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THIS SECTION IS BASED ON ROCKFON SONAR® - DC (DATA CENTER) CEILING PANELS.

## **PART 1 – GENERAL**

### **1.1 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. Related Requirements:
  - 1. Section 095113 "Acoustical Panel Ceilings" for ceilings consisting of acoustical panels and exposed suspension systems for interior ceilings.

### **1.2 SUMMARY**

- A. Section Includes: Provide suspended ceiling acoustical ceiling panels including but not limited to:
  - 1. Acoustical Ceiling Panel.
- B. Related Sections:
  - 1. Section 09 52 23, Metal Acoustical Ceiling Suspension Assemblies.
  - 2. Section 09 58 00, Integrated Ceiling Assemblies.
  - 3. Section 13 48 00, Sound, Vibration, and Seismic Control.
  - 4. Section 23 50 00, Central Heating Equipment.
  - 5. Section 26 50 00, Lighting.

### **1.3 REFERENCE**

- A. Abbreviations and Acronyms:
  - 1. ASCE: The American Society of Civil Engineers
  - 2. ASTM: American Society for Testing and Materials
  - 3. Cisca: Ceilings & Interior Systems Construction Association; [www.cisca.org](http://www.cisca.org).
  - 4. IBC: International Building Code
  - 5. International WELL Building Standard
  - 6. LEED: Leadership in Energy and Environmental Design (set of rating systems for the design, construction, operation, and maintenance of green buildings)
  - 7. Living Building Challenge - ILFI
- B. Reference Standards:
  - 1. ASTM C635 Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
  - 2. ASTM C636 Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels
  - 3. ASTM C1338 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
  - 4. ASTM D1308 Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems
  - 5. ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

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6. ASTM D4828	Standard Test Methods for Practical Washability of Organic Coatings
7. ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
8. ASTM E119	Standard Test Methods for Fire Tests of Building Construction and Materials
9. ASTM E580/E580M	Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions
10. ASTM E795	Practice for Mounting Specimens During Sound Absorption Tests
11. ASTM E1111	Standard Test Method for Measuring the Interzone Attenuation of Open Office Components
12. ASTM E1264	Standard Classification for Acoustical Ceiling Products
13. ASTM E1414/E1414M	Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
14. ASTM E1477	Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers
15. ICC ES AC 156	Acceptance Criteria for Seismic Certification by Shake-Table Testing of Non-structural Components
16. UL 2818	GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings
17. UL 2821	GREENGUARD Certification Program Method for Measuring and Evaluating Chemical Emissions From Building Materials, Finishes and Furnishings
18. UL 2824	GREENGUARD Certification Program Method For Measuring Microbial Resistance From Various Sources using Static Environmental Chambers
19. Health Product Declaration Standard V2.0	
20. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.2 2017	

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Conference: Conduct conference at [Project site] . Agenda includes Project conditions, coordination with work of other trades, and layout of items which penetrate ceilings.

#### 1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's Product Data, including maintenance data
- B. Sustainable Design Submittals:
  - 1. Product Data: For recycled content, indicating pre-consumer recycled content and cost
  - 2. Product Certificates: For indigenous materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project, means of transportation, and cost for each indigenous material.
  - 3. Environmental Product Declaration (EPD): Type III EPDs for each product.
  - 4. Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
  - 5. Third-Party Verified Environmental Product Declaration (3PV EPD) Certifications: For each product.
  - 6. Third-Party Verified Health Product Declaration (3PV HPD) Certifications.
  - 7. Laboratory Test Reports: For ceiling products, indicating compliance with requirements for low-emitting materials UL GREENGUARD GOLD in both school and office scenarios.
  - 8. Mold and mildew resistance per ASTM D3273 [Level 10 – No Mold Growth] and ASTM C1338 [Pass – No Fungal Growth].

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- C. Samples for Initial Selection: For components with factory-applied finishes.
  - D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
    - 1. Acoustical Panels: Set of [full-size] [6 by 6 inches (150 by 150 mm)]. Samples of each type and color.
  - E. Delegated Design Submittals: For seismic restraints for suspended ceiling systems.
    - 1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

## **1.6 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Ceiling suspension-system members.
  - 2. Structural members to which suspension systems will be attached.
  - 3. Method of attaching hangers to building structure.
  - 4. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
  - 5. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
  - 6. Size and location of initial access modules for acoustical panels.
  - 7. Items penetrating finished ceiling and ceiling-mounted items including the following:
    - a. Lighting fixtures.
    - b. Diffusers.
    - c. Grilles.
    - d. Speakers.
    - e. Sprinklers.
    - f. Access panels.
    - g. Perimeter moldings.
    - h. Other items as required
  - 8. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
  - 9. Minimum Drawing Scale: [1/4 inch = 1 foot (1:48)] [1/8 inch = 1 foot (1:96)] [1:50] [1:100] .
- B. Qualification Data: For testing agency.
- C. Product Test Reports: For each acoustical panel ceiling, for tests performed by [manufacturer and witnessed by a qualified testing agency] [a qualified testing agency].
- D. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type], from ICC-ES.
- E. Field quality-control reports.

## **1.7 CLOSEOUT SUBMITTALS**

- A. Operational and Maintenance Data: Submit maintenance instructions to Owner for recommended cleaning materials and methods for panels, suspension system, and trim.

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Include precautions for use of and composition of cleaning materials detrimental to acoustic panels for panels, suspension system, and trim.

### **1.8 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Panels: Full-size panels equal to [2%] [insert %] of quantity installed.
  2. Suspension-System Components: Quantity of each exposed component equal to [percent] of quantity installed.
  3. Hold-Down Clips: Equal to [percent] of quantity installed.

### **1.9 QUALITY ASSURANCE**

- A. Mock-ups: Build mock-ups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mock-up of typical ceiling area as indicated on Drawings.
  2. Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Architect specifically approves such deviations in writing.
  3. Subject to compliance with requirements, approved mock-ups may become part of the completed Work if undisturbed at time of Substantial Completion

### **1.10 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver acoustical panels to Project site and store them in fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

### **1.11 WARRANTY**

Warranty Period:

Acoustical Panels Manufacturer Warranty: Submit a written warranty executed by manufacturer for a period of 30 years from date of Substantial Completion, agreeing to repair or replace acoustical tile that fails or is compromised within the specified warranty period. The warranty does not cover any damage or change to the Products resulting from improper material handling or storage, water, moisture, fire, chemical fumes, bacteria, mold, fungi, wind, accident, disaster, non-intended use, improper installation, abuse, or failure of other system components or modification.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Acoustical panels to comply with the requirements of UL GREENGUARD GOLD Certification for both school and office scenarios and the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers

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- B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 0      Class A in accordance with ASTM E84.
  2. Smoke-Developed Index: 0      Class A in accordance with ASTM E84.
- C. Humidity Resistance: Ensure that acoustical panels are dimensionally stable at up to 100 percent relative humidity at temperatures ranging from 32 to 104 deg. F (0 to 40 deg. C) without having to acclimatize panels and tested to ASTM C367.

## 2.2 ACOUSTICAL PANELS

- A. Basis-of-Design Product: Rockfon Sonar® - DC (Data Center) Stone Wool Ceiling Tiles
- B. Panel Size [23-7/32" x 23-7/32"] [23-7/32" x 47-7/32"]
- C. Thickness: [1 inch (25 mm)]
- D. Edge/Joint Detail:] [Square Lay In Data Center SQDC]
- E. Color: [White]
- F. Noise Reduction Coefficient (NRC): Not less than less than [0.95]
- G. AC: 190
- H. Light Reflectance (LR): Not less than 0.85
- I. R Value: 3.5 (BTU Units)
- J. RSI Value: 0.62 (Watts Units)
- K. Fire Performance: Class A, tested to UL 723 (ASTM E84)
- L. Flame Spread Index per ASTM E84: 0
- M. Smoke Developed Index per ASTM E84: 0
- N. Sustainability Design Certification: Meeting UL GREENGUARD GOLD for classroom and office scenarios for VOC emissions, HDPs, and EPDs.
- O. Provide acoustical panels without any added antimicrobial treatments; that are inherently resistant to fungus, mold, mildew, and gram-positive and gram-negative bacteria with a rating of 10; and that show no mold, mildew, or bacterial growth after 28-days of exposure when tested in accordance with ASTM D3273 [Level 10 – No Mold Growth] and ASTM C1338 [Pass – No Fungal Growth].
- P. Sag and warp resistant in 100% RH (Relative Humidity) and tested to ASTM C367.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected

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**3.2 PREPARATION**

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

**3.3 INSTALLATION OF ACOUSTICAL PANEL CEILINGS**

- A. Install acoustical panel ceilings in accordance with ASTM C636/C636M, seismic design requirements,] manufacturer's written instructions and CISCA's "Ceiling System Handbook"

**3.4 CLEANING**

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touch up of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.