in the corresponding Technical Sections. The contractor shall appoint, employ, and pay services of qualified independent firm(s) to perform testing as outlined below and as specified herein, in individual Sections, and as additionally required by the DOR. Where testing requirements contradict, the Contractor shall bring the contradiction to the attention of the DOR, BECxP, and Owner, and the Contractor shall assume the more rigorous requirement applies.
- 4. Notification: Contractor shall notify DOR, Owner, and BECxP a minimum 7 days prior to any BECx performance testing.
- 5. If it is determined that a system is constructed according to the Contract Documents but is not performing as intended, the Owner will decide whether modifications are required to bring the performance of the system to a level where the noted failure or deficiency is eliminated. If corrective work is performed, the Owner shall decide whether additional tests are required. All modifications and additional tests performed at the Owner's and OPM's direction will be eligible for additional compensation.
- 6. If tests cannot be completed because of a deficiency outside the scope of the repair work, the deficiency shall be documented and reported to the Owner, OPM, and DOR, who shall collectively determine how to resolve these deficiencies.

### 3.4 ACCEPTANCE PHASE AND PROJECT CLOSEOUT

- A. As part of the project record closeout documentation at the completion of the work, the Contractor shall provide a systems manual that includes all test reports, inspection reports and certificates, manufacturer operation instructions for all operable elements of the building enclosure, and recommended maintenance frequency and maintenance requirements for each major building exterior enclosure system.
- B. At the completion of construction, the BECxP will provide a final commissioning report that includes a summary of the commissioning activities, all outstanding noncompliance items, and all relevant reports and documentation.

### 3.5 LABORATORY PERFORMANCE MOCKUP TESTING

- A. Reference 084400, Glazed Framing Systems for laboratory performance mockup and testing requirements. Laboratory performance mockup testing specimen to include typical glazed curtain wall and precast architectural concrete assemblies.

- B. In general the mockup performance test sequence shall include:
1. Structural: ASTM E330 at 50 percent of the positive wind load design pressure
  2. Air infiltration: ASTM E283
  3. Static Pressure Water Penetration: ASTM E331
  4. Dynamic Pressure Water Penetration: AAMA 501.1
  5. Structural: ASTM E330 at 100% of positive and negative wind load design pressure
  6. Repeat Static Pressure Water Penetration: ASTM E331
  7. Vertical Interstory Movement: AAMA 501.7
  8. Repeat Static Pressure Water Penetration: ASTM E331
  9. Interstory Drift: AAMA 501.4 at service level drift
  10. Repeat Static Pressure Water Penetration: ASTM E331
  11. Structural: ASTM E330 at 100 percent of positive and negative wind load design pressure
  12. Repeat Static Pressure Water Penetration: ASTM E331
  13. Structural: ASTM E330 at 150% of positive and negative wind load design pressures
  14. Interstory Drift: AAMA 501.4 at design level drift

### 3.6 FIELD PERFORMANCE TESTING

- A. Joint Sealant and Membrane Adhesion Testing During Construction
1. Sealant Adhesion Testing: ASTM C1521, Destructive "Tail" Procedure Method A.
    - a. TA to perform testing at the rate of one test per 100 lf of installed sealant for the first 1,000 ft of joint. If no test failure is observed in the first 1,000 lf, perform one test per 1,000 lf thereafter, or once per floor per elevation.
  2. Membrane Adhesion Testing: ASTM D4541
    - a. TA shall record the pull-off strength of the membrane at a minimum of three locations for each substrate (testing on mockup only is acceptable).
- B. Perform the following tests upon completion of each system/area
1. Single-ply Low-slope Roofing
    - a. Electronic Leak Detection Testing: ASTM D7877
  2. Horizontal Waterproofing
    - a. Flood Testing Drains and Penetrations: ASTM D5957
    - b. Electronic Leak Detection Testing: ASTM D7877
- C. Building Enclosure Water Penetration Testing
1. Static Water Penetration Testing: ASTM E1105
    - a. Fenestration: Test three areas for each unique fenestration assembly (e.g., CW-1, CW-2, etc.) upon 10% completion, 35% completion, and 70% completion. Each test specimen shall include three curtain wall bays wide by one story high. At least one specimen at each percentage completion shall include an interface with an adjacent assembly (e.g., curtain wall to precast, curtain wall to horizontal waterproofing, curtain wall to air barrier, etc.).
  2. Nozzle Water Testing: AAMA 501.2
    - a. In conjunction with fenestration water penetration testing at 10% completion, 35% completion, and 70% completion described above,



perform nozzle testing as directed by the BECxP and DOR. Testing can include up to 150 lf at up to two locations for each round of testing and can include fenestration system joints and interfaces, system perimeter condition, transitions between systems, and air barrier penetrations.

### 3.7 COMMISSIONING TASK MATRIX

- A. The following table summarizes commissioning tasks outlined in this specification. Refer to Specification Sections outlined in Section 1.2 above for specific Section-related requirements beyond what is noted herein.

TASKS	RESPONSIBLE	ASSIST / PARTICIPATE	DELIVERABLE	SCHEDULE MILESTONE
<b>General</b>				
Submittals and Shop Drawings	Contractor	DOR, BECxP	Approved Shop Drawings and Submittals	Prior to start of construction of every enclosure related system
Site Observations	DOR, BECxP	Contractor	Site Visit Report	Periodically during construction
Sealant compatibility and adhesion tests	Manufacturer	Contractor	Written test report and approval letter	Prior to the installation of sealant at each substrate type on the project.
Air Barrier Adhesion Testing	TA	Contractor	Written test report and approval letter	Prior to installation of cladding systems.
<b>Mockup (as applicable) and In Situ Performance Tests</b>				
Flood Test at Drains and Penetrations of Horizontal Waterproofing ASTM D5957	TA	Contractor/ Manufacturer	Written Test Report	At completion of roofing and drain installation at low-slope roof and terrace waterproofing
ELD Test of Low-Slope Roof and Horizontal Waterproofing ASTM D7877	TA	Contractor	Written Test Report	At completion of roofing assembly

<b>TASKS</b>	<b>RESPONSIBLE</b>	<b>ASSIST / PARTICIPATE</b>	<b>DELIVERABLE</b>	<b>SCHEDULE MILESTONE</b>
Sealant Adhesion Testing (ASTM C1521 Method A)	TA	Contractor	Written Test Report	On exterior performance mockup and periodically during construction  In situ (as described above)
Membrane Adhesion and Durability Testing ASTM D4541	TA	Contractor	Written Test Report	On exterior performance mockup and periodically during construction  In situ (as described above)
Static Water Penetration Testing ASTM E1105	TA	Contractor, **BECxP	Written Test Report	On exterior performance mockup and periodically during construction  In situ for each unique fenestration (as described above)
AAMA Nozzle Testing AAMA 501.2	TA	Contractor, **BECxP	Written Test Report	On exterior performance mockup and periodically during construction  In situ for each unique fenestration (as described above)
Fenestration Air Leakage Testing ASTM E783	TA	Contractor, **BECxP	Written Test Report	On exterior performance mockup.

\*\* Denotes BECxP will witness, at a minimum, the first test.

END OF SECTION