DANE COUNTY DEPT. OF PUBLIC WORKS, HIGHWAY & TRANSPORTATION

1919 Alliant Energy Center Way Madison, Wisconsin 53713 Office: 608/266-4018 ◊ Fax: 608/267-1533 Public Works Engineering Division

ADDENDUM

AUGUST 10, 2020

ATTENTION ALL REQUEST FOR BID (RFB) HOLDERS

RFB NO. 1 - ADDENDUM NO. 1

COURTHOUSE HVAC CONTROLS REPLACEMENT

<u>BIDS DUE</u>: TUESDAY, SEPTEMBER 1, 2020, 2:00 PM. DUE DATE AND TIME ARE NOT CHANGED BY THIS ADDENDUM.

This Addendum is issued to modify, explain or clarify the original Request for Bid (RFB) and is hereby made a part of the RFB. Please attach this Addendum to the RFB.

PLEASE MAKE THE FOLLOWING CHANGES:

1. Sample Bid Bond, Sample Performance Bond, & Sample Payment Bond

Add new sections, attached with this addendum:

Section 00 61 12 - Sample Bid Bond

Section 00 61 13.13 - Sample Performance Bond

Section 00 61 13.16 - Sample Payment Bond

2. AllureTM EC-Smart-Vue Sensor Series Datasheet

Add new datasheet, issued with this Addendum. Thermostat to be used in place of existing zone thersmostats.

3. ECB-VAV Datasheet

Add new datasheet, issued with this Addendum. VAV controller to be used in place of existing VMA controllers.

4. Sheets A2.1-A2.2 - Partial Reflected Ceiling Plans

Add new Sheets A2.1 & A2.2, issued with this Addendum.

5. Sheets A7.11-A7.17 - Enlarged Courtroom Plans and Interior Elevations

Add new Sheets A7.11 - A7.17, issued with this Addendum.

PLEASE NOTE THE FOLLOWING CONTRACTOR SUBMITTED QUESTIONS:

- **Q1:** The existing VFD's are shown as integration on the N2 bus, is the County intending for these to be integrated into the new system?
- **A1:** There will be NO BacNet or N2 integrations required to the VFD's. Stop/ Start, Status, Speed, Safety controls will all be required.

RFB No. 320021 - 1 - rev. 01/19

Q2: Is there anything not shown on the RFB drawings that the Contractor should be aware of?

A2: Yes. The 4th floor mechanical room has a unitary domestic water controller that was added after the drawings were made. The controller has start / stop, pump start / stop, water temperature/ setpoint and single control valve output.

If any additional information about this Addendum is needed, please call Todd Draper at 608/267-0119, draper@countyofdane.com .

Sincerely, *Todd Draper*Project Manager

Enclosures:

Section 00 61 12 - Sample Bid Bond
Section 00 61 13.13 - Sample Performance Bond
Section 00 61 13.16 - Sample Payment Bond
AllureTM EC-Smart-Vue Sensor Series Datasheet
EC-VAV Datasheet
Sheets A2.1-A2.2 - Partial Reflected Ceiling Plans
Sheets A7.11-A7.17 -Enlarged Courtroom Plans and Interior Elevations

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RFB No. 320021 - 2 - rev. 01/19

Bid Bond

| CONTRACTOR: (Name, legal status and address) | SURETY: (Name, legal status and principal place of business) |
|--|---|
| OWNER: (Name, legal status and address) | This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification. Any singular reference to Contractor, Surety, Owner or |
| BOND AMOUNT: | other party shall be considered plural where applicable. |
| PROJECT: (Name, location or address, and Project num | ber, if any) |

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

| Signed and sealed this day of | | |
|-------------------------------|---------------------------|--------|
| | (Contractor as Principal) | (Seal) |
| (Witness) | | |
| | (Title) | |
| | (Surety) | (Seal) |
| (Witness) | | |
| | (Title) | |

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



Performance Bond

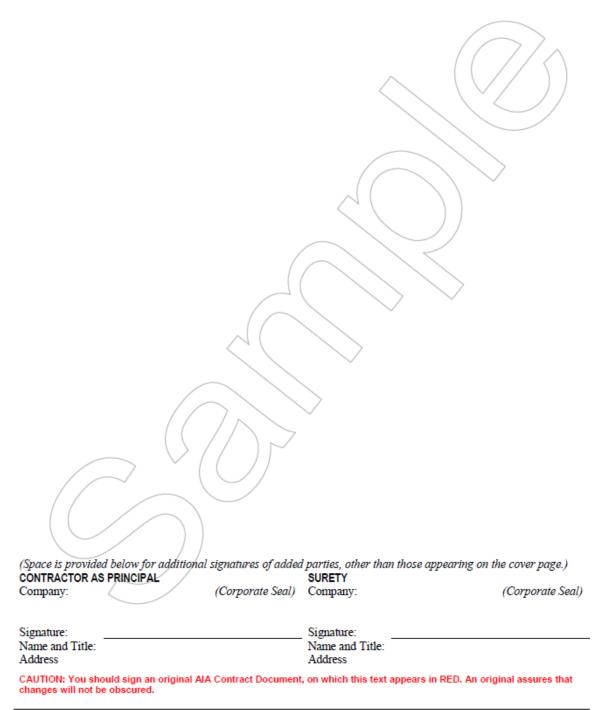
| CONTRACTOR: (Name, legal status and address) | SURETY: (Name, legal status and principal place of business) | |
|--|---|---|
| OWNER: (Name, legal status and address) | | This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification. |
| | | Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable. |
| CONSTRUCTION CONTRACT Date: | $\langle \langle \langle \rangle \rangle \rangle$ | AIA Document A312–2010 combines two separate bonds, a |
| Amount: | | Performance Bond and a Payment Bond, into one form. |
| Description: (Name and location) | | This is not a single combined Performance and Payment Bond. |
| BOND Date: (Not earlier than Construction Contract Date) | | |
| Amount: | | |
| Modifications to this Bond: ☐None | ☐ See Section 16 | |
| CONTRACTOR AS PRINCIPAL | SURETY | |
| Company: (Corporate Seal) | Company: (Corporate Seal) | |
| Signature: | Signature: | |
| Name Nam | е | |
| and Title: (Any additional signatures appear on the last | and Title: t page of this Performance Bond.) | |
| (FOR INFORMATION ONLY—Name, addr AGENT or BROKER: | ress and telephone) OWNER'S REPRESENTATIVE: (Architect, Engineer or other party:) | |

- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
- § 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after
 - .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default:
 - .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - .3 the Owner has agreed to pay the Balance of the Contract/Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
- § 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
- § 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
- § 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
- § 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors:
- § 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
- § 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
 - After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- § 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

- § 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for
 - .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract:
 - .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
 - .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- § 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.
- § 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.
- § 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.
- § 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

- § 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
- § 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
- § 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
- § 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- § 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.
- § 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.





Payment Bond

| CONTRACTOR: (Name, legal status and address) | SURETY: (Name, legal status and principal place of business) | |
|---|--|--|
| OWNER: (Name, legal status and address) | | This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification. Any singular reference to |
| | | Contractor, Surety, Owner or other party shall be considered |
| CONSTRUCTION CONTRACT Date: | | plural where applicable. AIA Document A312–2010 combines two separate bonds, a |
| Amount: | | Performance Bond and a Payment Bond, into one form. |
| Description: (Name and location) | | This is not a single combined Performance and Payment Bond. |
| | | |
| BOND Date: (Not earlier than Construction Contract Date | | |
| Amount: | | |
| Modifications to this Bond: None | ☐ See Section 18 | |
| CONTRACTOR AS PRINCIPAL | SURETY | |
| Company: (Corporate Seal) | Company: (Corporate Seal) | |
| Signature: | Signature: | |
| Name Nam | е | |
| and Title: (Any additional signatures appear on the last | and Title: | |
| (Any additional signatures appear on the tast | i page oj inis I dymeni Dona.) | |
| (FOR INFORMATION ONLY — Name, addr | | |
| AGENT or BROKER: | OWNER'S REPRESENTATIVE: (Architect, Engineer or other party:) | |

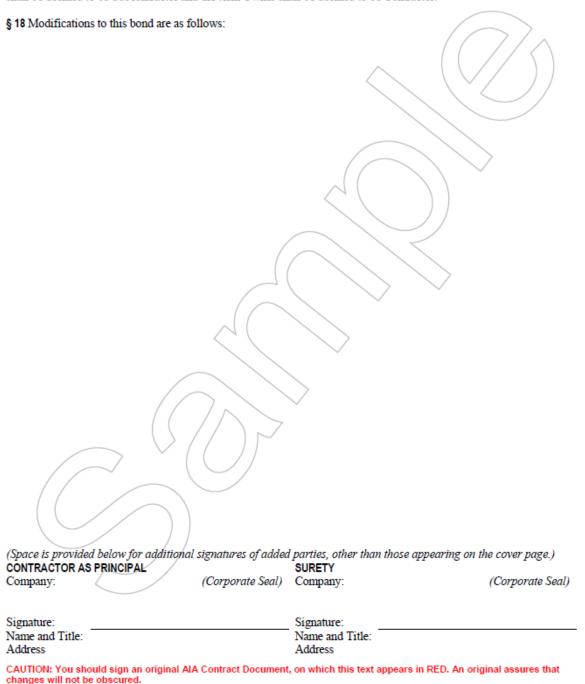
- § 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
- § 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
- § 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.
- § 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.
- § 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:
- § 5.1 Claimants, who do not have a direct contract with the Contractor,
 - .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - .2 have sent a Claim to the Surety (at the address described in Section 13).
- § 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).
- § 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.
- § 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
- § 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
- § 7.2 Pay or arrange for payment of any undisputed amounts.
- § 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
- § 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
- § 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

- § 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.
- § 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
- § 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
- § 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
- § 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- § 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

- § 16.1 Claim. A written statement by the Claimant including at a minimum:
 - .1 the name of the Claimant;
 - .2 the name of the person for whom the labor was done, or materials or equipment furnished;
 - .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
 - .4 a brief description of the labor, materials or equipment furnished;
 - .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim:
 - .7 the total amount of previous payments received by the Claimant; and
 - .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.
- § 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- § 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

- § 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- § 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.
- § 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.





Allure™ EC-Smart-Vue Sensor Series

Line of communicating sensors with backlit display and graphical menus



Overview

The Allure EC-Smart-Vue Series is designed to interface with Distech Controls' ECL series LonWorks® Controllers, ECB series BACnet® Controllers and ECLYPSE™ series BACnet/IP and Wi-Fi Controllers.

This line of communicating sensors with backlit display consists of eight models that provide precise environmental zone control. Models are available with any combination of the following: temperature, humidity, CO₂, and motion sensor.

Applications

Offers temperature, humidity, CO₂, and motion sensing for the following applications:

- VAV controllers
- □ Fan coil units
- Roof top units
- Heat pumps
- Unit ventilators

Features & Benefits

ABC Logic Self-Calibration System

The patented ABC Logic self-calibration system eliminates the need for manual CO₂ calibration in most applications. ABC Logic guarantees lifetime CO₂ calibration.

"4-in-1" Communicating Sensors

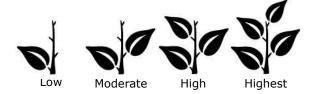
Multi-sensing capabilities (temperature, humidity, CO₂, and motion) using one wire and one connection.

ECO-Vue Leaf Pattern

The innovative ECO-Vue Leaf Pattern graphically indicates energy consumption in real time to promote an occupant's energy-conscious behavior. Occupants are encouraged to have greener habits with the ECO-Vue Leaf Pattern while reducing energy costs. As more leaves appear, greater energy efficiency is being achieved, while fewer leaves will encourage the occupant to take corrective action to optimize the system's environmental performance.



Energy efficiency levels:



Enhanced User Experience

Occupants can view and adjust environmental settings to their liking, for example, view the space temperature, adjust the setpoint, control lighting through occupancy detection, set the fan speed, and apply occupancy overrides.

Occupants can override the HVAC mode and view and adjust the setpoint and fan speed for improved personal comfort.

Appealing User Interface and Design

Slim, compact style, and clean lines are well received by architects and building owners. Furthermore, the clear and bright LCD display provides real-time access to temperature and other system information such as setpoint, occupancy status, HVAC mode, etc.

Commissioning and Troubleshooting

A password protected technician mode allows an installer to perform commissioning and troubleshooting. When connected to a controller that embeds preloaded applications, commissioning can start immediately after installation, as the Allure EC-Smart-Vue Series sensors can be used as a hand-held tool to select the appropriate controller application for the type of HVAC equipment to be controlled, and to troubleshoot the system.

When associated to VAV controllers, the Allure EC-Smart-Vue Series sensors also allows to perform air balancing of the system without requiring an onsite controls engineer.

Furthermore, when the controller uses wireless sensors, a technician in the field can use the Allure EC-Smart-Vue Series sensors to make the controller learn each wireless sensor's ID on the fly, in order to commission the wireless sensors.

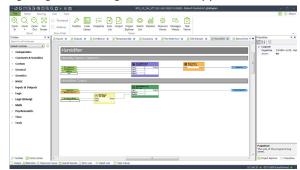
Increased Energy Efficiency

Achieve energy efficiency through occupancybased control with:

- Motion sensor to readjust the space temperature setpoint and manage lighting
- CO₂ sensor as part of the demand-controlled ventilation strategy that adjusts the amount of outdoor air intake according to the number of occupants

Programmability

Supports Distech Controls' EC-gfxProgram, which makes Building Automation System (BAS) programming effortless, by allowing you to visually assemble building blocks to create a custom control sequence for any HVAC, lighting, or building automation application.



Quick and Easy Installation

Both power and communications pass through a single Cat 5e cable for reduced installation costs and for easier installation.

Two RJ-45 ports facilitate the daisy-chain connections of room devices.

CO₂ Sensing

Achieve energy efficiency with a CO₂ sensor as a part of the demand-controlled ventilation strategy that adjusts the amount of outdoor air intake.

Automatic Calibration of CO₂ Sensors

ABC Logic (Automatic Calibration Logic) is a patented self-calibration technique that eliminates the need for manual calibration in most applications. The sensor is designed to work in environments where CO₂ concentrations will drop to outdoor ambient conditions (400 ppm) at least three times in a 14-day period, typically during unoccupied periods. For example, in a typical office, school, theater, etc., people are the main source of CO₂ in a building. When people go home at night, the indoor CO₂ level will drop to the outdoor CO₂ level, which is typically 380 to 400 ppm. The ABC Logic system records the lowest reading every 24-hour period for analysis. If there is a statistical difference in the baseline readings, then a calibration factor is applied to all subsequent sensor readings. The ABC Logic system typically takes three weeks of continuous run-time before making corrections. Lifetime CO₂ calibration is guaranteed with ABC Logic.

The sensor will typically reach its operational accuracy after 25 hours of continuous operation on condition that it was exposed to ambient air reference levels of 400 ppm ±10 ppm CO₂.

Model Selection

| Model | Temperature | Humidity | Motion | CO ₂ ¹ |
|-------------------------|-------------|----------|--------|-------------------|
| Allure EC-Smart-Vue | | | | |
| Allure EC-Smart-Vue-C | | | | |
| Allure EC-Smart-Vue-H | | | | |
| Allure EC-Smart-Vue-M | | | | |
| Allure EC-Smart-Vue-CH | | | | |
| Allure EC-Smart-Vue-CM | | | | |
| Allure EC-Smart-Vue-HM | | | | |
| Allure EC-Smart-Vue-CHM | | | | |

^{1.} The Allure EC-Smart-Vue CO₂ models must be used in spaces that are periodically unoccupied (e.g. during evening or nighttime hours). A controller can support a maximum of two communicating sensors equipped with a CO₂ sensor. Any remaining connected communicating sensors must be without a CO₂ sensor.

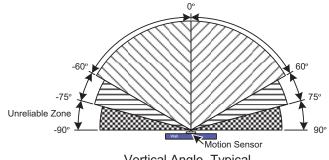
Product Specifications

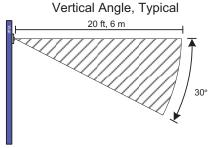
Power Supply Input

| Voltage — | 16 VDC maximum, Class 2 |
|--------------------------------------|--|
| | At the connected controller, an additional 5.25 VA per CO₂ sensor model |
| | and 1.0 VA per non-CO₂ sensor model. |
| Communications | |
| Rate — | 38 400 bps |
| | RS-485 |
| Wiring — | Cable length: 600 ft (180 m) maximum |
| | T568B Cat 5e network cable, 4 twisted pairs |
| Connectors: | |
| | RJ-45 |
| | RJ-45 (pass-through for daisy chain connection to other room devices) |
| | ½" (3.5 mm) stereo plug connector |
| | For ECL & ECB series controllers only (excluding PTU Series controllers) |
| D | See the controller's hardware installation guide |
| Daisy-chaining — | Up to 12 Allure EC-Smart-Vue sensors or room devices depending |
| | on the controller model – see the controller's datasheet |
| Temperature Sensor | |
| | 10 kΩ NTC Thermistor |
| Range — | 41°F to 104°F (5°C to 40°C) |
| | ± 0.9°F (± 0.5°C) |
| Resolution ———— | 0.18°F (0.1°C) |
| Humidity Sensor | |
| Accuracy — | ±3% |
| | 1% |
| CO ₂ Sensor | |
| | 0.4.0000 |
| Measurement Range — | |
| | 0 to 16000 ft (0 to 4877 m) |
| • | < 2 minutes (operational), 10 minutes (maximum accuracy) |
| | 400-1250 ppm ± 30 ppm or 3% of reading, whichever is greater ¹ |
| | 1250-2000 ppm ±5% of reading + 30ppm ¹ |
| | ±0.11% FS per°F (0.2% FS per °C) <2% of FS over life of sensor (15 years) |
| | |
| | 0.135% of reading per mm Hg; software adjustable |
| Sensing Method | Non-dispersive infrared (NDIR) absorption |
| Calibration Mathed | Gold-plated optics Patented ABC Logic self-calibration algorithm |
| Tolerance based on span gas of ±2% a | |

Type — Passive Infrared (PIR) sensor with Fresnel lens



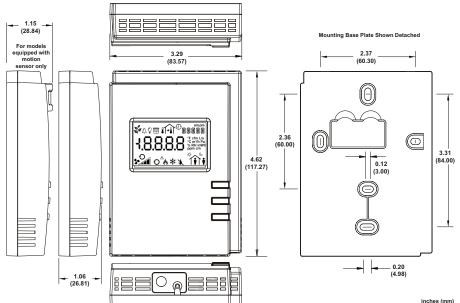




Mechanical

Dimensions (H × W × D):

- □ Model without motion sensor 4.62 × 3.29 × 1.06" (117.27 × 83.57 × 26.81 mm)
- □ Model with motion sensor 4.62 × 3.29 × 1.15" (117.27 × 83.57 × 28.84 mm)



Shipping Weight:

Enclosure Material

- □ Model without motion sensor 0.18 kg (0.40lbs)
- □ Model with motion sensor 0.20 kg (0.44lbs)

Color — white

Installation ———— wall mounting through mounting holes (see figure above for hole positions)

ABS

Environmental

| Operating Temperature | | 32°F to 122°F (0°C to 50°C) |
|------------------------|-------------------------|---|
| Storage Temperature — | | -4°F to 122°F (-20°C to 50°C) |
| Relative Humidity —— | | 0 to 90% Non-condensing |
| Standards and Regu | ulation | |
| CE | | |
| □ Emission ——— | EN | 61000-6-3: 2007 + A1: ed.2011; Generic standards for |
| | re | sidential, commercial and light-industrial environments |
| □ Immunity ——— | | EN 61000-6-1: 2007; Generic standards for |
| | re | sidential, commercial and light-industrial environments |
| FCC | ———This devi | ice complies with FCC rules part 15, subpart B class B |
| UL Listed (CDN & US) - | | UL916 Energy management equipment |
| WEEE | ———— All prod | ucts are marked according to the Waste Electrical and |
| | | Electronic Equipment (WEEE) directive. |
| RoHS — | - All materials and mar | nufacturing processes comply with the RoHS directive. |
| | .(I) | oHS 🕱 |
| | t GP 02 | 2002/95/EC |

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BACnet B-ASC VAV Controller



Overview

The ECB-VAV Series controllers are microprocessor-based programmable variable air volume (VAV) controllers designed to control any variable air volume box. Each controller uses the BACnet® MS/TP LAN communication protocol and is BTL®-Listed as BACnet Application Specific Controllers (B-ASC).



Applications

- □ Cooling Only VAV Boxes
- □ Dual-Duct VAV Systems
- Cooling with Reheat VAV Boxes
- □ Parallel Fan VAV Boxes
- □ Series Fan VAV Boxes
- □ Room Pressurization
- Smart Room Control support for HVAC, light, and shades/sunblinds

Features & Benefits

Flexible Inputs and Outputs

This controller has various input types including resistance, voltage, and digital-based ones. Moreover, it provides digital, floating, pulse width modulation, and proportional control outputs for valves, heating elements, fans, and lighting applications. This controller covers all industry-standard HVAC unitary applications.

Highly Accurate Universal Inputs

Highly accurate universal inputs support thermistors and resistance temperature detectors (RTDs) that range from 0 Ohms to 350,000 Ohms, as well as support for inputs requiring 0 to 10VDC or 0 to 20mA with an external resistor. This provides the freedom of using your preferred or engineer-specified sensors, in addition to any existing ones.

Rugged Inputs/Outputs

Rugged hardware inputs and outputs eliminate need for external protection components, such as diodes for 12V DC relays.



Preloaded Applications

Factory preloaded applications allow these controllers, straight out of the box, to operate standard VAV equipment with a proven energy-efficient sequence of operation thereby eliminating the need for programming.

The preloaded application can be selected using an Allure EC-Smart-Vue sensor even before the network has been installed for rapid deployment or through the EC-Net™ solution using Distech Controls' *dcgfx*Applications.

Integrated VPACC

Integrated VAV Performance Assessment Control Charts (VPACC) control sequences, provides a means of automatically detecting when the VAV is operating outside of its design parameters including: Persistent High/Low Space Temperature, Persistent High/Low Discharge Temperature, Persistent High/Low Air Flow, and Unstable Air Flow.

Programmability

Supports Distech Controls' EC-gfxProgram, which makes Building Automation System (BAS) programming effortless, by allowing you to visually assemble building blocks to create a custom control sequence for any HVAC / building automation application.



Increased Energy Efficiency

Improves energy efficiency when combined with:

- Motion detectors to automatically adjust a zone's occupancy mode from standby to occupied when presence is detected
- CO₂ sensors as part of a demand-controlled ventilation strategy that adjusts the amount of fresh air intake according to the number of building occupants
- Light switches to control both lighting and a room's HVAC occupancy / standby mode setting

On-Board Air Flow Sensor

This controller is equipped with an accurate onboard air flow sensor for precise air flow monitoring and control at low and high air flow rates, allowing the design for maximum energy efficiency while maintaining an optimal comfort level

The on-board air flow sensor has a range of ±2 inches of water column (±500 Pascal) and is polarity free.

Built-in Actuator

A built-in actuator with a brushless motor and integrated position feedback system eliminates periodic damper re-initialization and ensures worry-free operation, providing increased occupant comfort and extended service life.

The built-in actuator for precise damper positioning used for loads requiring up to 45 inch-pounds (5 Newton-meters) of torque.

Robust Hardware Design

This Controller features durable pitot terminal barbs which help prevent damage when connecting and disconnecting the pitot tubes. The anchor point and mounting bracket are metallic, making the mounting of the VAV very solid.

Extended Daisy-Chaining

The power supply uses power factor correction (PFC) to optimize power usage when multiple controllers are connected to the same transformer. This allows for up to 20 VAV controllers or up to 950 feet of wiring to be connected to the same transformer, offering an opportunity to save not only on installation costs, but also on overall wiring costs.

Optimized Air Balancing

Optimized air balancing process saves time during commissioning: the flow sensor requires no zero flow calibration, and its variable-speed motor goes to minimum and maximum flow position in half the time of typical VAV actuators.

□ □ □ 2 / 10 ECB-VAV

Smart Room Control Support

The Smart Room Control solution is an end-toend system for the control of HVAC equipment, lighting, and shades/sunblinds, achieving the highest levels of comfort for occupants while cutting costs from installation time and wiring/ material requirements to energy consumption. This solution combines:

- Lighting and shade/sunblind expansion modules to control lights (DALI, on/off or dimming) and shades/sunblinds (24 VDC or 100-240 VAC, up/down and angle rotation).
- Multi-sensor combining motion and luminosity (Lux) sensors and equipped with an Infrared receiver that works with a convenient remote control.
- ☐ Wireless (infrared) personal remote control for increased occupant comfort.
- □ Allure[™] Series Communicating Sensors for increased occupant comfort settings.

Open-to-Wireless™ Solution



The controllers are Open-to-Wireless™ ready, and when paired with the Wireless Receiver, work with a variety of wireless battery-less sensors and switches, to reduce the cost of installation and minimize the impact on existing partition walls. For supported frequencies in your area, refer to the Open-to-Wireless Solution Guide.

Available with an optional Wireless Receiver that supports up to 18 wireless inputs to create wire-free installations.

Allure[™] Series Communicating Sensor Support

These controllers work with a wide range of sensors, such as the Allure Series Communicating Sensors that are designed to provide intelligent sensing and control devices for increased user experience and energy efficiency.

 Allure EC-Smart-Vue sensors feature a backlit-display and graphical menus that provide precise environmental zone control, with any combination of the following: temperature, humidity, CO₂, and motion sensor.

- Allure EC-Smart-Comfort sensors feature colored LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and an occupancy override push button. This sensor can also be expanded with a combination of up to 4 add-on push button modules for lighting and shade/ sunblind control.
- Allure EC-Smart-Air sensors combine precise environmental sensing in a discreet and alluring enclosure for temperature, humidity, and CO₂.



Supported Platforms

EC-Net Solution

The EC-Net multi-protocol integration solution is web-enabled and powered by the Niagara establishing a fully Internet-Framework, enabled, distributed architecture for real-time access, automation and control of devices. The EC-Net open framework solution creates a development and common management environment for integration of LonWorks®, BACnet® and other protocols. Regardless of manufacturer and protocol, the EC-Net system provides a unified modeling of diverse systems and data, providing one common platform for development, management and enterprise applications.

Model Selection

| Model | ECB-VAV |
|------------------------------|--------------|
| Points | 12-Point VAV |
| Universal hardware inputs | 4 |
| Built-in flow sensor | |
| Wireless inputs ¹ | 18 |
| 15 Vdc Power Supply | |
| Digital (Triac) outputs | 4 |
| Universal outputs | 2 |
| Built-in actuator | |

^{1.} All controllers are Open-to-Wireless ready. Available when an optional Wireless Receiver is connected to the controller. Some wireless sensors may use more than one wireless input from the controller.

Accessories

| Terminal covers | Terminal cover designed to conceal the |
|-----------------|---|
| | controller's wire terminals. Required to meet local |
| | safety regulations in certain jurisdictions. |

BACnet Objects List

| BACnet Objects List | | | |
|-------------------------------|----|--|--|
| BACnet Calendar Objects | 1 | | |
| □ Special events per calendar | 25 | | |
| BACnet Schedule Objects | 2 | | |
| □ Special events per schedule | 5 | | |
| BACnet PID Loop Objects | 8 | | |
| BACnet BV Objects: | | | |
| □ Commandable | 10 | | |
| □ Non-Commandable | 40 | | |
| BACnet MSV Objects: | | | |
| □ Commandable | 10 | | |
| □ Non-Commandable | 40 | | |
| BACnet AV Objects: | | | |
| □ Commandable | 25 | | |
| □ Non-Commandable | 75 | | |

□ □ 4 / 10 ECB-VAV

Product Specifications

Power Supply Input

| Voltage Range¹ ———————————————————————————————————— | 24VAC/DC; ±15%; Class 2 |
|---|--|
| Frequency Range ———————————————————————————————————— | 50/60Hz |
| | Field replaceable fuse |
| Fuse Type ———————————————————————————————————— | 3.0A |
| Power Consumption ———————————————————————————————————— | — 4 VA typical plus all external loads², 75 VA max. |
| | (including powered triac outputs) |
| Power Factor ———————— | >90% |
| 24VDC does not support DO (triac outputs). External loads must include the power consumption of any connected modules respective module's datasheet for related power consumption information. | such as subnet devices, wireless module (1VA) and triac outputs. Refer to the |
| Communications | |
| Communication Bus — | |
| BACnet Profile | |
| | Built-in, jumper selectable |
| Baud Rates — | 9600, 19 200, 38 400, or 76 800 bps |
| Addressing — Dip switch or with an Al Refer to Distech Controls' Protocol Implementation Conformity Statement for B. | lure EC-Smart-Vue Series Communicating Sensor |
| Hardware | |
| Processor — | STM32 (ARM Cortex™ M3) MCU, 32 bit |
| CPU Speed ——————————————————————————————————— | 68 MHz |
| Memory — | ———— 384 kB Non-volatile Flash (applications) ———————————————————————————————————— |
| Real Time Clock (RTC) | Built-in Real Time Clock without battery |
| | Network time synchronization is required at each |
| | power-up cycle before the RTC become available |
| Status Indicator — | Green LEDs: power status & LAN Tx |
| | Orange LEDs: controller status & LAN Rx |
| Subnetwork ¹ | |
| Communication ———————————————————————————————————— | |
| | Cat 5e, 8 conductor twisted pair |
| Connector — | RJ-45 |
| Connection Topology ———————————————————————————————————— | ————— Daisy-chain Configuration |
| Maximum number of supported devices per contro | oller combined ————4 |
| Allure Series sensor | ————Up to 4 ¹ |
| | Up to 4 |
| □ ECx-Light-4 / ECx-Light-4D / ECx-Light-DALI | ———— Up to 2 |
| | Up to 2 |
| A controller can support a maximum of two Allure Series Communicating Sensor | or models equipped with a OO_2 sensor. The remaining connected Allure Series |

Wireless Receiver¹

| Communication Protocol — | EnOcean wireless standard |
|--|--|
| Number of Wireless Inputs ² | 18 |
| Supported Wireless Receivers — | Refer to the Open-to-Wireless Solution Guide |
| Cable | Telephone cord |
| □ Connector — | 4P4C modular jack |
| □ Length (maximum) ——————————————————————————————————— | 6.5ft (2m) |



- 1. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Solution Guide for a list of supported EnOcean wireless modules.
- 2. Some wireless modules may use more than one wireless input from the controller.

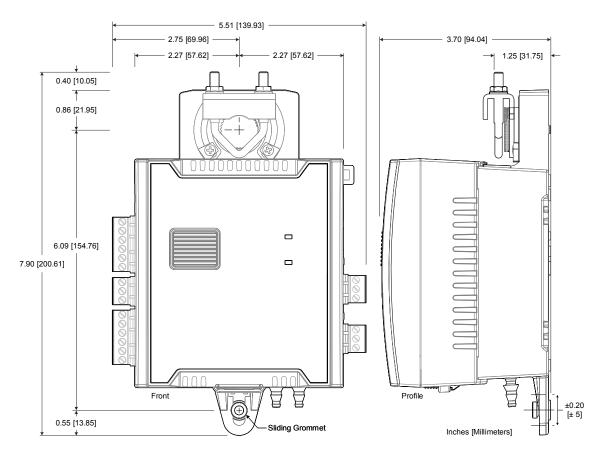
Integrated Damper Actuator

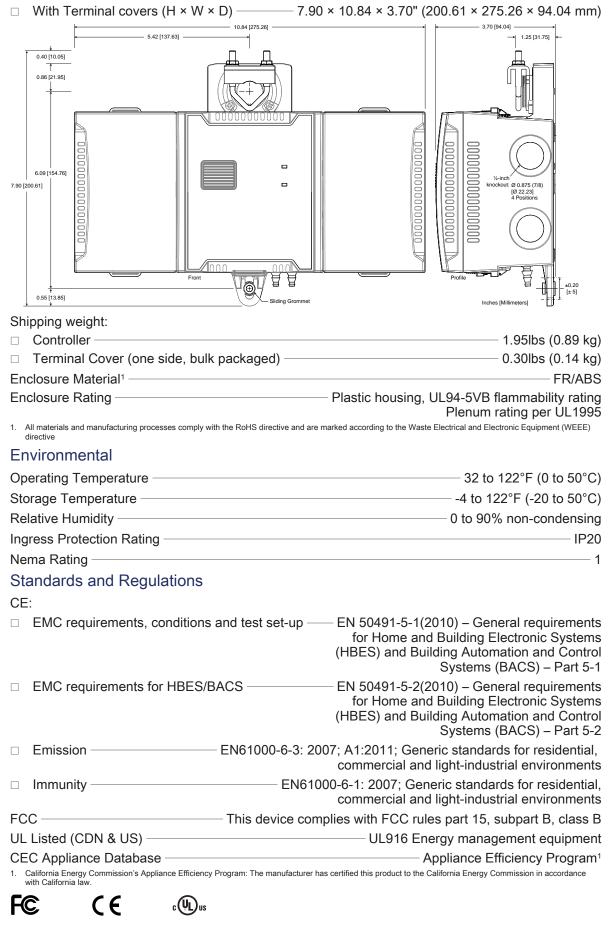
| Motor — | Belimo brushless DC motor |
|-----------------------|--|
| Torque — | 45 in-lb, 5 Nm |
| Degrees of Rotation — | 95° adjustable |
| Shaft Diameter — | 5/16 to 3/4"; 8.5 to 18.2mm |
| Acoustic Noise Level | < 35 dB (A) @ 95° rotation in 95 seconds |

Mechanical

Dimensions:

□ Without Terminal covers (H × W × D) — 7.90 × 5.51 × 3.70" (200.61 × 139.93 × 94.04 mm)





Specifications – On-Board Air-Flow Sensor

| Differential Pressure Range | ±2.0 in. W.C. (±500 Pa) |
|--|---|
| | Polarity-free high-low sensor connection |
| Input Resolution — | |
| Air Flow Accuracy | ±4.0% @ > 0.05 in. W.C. (12.5 Pa) |
| • | air flow balancing @ > 0.05 in. W.C. (12.5 Pa) |
| Pressure Sensor Accuracy | ±(0.2 Pa +3% of reading) |
| Specifications - Universal Inputs | (UI) |
| General | |
| Input Type — | Universal; software configurable |
| Input Resolution — | |
| Power Supply Output — | 18 VDC; maximum 80mA |
| Contact | |
| Type — | Dry contact |
| Counter | |
| Type — | Dry contact |
| Maximum Frequency | 1Hz maximum, |
| Minimum Duty Cycle — | — 500milliseconds On / 500milliseconds Off |
| 0 to 10VDC | |
| Range | |
| 0 to 5VDC | |
| Range | 0 to 5VDC (high input impedance) |
| 0 to 20mA | |
| Range | 0 to 20mA |
| | ——— 249Ω external resistor wired in parallel |
| Resistance/Thermistor | |
| Range | 0 to 350 KΩ |
| Supported Thermistor Types | Any which operate in this range |
| Pre-configured Temperature Sensor Types: | |
| □ Thermistor ───── | 10KΩ Type 2, 3 (10KΩ @ 77°F; 25°C) |
| □ Platinum — □ Nickel — □ | |
| | RTD Ni1000 (1KΩ @ 32°F; 0°C) RTD Ni1000 (1KΩ @ 69.8°F; 21°C) |
| | 1710 1411000 (11/22 (20 03.0 1 , 21 0) |

ECB-VAV

Specifications – Universal Outputs (UO)

General Universal; software configurable Output Type — Output Resolution — 10-bit digital to analog Converter Built-in snubbing diode to protect against back-EMF, Output Protection for example when used with a 12VDC relay Output is internally protected against short circuits Auto-reset fuse - Provides protection from accidental 24VAC connection 0 or 12VDC (On/Off) 0 or 12VDC Range **PWM** Range -— Adjustable period from 2 to 65seconds Thermal Actuator Management — — Adjustable warm up and cool down time Floating 500milliseconds Minimum Pulse On/Off Time — Drive Time Period - Adjustable 0 to 10VDC Source: □ Voltage Range — 0 to 10VDC linear Maximum 20 mA at 10VDC (minimum resistance 600Ω) □ Source Current — Sink: Voltage Range — — 0 to 10VDC linear Maximum 2.5 mA at 1VDC (minimum resistance 4kΩ) □ Sink Current — Specifications – Digital Outputs (DO) General Output Type — 24VAC Triac; software configurable Maximum Current per Output ----- 0.5A continuous 1A @ 15% duty cycle for a 10-minute period External or internal power supply (jumper selectable) Power Source — 0 or 24VAC (On/Off) 0 or 24VAC Range **PWM** Adjustable period from 2 to 65seconds Range — Floating

| ECB-VAV |
|---------|
|---------|

Drive Time Period —

Power Source -

Minimum Pulse On/Off Time —

Adjustable

Adjustable

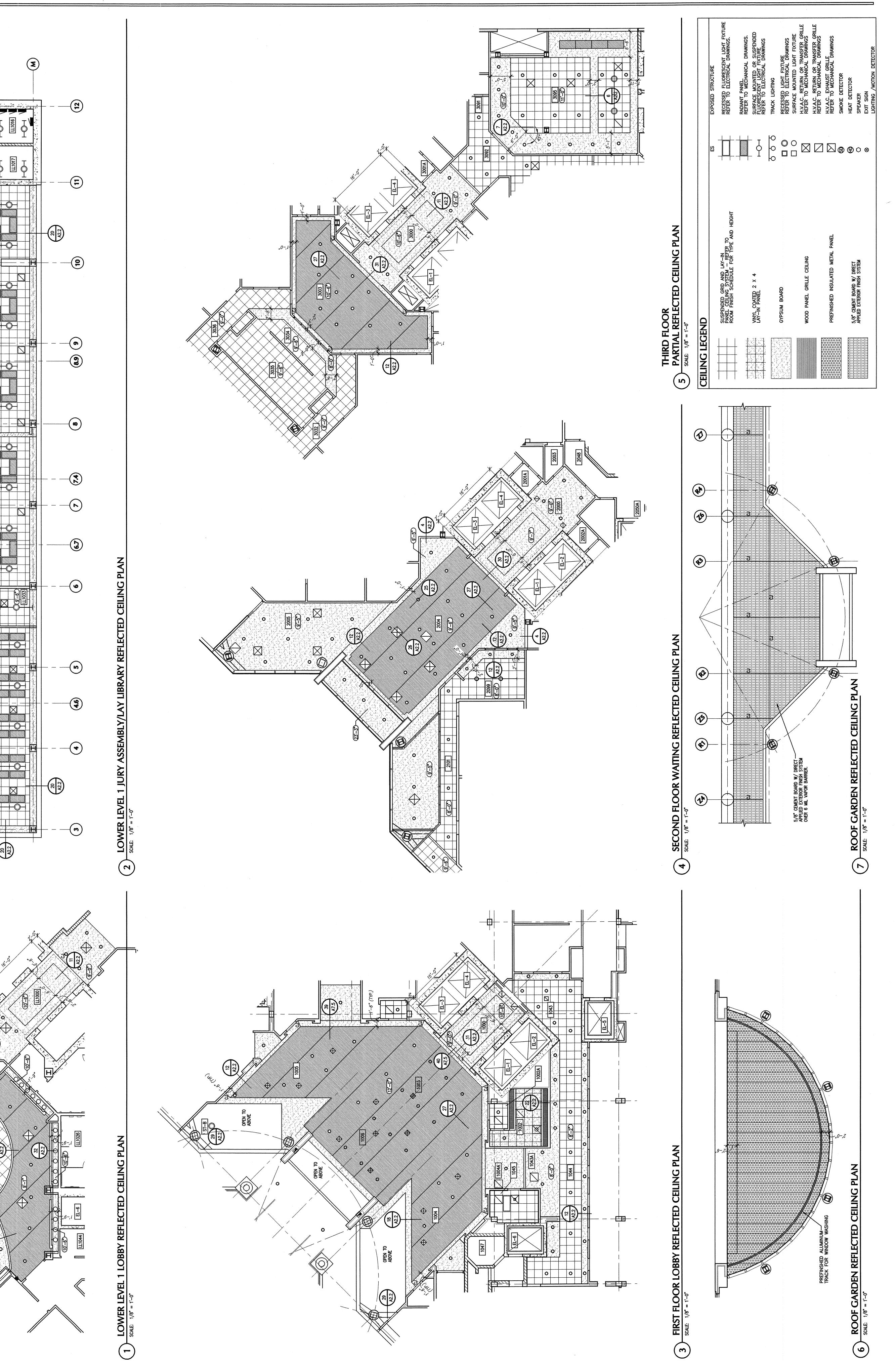
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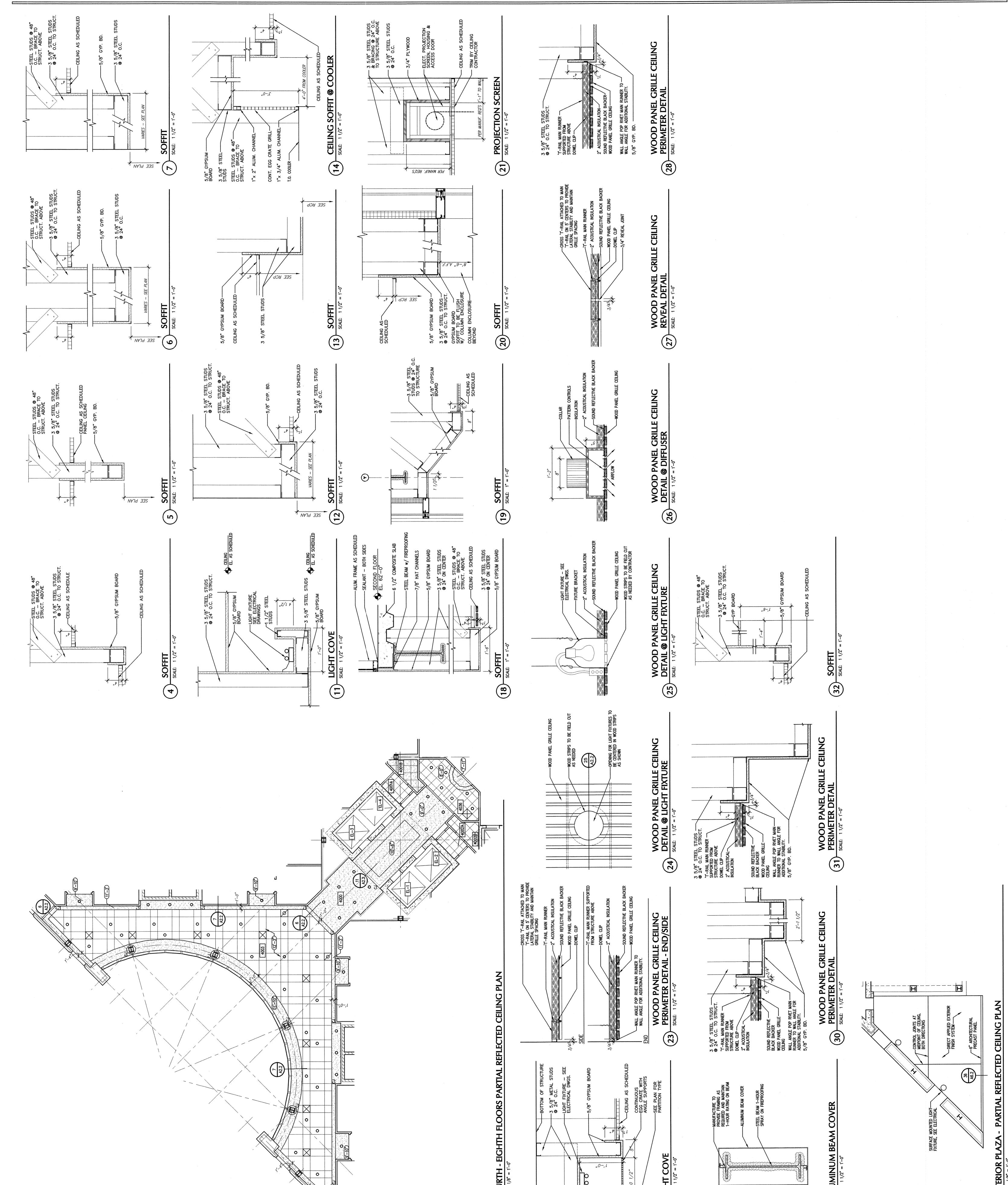




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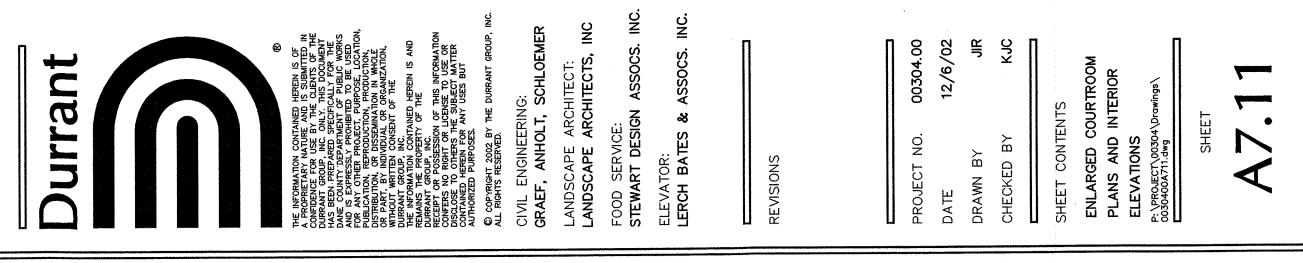
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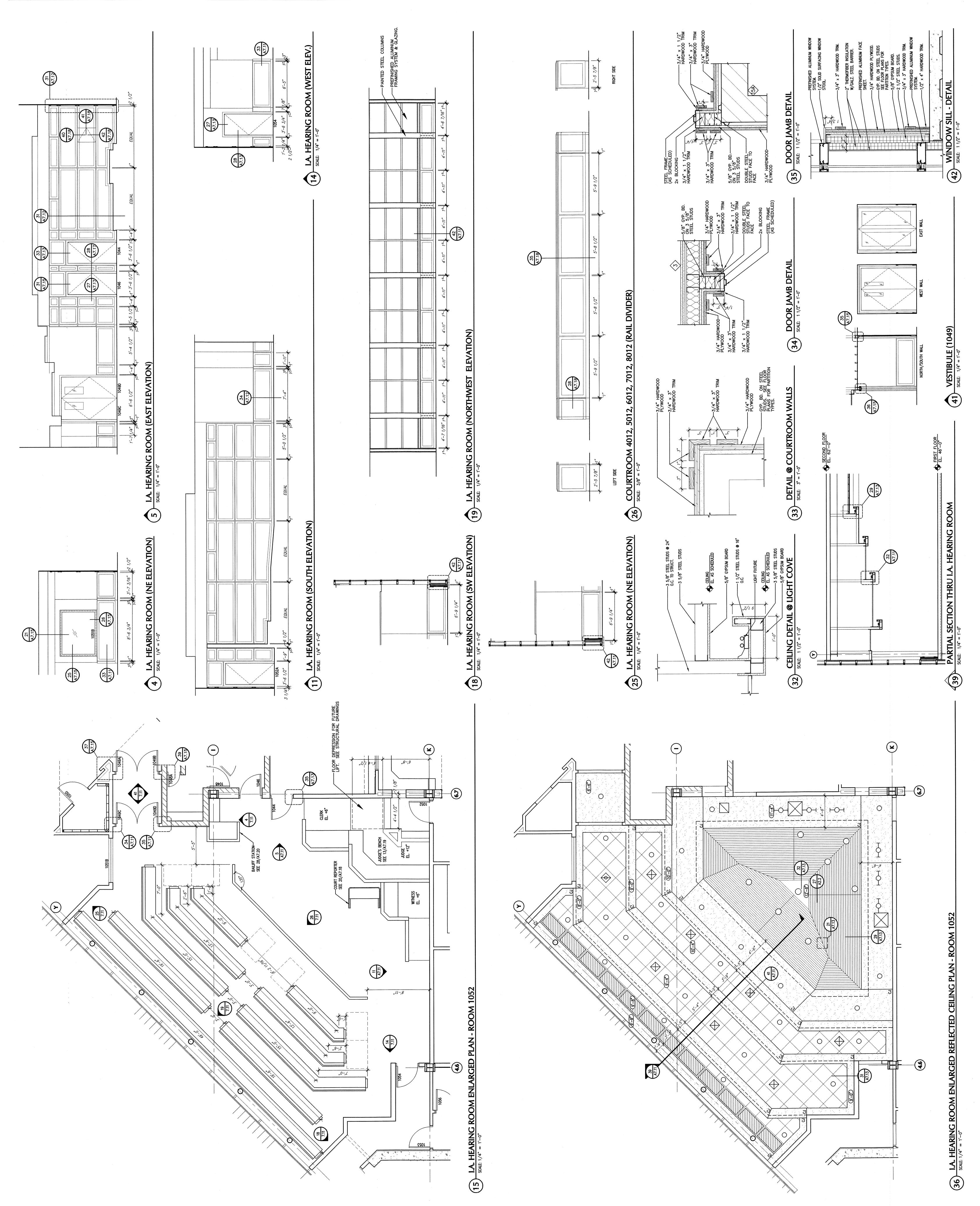
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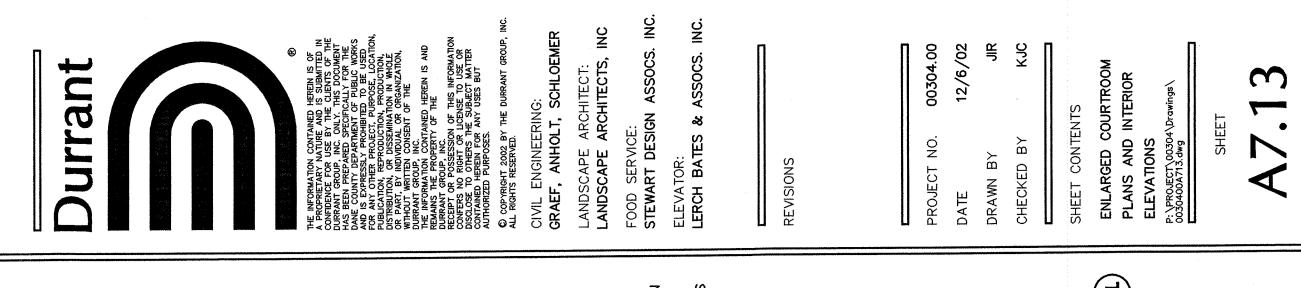
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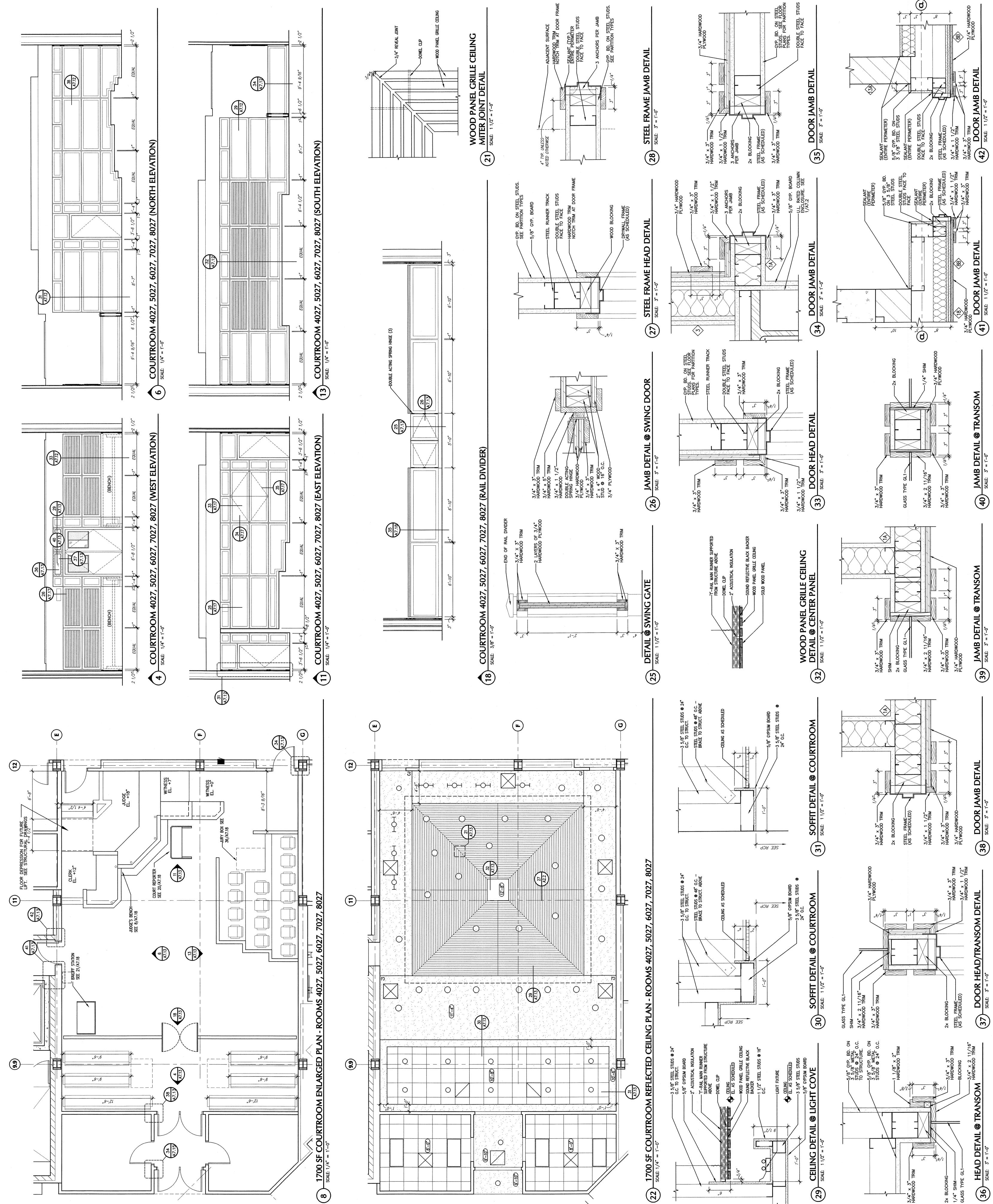


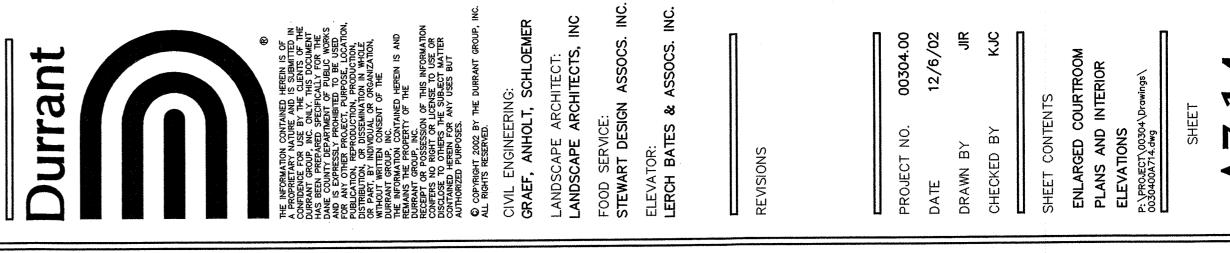
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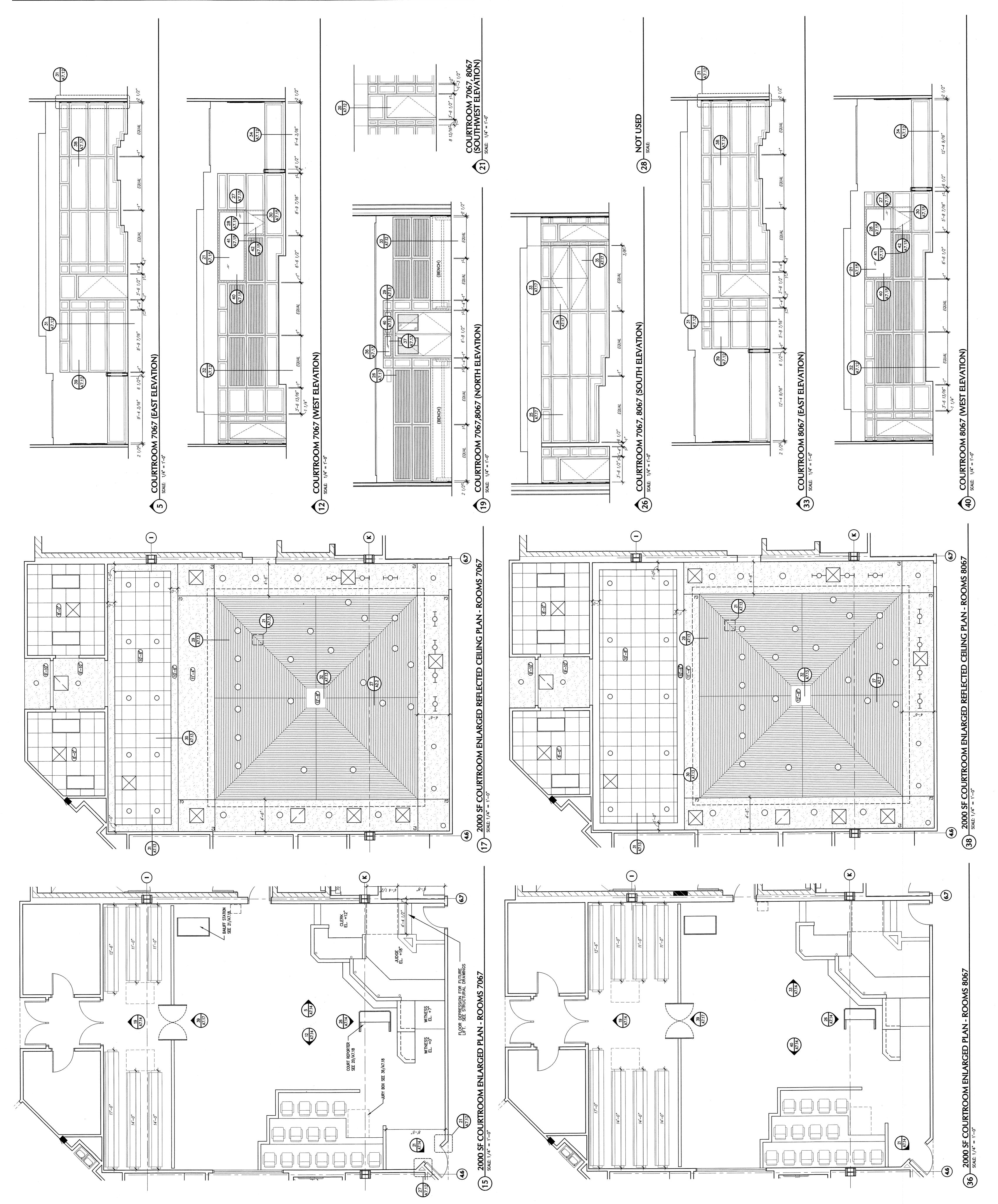
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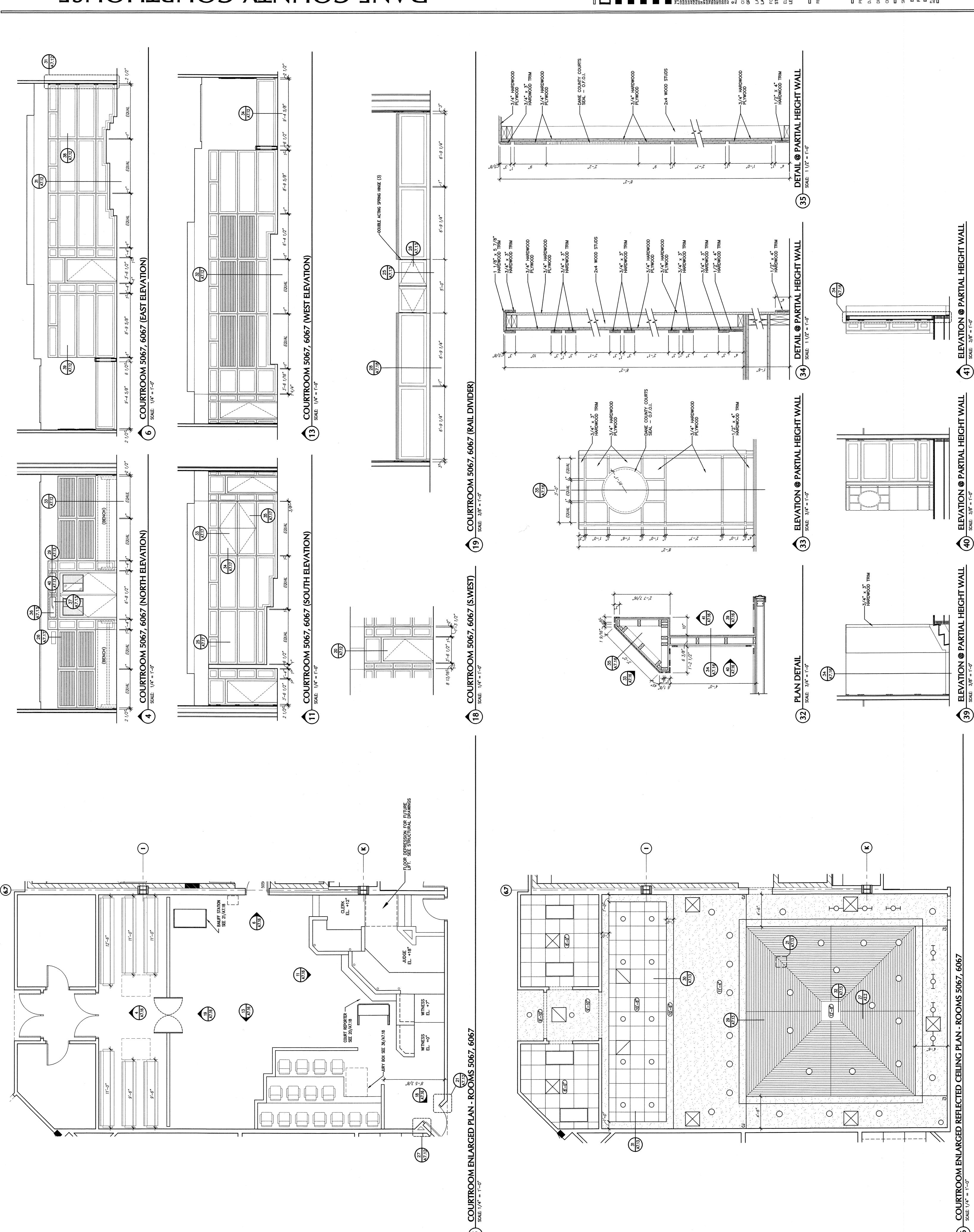




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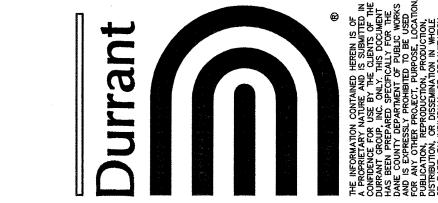


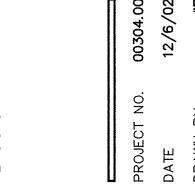


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