

abaa2025 building enclosure conference

Introduction to Delegated Design for Building Enclosure Systems

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AIA
Continuing
Education
Provider





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Introduction to Delegated Design for Building Enclosure Systems

Delegating the design of portions or even the entirety of the building enclosure to specialty contractors is a growing trend. This presentation will introduce the delegated design process and include a combination of research and professional experience to assist participants with understanding and navigating the process. Topics will include the potential advantages for using delegated design, common problems associated with the process, and inconsistent policies and requirements in varying jurisdictions. Considerations will be presented for how project participants can take full advantage of the benefits of delegated design while minimizing risk. This presentation will also outline strategies for successfully implementing delegated designs within both traditional and modern project delivery methods. With building enclosure commissioning becoming more prevalent, early project involvement of building enclosure consultants and BECx Providers can provide value and additional quality assurance for the project, related to delegated design.



Andrea Baird

Andrea Baird has over 20 years of architectural experience specializing in building enclosure consulting, commissioning, evaluation, and repair design. Her expertise includes building enclosure design review, forensic investigation, diagnostic and performance testing, and building enclosure analysis using software such as THERM and WUFI. She has considerable roofing and waterproofing experience in the areas of investigation, testing, and development of repair design drawings and specifications. Her knowledge of waterproofing and roofing systems includes below-grade, plaza, single-ply membrane, metal, slate, and built-up roofing. She has provided litigation support services in the areas of investigation, depositions, and document review on related failures.

Rebecca Booth

Rebecca Booth has over 12 years of architectural experience specializing in evaluation, investigation, repair design, and construction contract administration for repair projects involving both new and existing buildings. She has conducted field investigations involving condition survey documentation and on-site testing, as well as construction observation during repair construction programs. She has performed litigation support related to building enclosure and material nonperformance issues for construction defect claims. Her project experience has involved the evaluation of a variety of building enclosures, cladding materials, and wall systems, including concrete, masonry, stucco, exterior insulation and finish systems (EIFS), elastomeric coatings, air barriers, sealants, windows, skylights, curtain walls, insulating glass units, vehicular deck coatings, roofing assemblies, flashing, metal panel systems, and waterproofing systems.

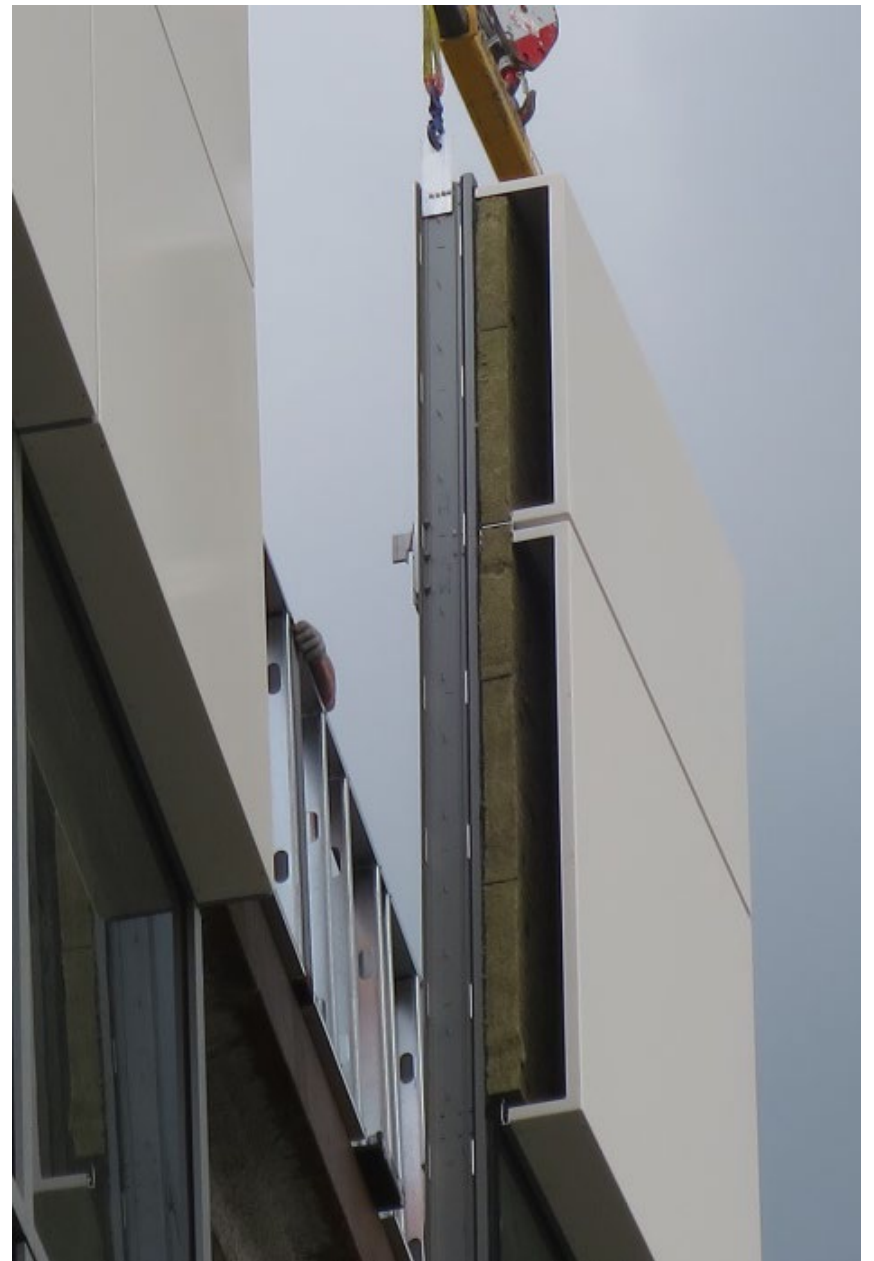


Learning Objectives

1. Describe the delegated design process and how it is used for the building enclosure
2. Evaluate common advantages and disadvantages associated with the delegated design process
3. Review performance specifications and strategies to use when writing or reviewing specifications, incorporating delegated design components and systems
4. Discuss how delegated design impacts project workflow and construction scheduling for different project delivery methods

Delegated Design – Background and Definitions









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Section 107 - Submittal Documents

107.1 General

Submittal documents consisting of *construction documents*...shall be submitted in two or more sets with each permit application. The construction documents shall be prepared by a registered design professional.

107.2.1 **Information on construction documents** ...*Construction documents* shall be of suitable clarity to indicate the location, nature, and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, and regulations, as determined by the *building official*.

Section 107 - Submittal Documents

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107.3.4 Design professional in responsible charge

...The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.



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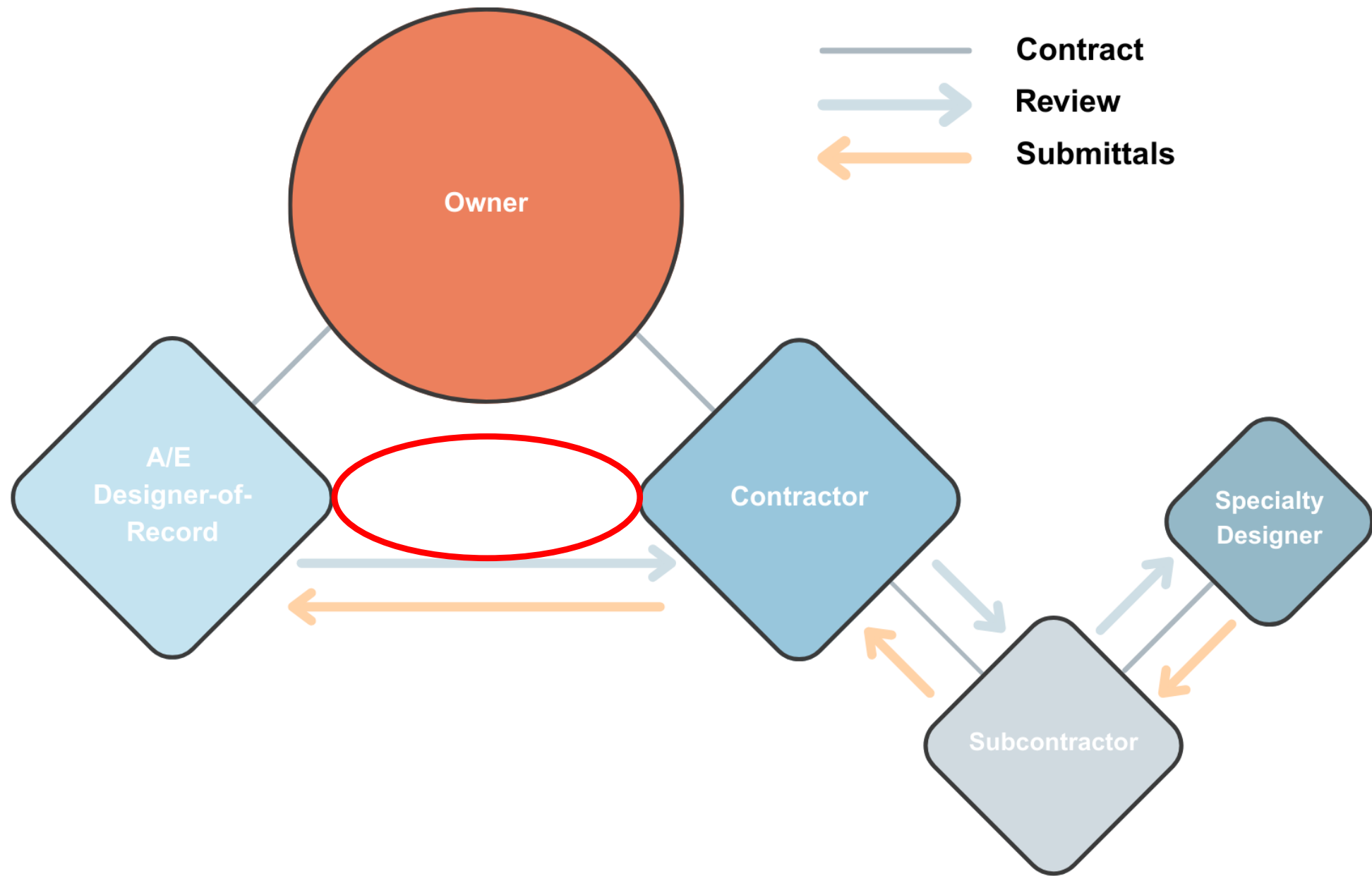
Section 107 - Submittal Documents

107.3.4.1 Deferred submittals

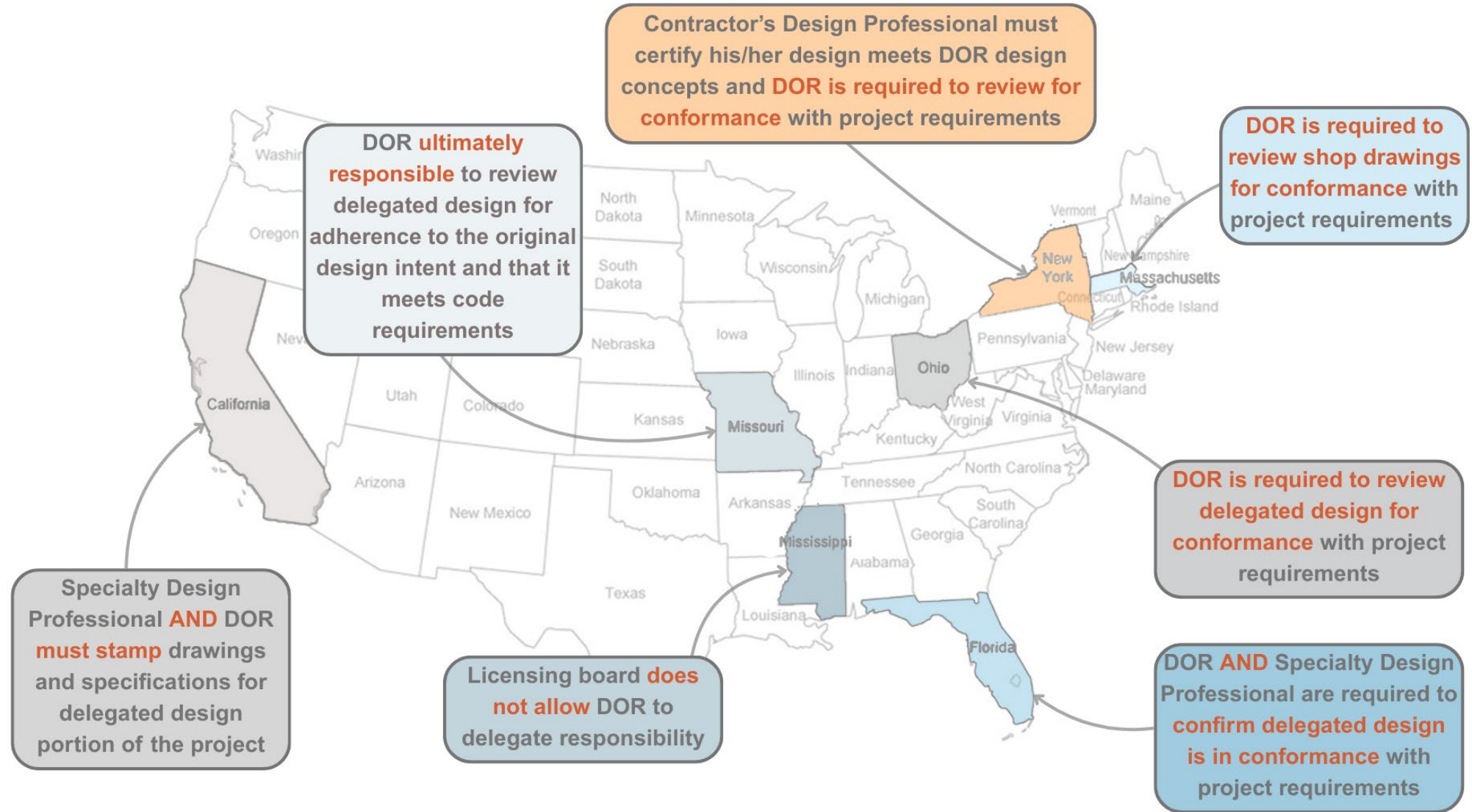
Deferral of any submittal items shall have prior approval of the building official. The registered design professional in responsible charge shall list the deferred submittals on the construction documents for review by the building official.

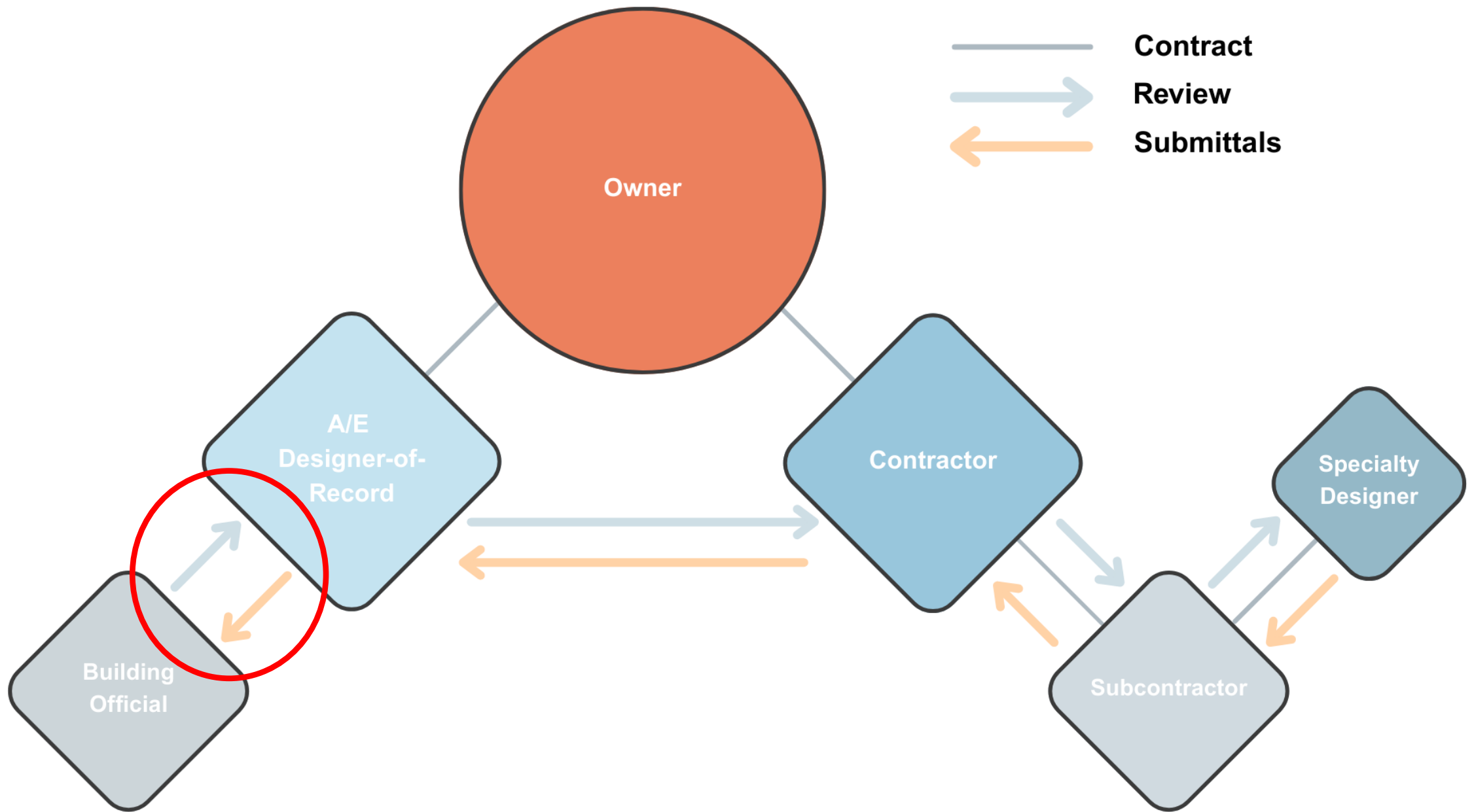
Documents for deferred submittal items shall be submitted to the registered design professional in responsible charge, who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design of the building.

The deferred submittal items shall not be installed until the deferred submittal documents have been approved by the building official.



Professional Licensure Requirements





DOR

Standard of Care

prepare documents with a standard of care similar to other designers doing similar work in the same geographic area at the same point in time. A degree of **errors and omissions are expected and acceptable.**

Vs.

Contractor

Contract Standard

complete the project according to the drawings and specifications, and **guarantee/warrant performance.**

When the project specifications include delegated design responsibilities, the contractor can inadvertently assume risk beyond what would be typical for a designer.

Delegated Design – Standard Contract Language

AIA A201

3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of **architecture or engineering** unless such services are **specifically required by the Contract Documents** for a portion of the Work...

3.12.10.1 If professional design services or certifications by a design professional...are specifically required of the Contractor by the Contract Documents, the **Owner and the Architect will specify all performance and design criteria** that such services must satisfy...

DRAFT AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A301™ Guide for Supplementary Conditions.

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1

AIA A201

3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals

DRAFT AIA® Document A201™ – 2017
General Conditions of the Contract for Construction

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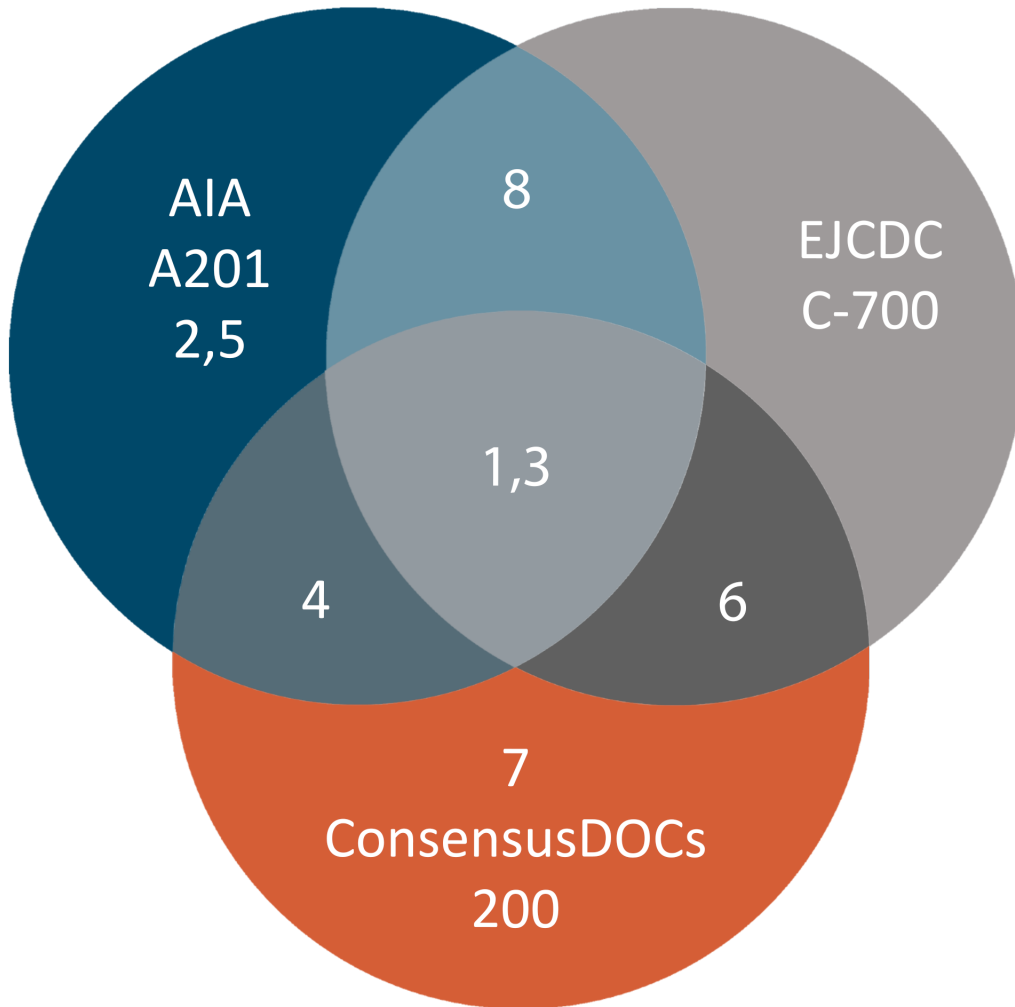
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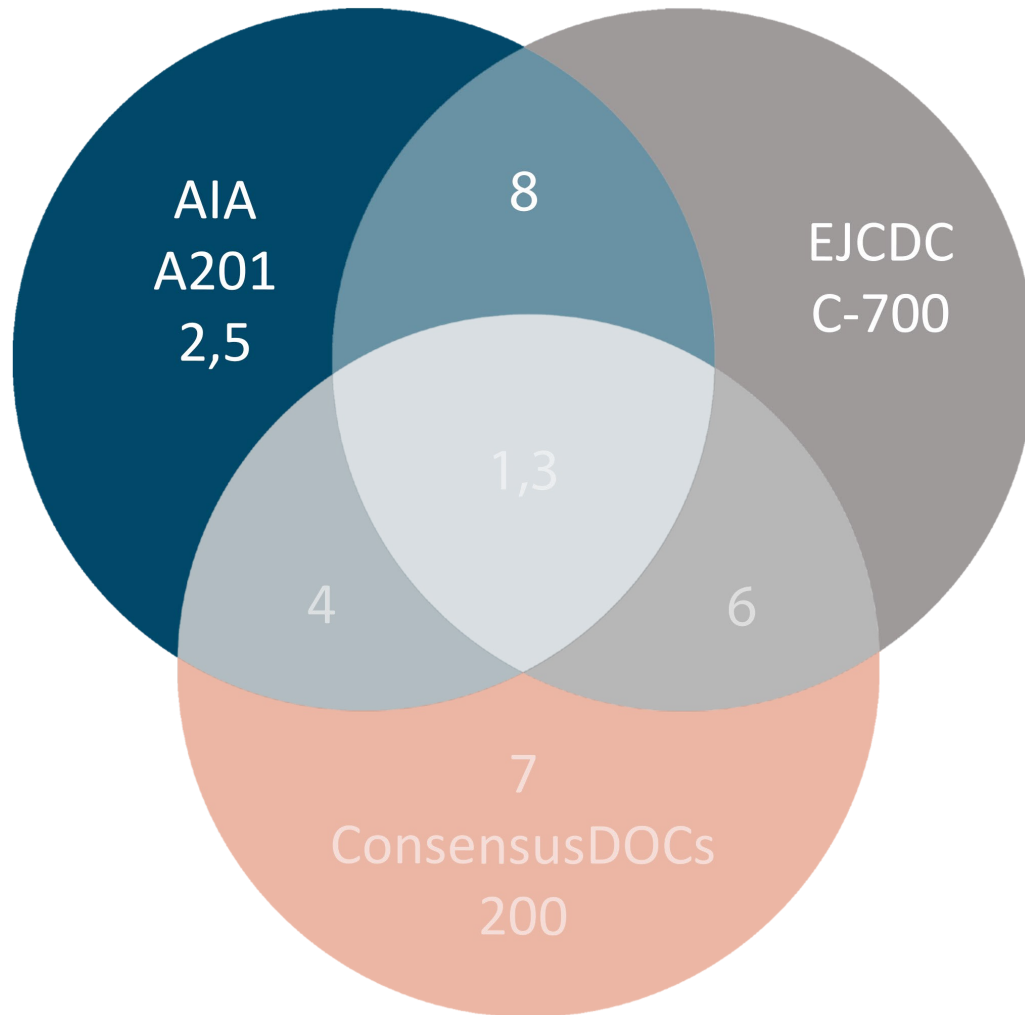
May no longer hold true for projects incorporating the delegated design process. Depends on final specification language that may supersede standard general conditions.

Standard Contracts



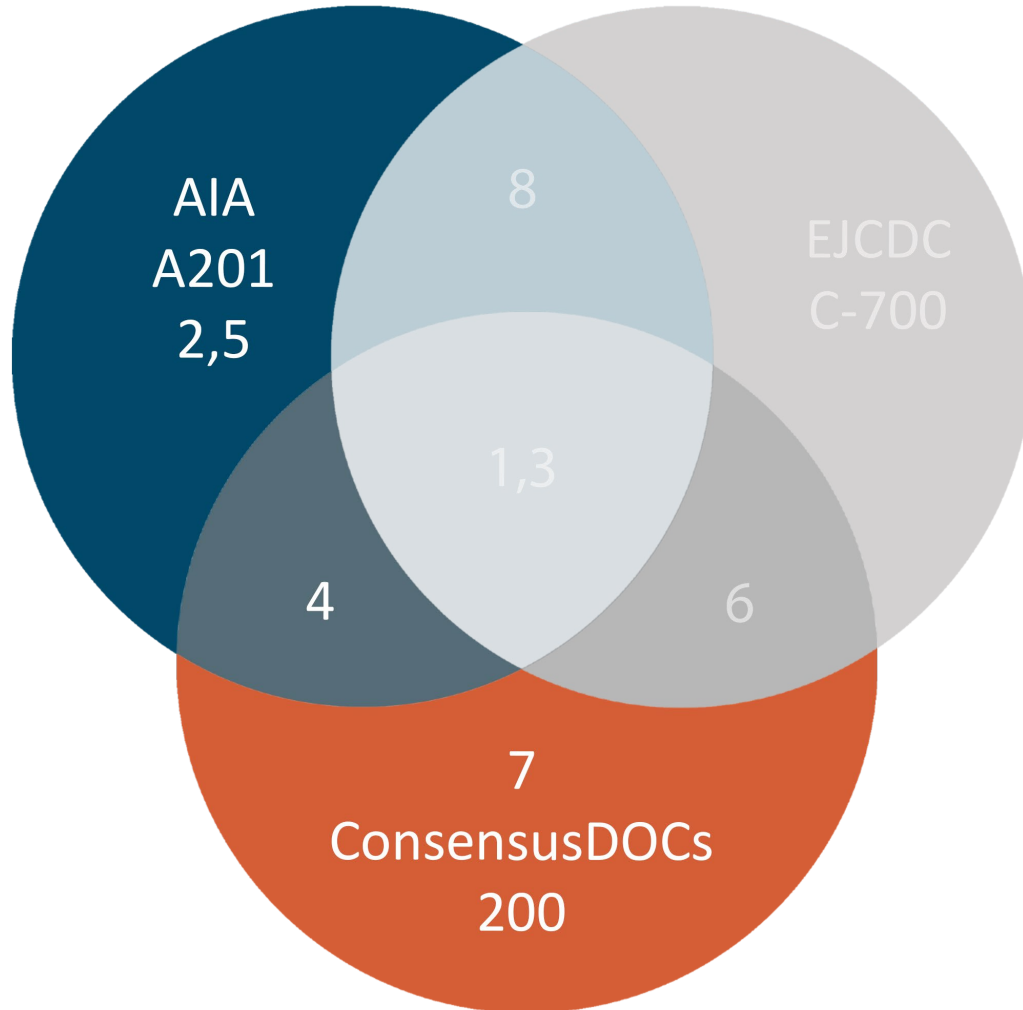
1. Contractor cannot be required to provide design services unless specifically required by CDs.
2. Contractor cannot be required to provide design services in violation of applicable law.
3. The owner and DOR are required to specify all performance & design criteria.
4. The contractor is entitled to rely upon the performance & design criteria specified in the CDs.
5. If required by the CDs, the contractor's licensed design professional must certify that the design meets the performance & design criteria.
6. The signature and seal of the contractor's licensed design professional must appear on all submittals related to the delegated design.
7. Approved submittals and shop drawings are considered CDs.
8. Approved submittals and shop drawings are NOT considered CDs.

Standard Contracts



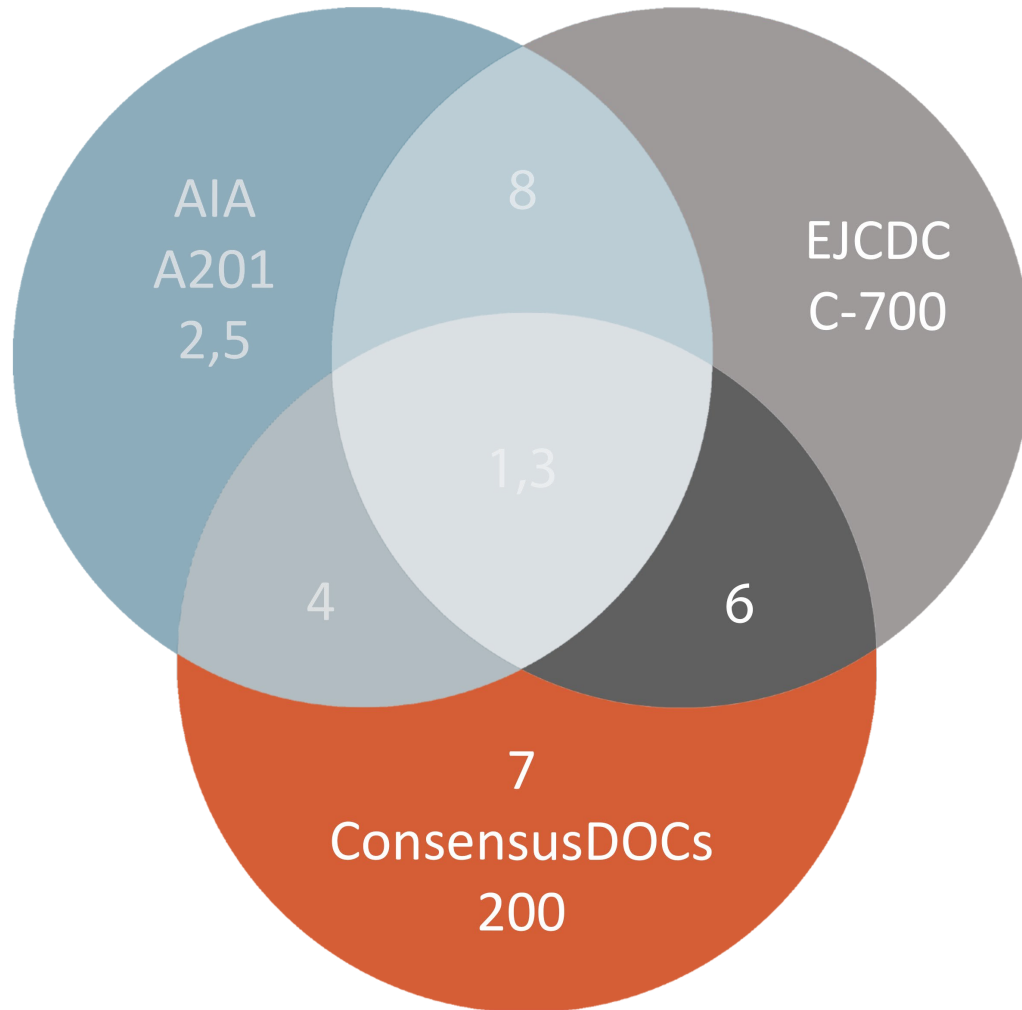
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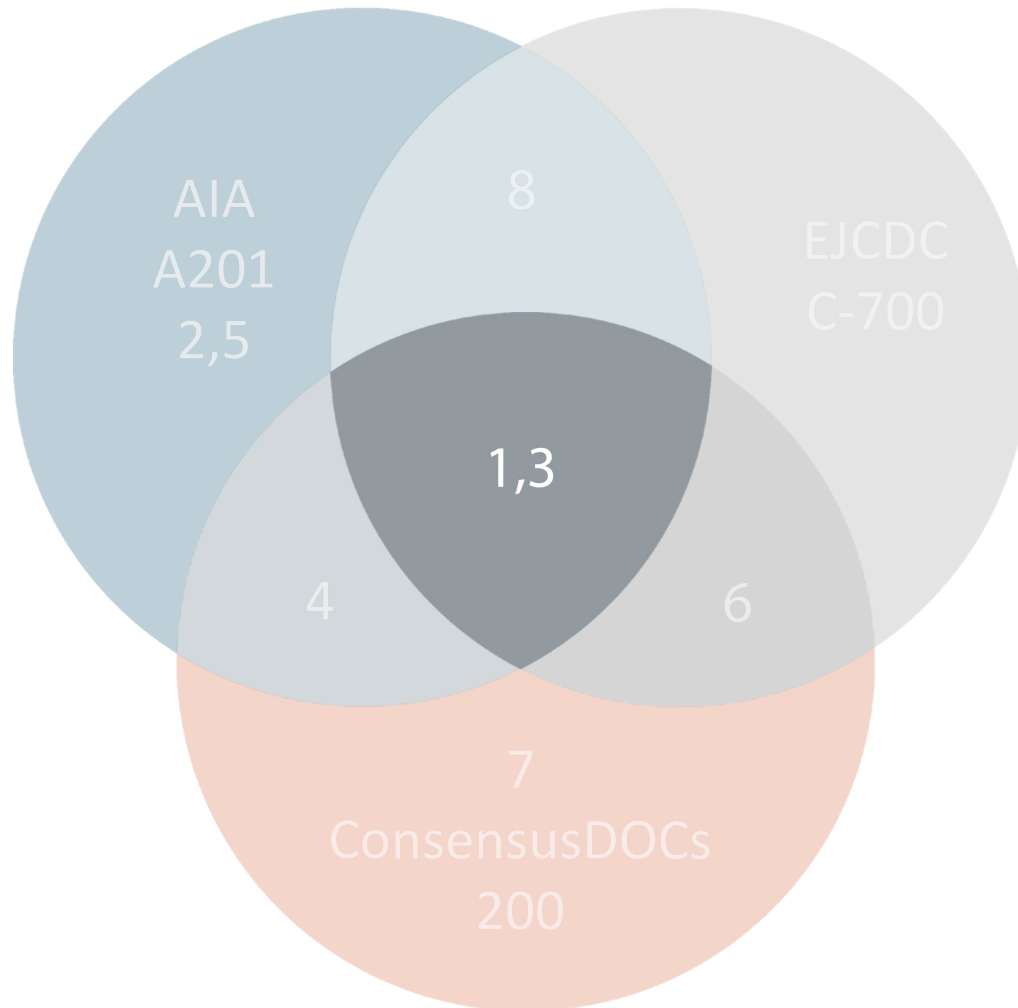
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Standard Contracts



1. **Contractor cannot be required to provide design services unless specifically required by CDs.**
2. Contractor cannot be required to provide design services in violation of applicable law.
3. **The owner and DOR are required to specify all performance & design criteria.**
4. The contractor is entitled to rely upon the performance & design criteria specified in the CDs.
5. If required by the CDs, the contractor's licensed design professional must certify that the design meets the performance & design criteria.
6. The signature and seal of the contractor's licensed design professional must appear on all submittals related to the delegated design.
7. **Approved submittals and shop drawings are considered CDs.**
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Delegated Design

What Actually Takes Place...

A form of design allocation and shifting responsibilities by means of **separate contracts**:

- Owner-DOR Agreement(s)
- Owner-Contractor Agreement
- Contractor-Subcontractor Agreement(s)

Outcome | Major Trends

- More Project Control Ceded to Contractor
- Greater Need for Project Coordination, Early!

Traditional Design-Bid-Build

DOR's drawings and specifications are typically completed before the contractor is selected

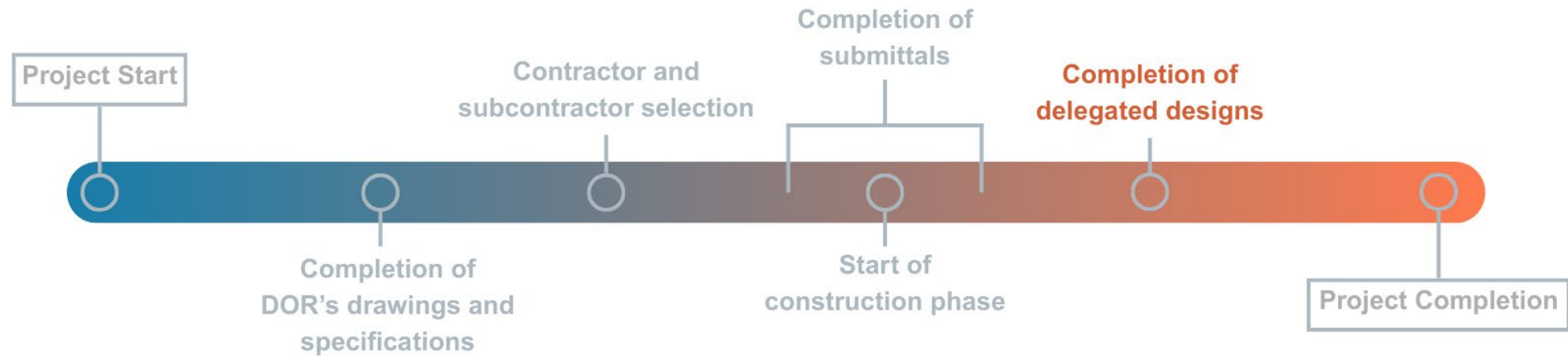
Projects with Delegated Design

Do not lend themselves well to traditional approaches because the specialty delegated designs are completed partially or wholly during the construction phase.

“Collaborative Design”

Design-Assist, Integrated Project Delivery, etc.,...the general contractor (GC) and key specialty subcontractors are selected during the design phase of the project.

Traditional Design-Bid-Build



“Collaborative Design”



Role of Specifications in Delegated Design

Drawing and Specification Review



Projects incorporating delegated design:

- Are adjacent/interconnected systems expected to be designed by different parties?
- What systems and interfaces will need to be coordinated later during shop drawing review?
- Is Delegated Design defined in Division 01?
- Are complete performance and design criteria specified?
- Are quantitative requirements clearly defined?

Cold-Formed Steel Framing:
Shop Drawings "B"

Interior Sealant Joint(s): It
depends on the project

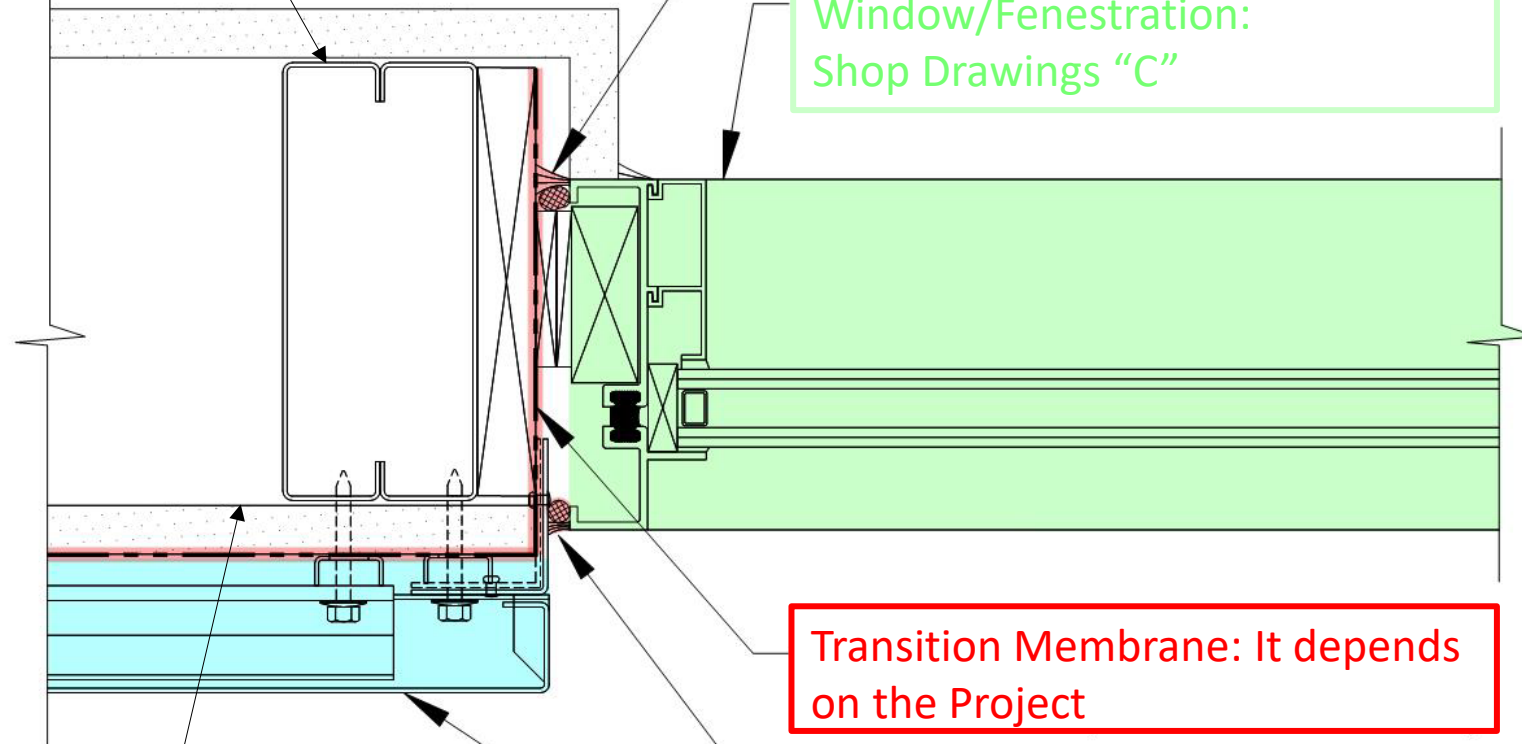
Window/Fenestration:
Shop Drawings "C"

Transition Membrane: It depends
on the Project

Exterior Sealant Joint(s): It
depends on the project

Metal Panels:
Shop Drawings "A"

Contract Drawings



Specifications

Clear

Concise

Correct

+ Complete + Coordinated

Specifications should define the scope and clarify expectations for delegated design services....
Start with Division 01.

DELEGATED DESIGN – Guide Specifications

SECTION 013300 SUBMITTAL PROCEDURES – SECTION 1.7 DELEGATED DESIGN SERVICES:

“This article directly relates to AIA Document A201 requirement for Contractor to provide professional services where indicated by the Contract Documents. AIA Document A201 refers to a "design professional," but no definition of the term is included. Retain this article if authorities having jurisdiction allow Contractor to perform these services.”

SECTION 014000 QUALITY REQUIREMENTS – SECTION 1.3 DELEGATED DESIGN SERVICES:

“This article directly relates to AIA Document A201 requirement for Contractor to provide professional services where indicated by the Contract Documents. AIA Document A201 refers to a "design professional," but no definition of the term is included. Retain this article if authorities having jurisdiction allow Contractor to perform these services.”



Specifications

No Dedicated CSI Section

Typically included in Div 01:

013300 Submittal Procedures

or

014000 Quality Requirements

1.7 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to DOR.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

C. Adjacent or Interconnected Products and Systems: Where delegated design services are required for multiple adjacent or interconnected products and systems, the Contractor will coordinate and assign responsibility for the detailing of interface conditions by the responsible design professionals and provide fully coordinated shop drawings.

Specifications

- C. Adjacent or Interconnected Products and Systems:
Where delegated design services are required for multiple adjacent or interconnected products and systems, **the Contractor will coordinate and assign responsibility for the detailing of interface conditions by the responsible design professionals and provide fully coordinated shop drawings.**

Technical Specifications (Divisions 3-9)

- Explicitly state when delegated design services are required.
- Performance-based (rather than proprietary or prescriptive, so that they specify only the design requirements and not the design solution).
- **Include all performance and design criteria** that the specialty contractor will need to complete the design.
- List all required submittals.

Example: Glazed Aluminum Curtainwall

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazed aluminum curtain walls.
- B. General Performance: Comply with performance requirements specified...
 - 1. Glazed aluminum curtain walls **shall withstand movements of supporting structure**, including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.

Example: Glazed Aluminum Curtainwall

- 2. Water Penetration Test Method:** Test for water penetration in accordance with **AAMA 503 and ASTM E1105** requirements. Test at a pressure of 10 psf.

Although this language references AAMA and ASTM standards, it fails to specifically indicate failure criteria. The failure criteria for AAMA 503 and ASTM E1105 are different.

Ultimately, the project specifications should include information such that the listed performance requirements meet or exceed those established by the OPR.

Common Enclosure Delegated Design Components and Project Coordination Considerations

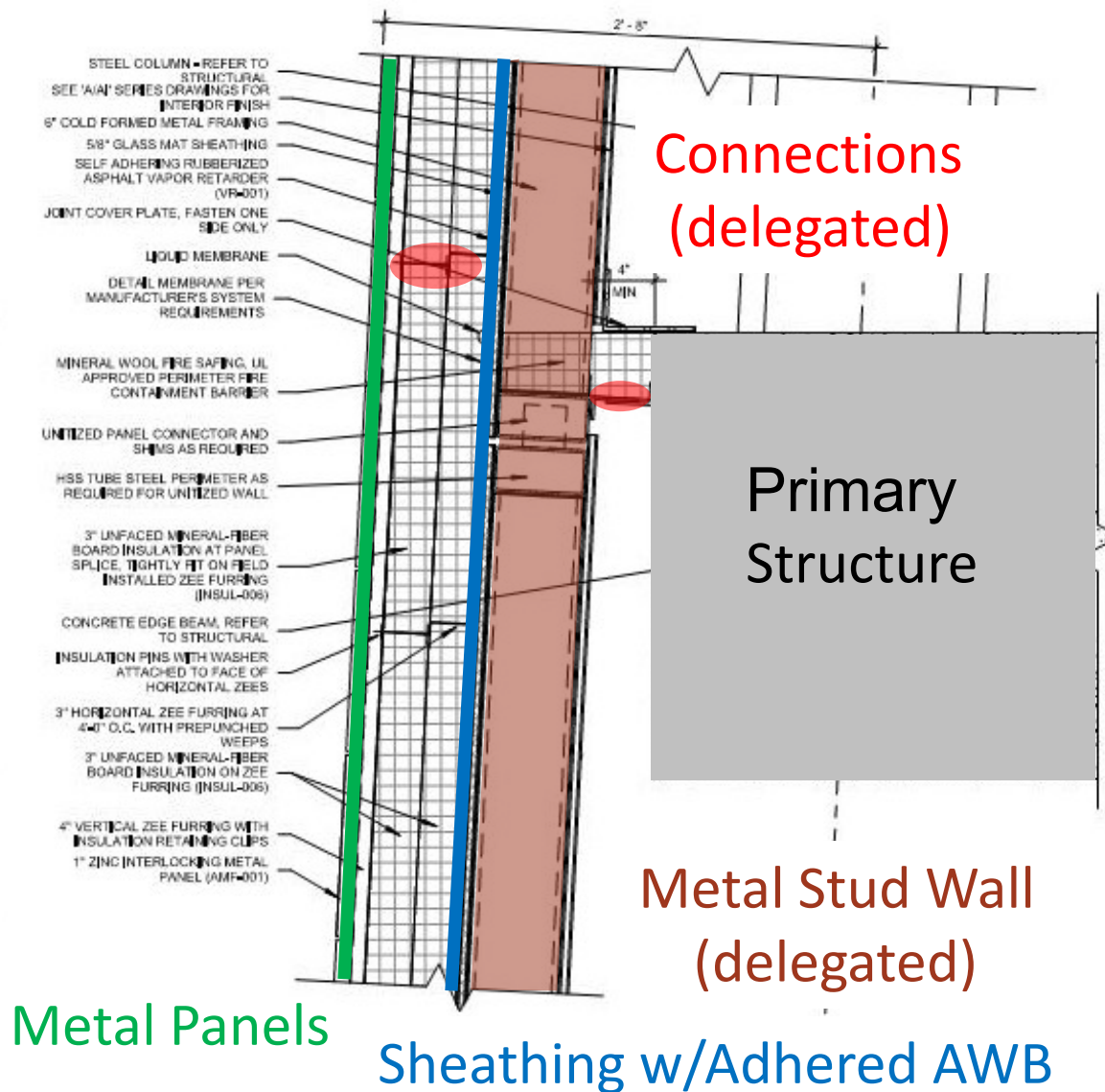
ARCHITECTURAL DELEGATED DESIGN

Traditional



Emerging





10 METAL PANEL WALL AT EDGE BEAM

1 1/2" = 1'-0"

Performance Requirements

Common

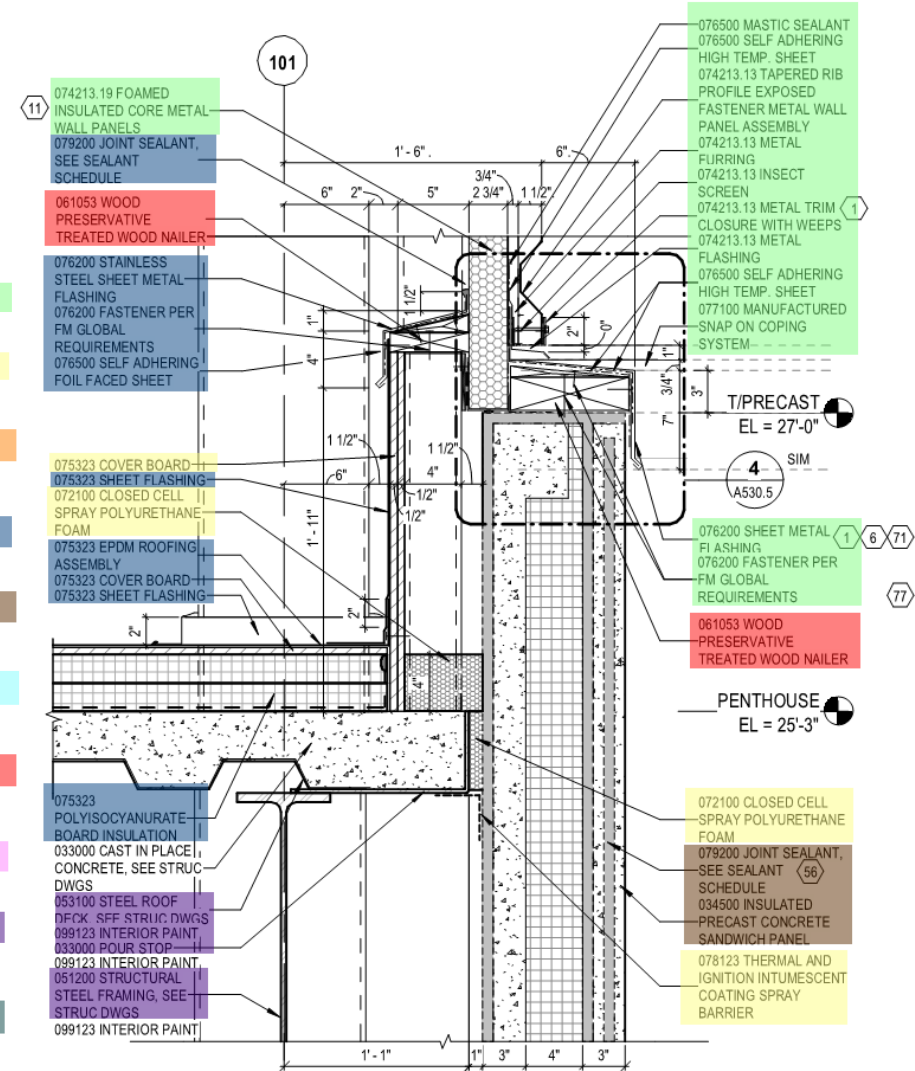
- Structural
- Water Resistance
- Air Infiltration Resistance
- Thermal Resistance
- Condensation Resistance

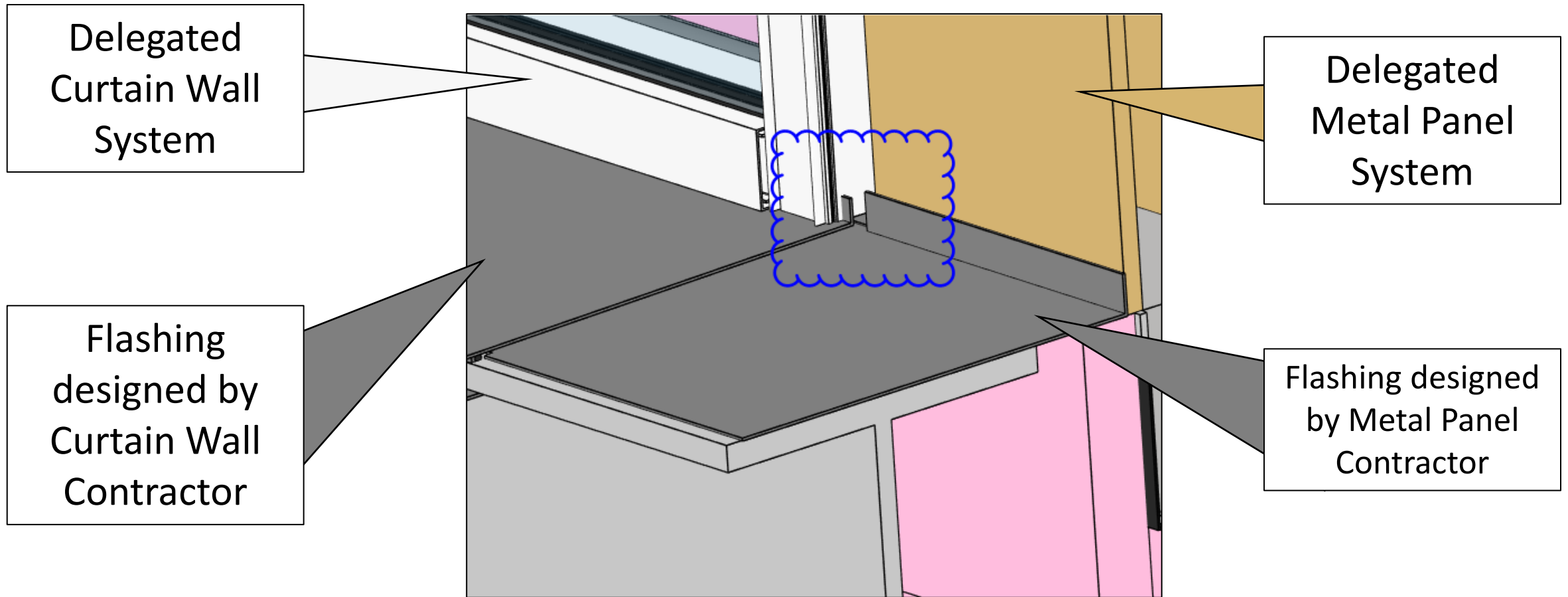
Implied

- Attachment to structure
- Deflection
- Construction Tolerance
- Interface with adjacent construction

Construction Coordination

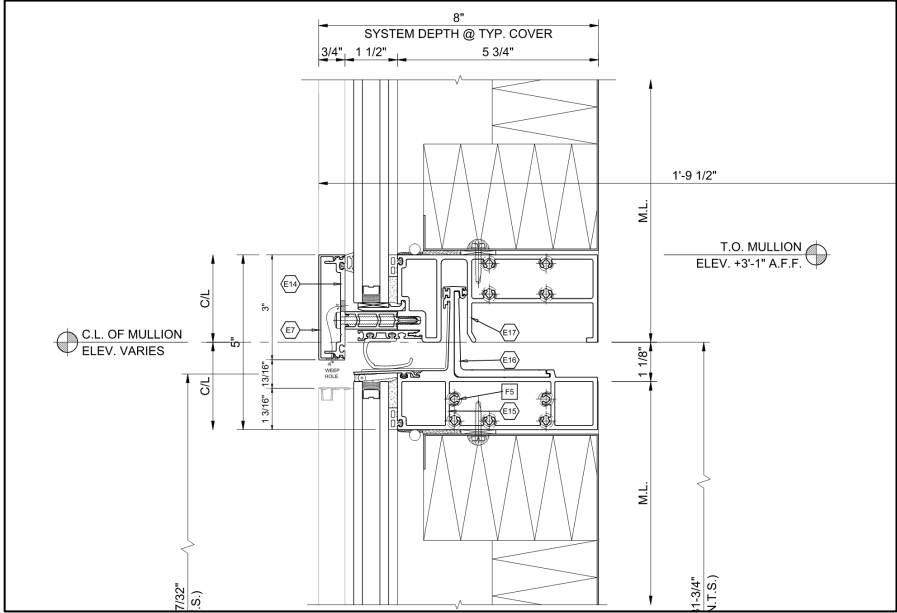
- Conformance with Contract Documents
- Constructability
- Tolerances
- Material compatibility
- Interface conditions
- Sequencing
- Coordination



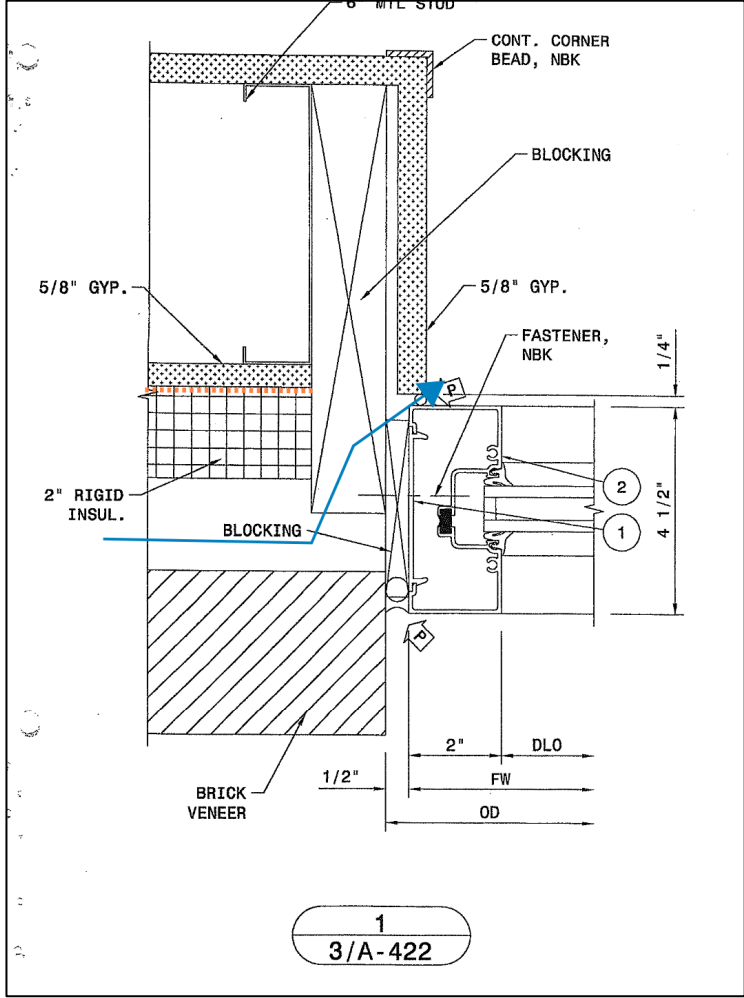


Delegated designs are not prepared by specialty subcontractors until after their contracts have been awarded. Therefore, coordination of interface details generally occurs during the construction phase.

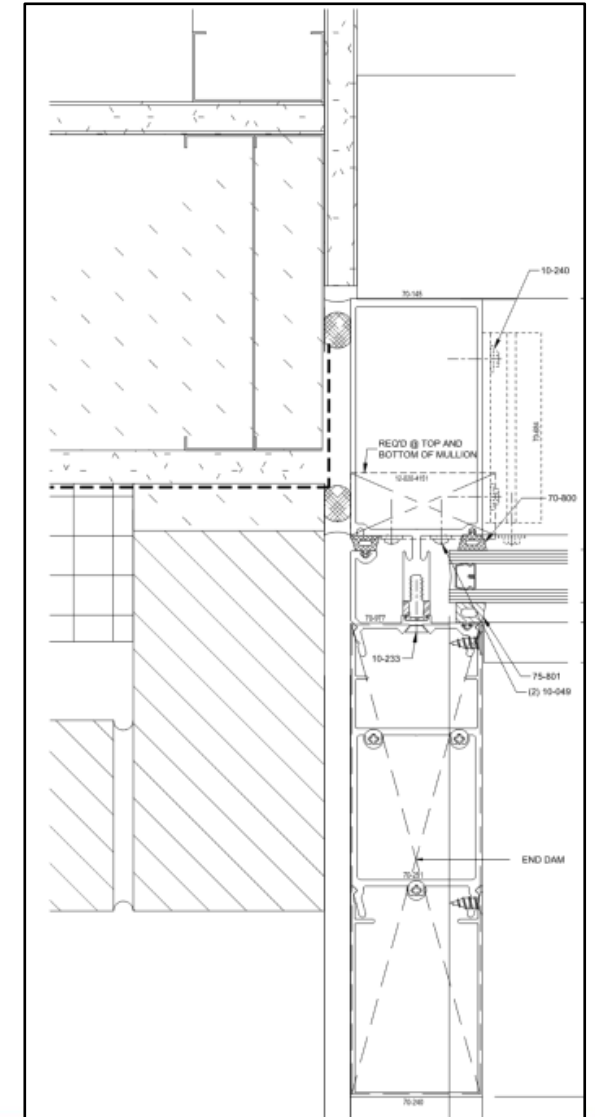
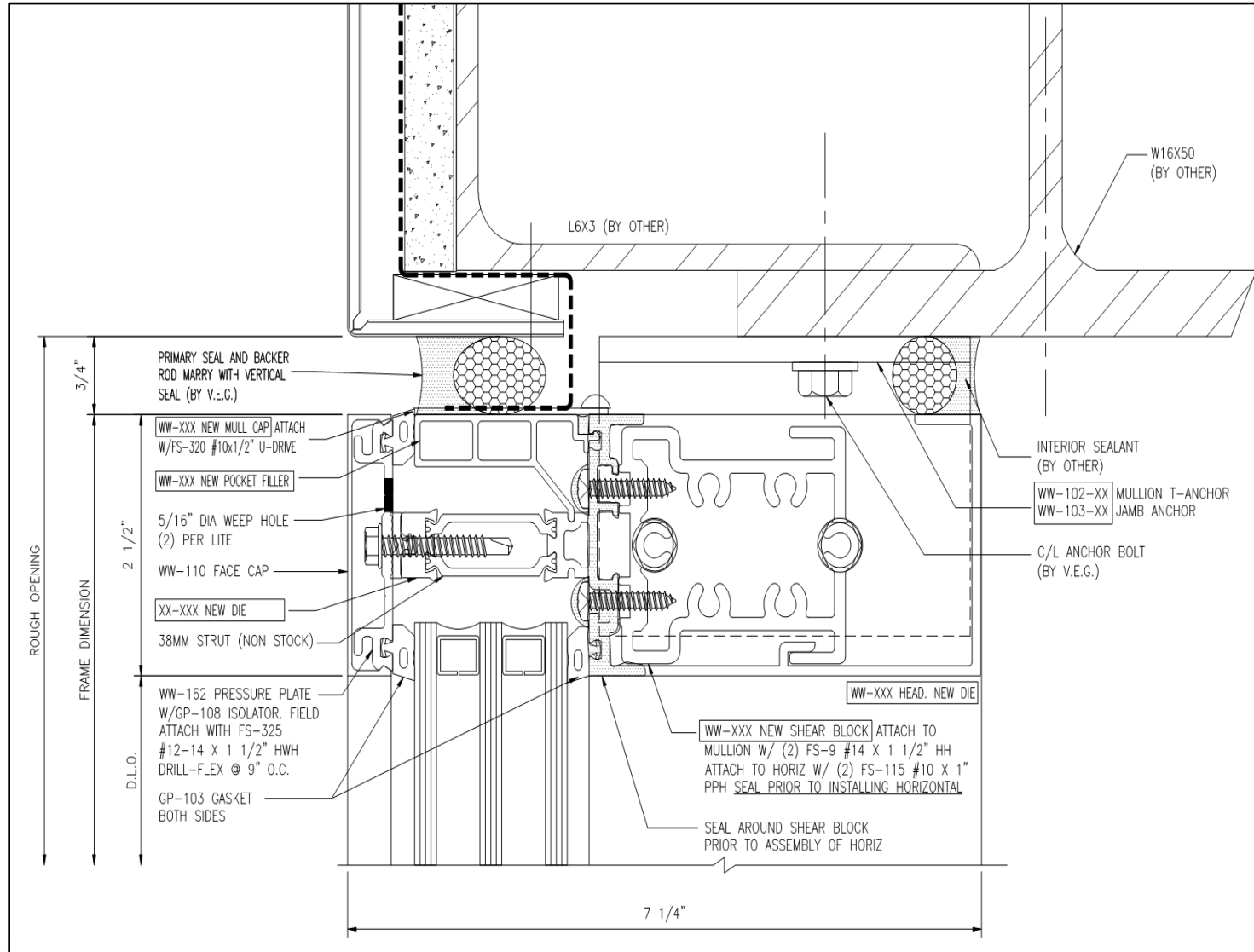
Curtainwall/Fenestration



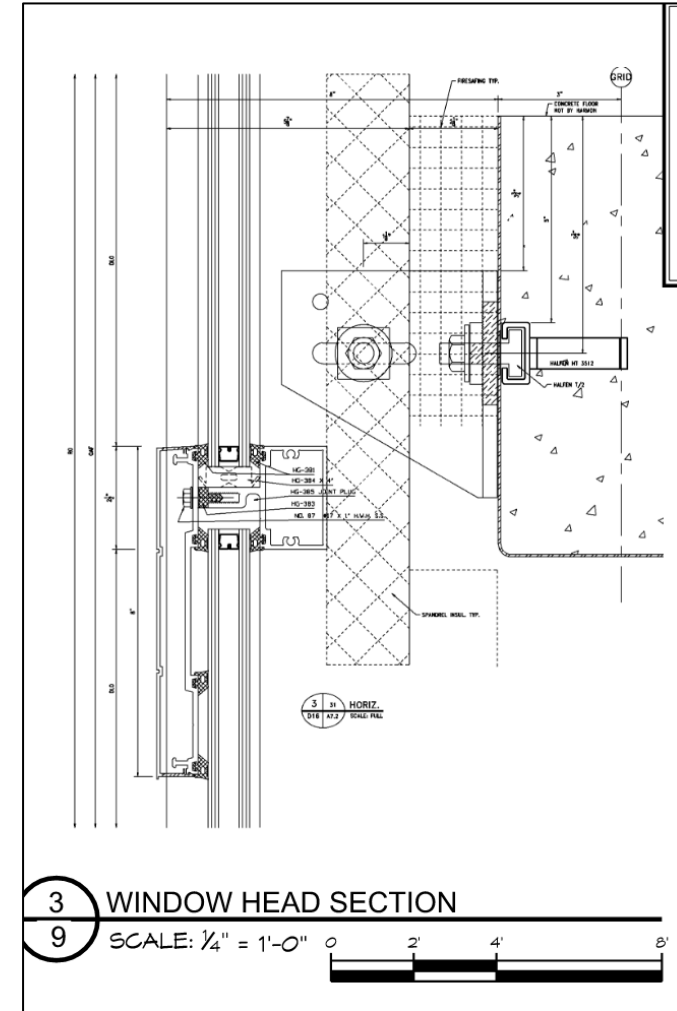
Glazing to WRB Disconnect



Connection Between Fenestration and WRB



Unsealed Spandrel Areas



Unsealed Spandrel Areas



Unsealed Spandrel Areas



Metal Panel

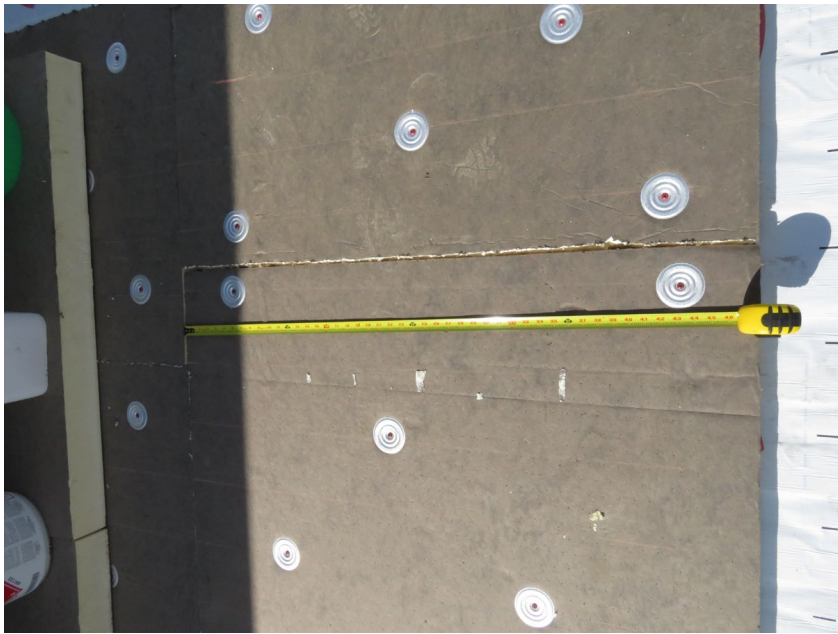


Metal Panel



Roofing

- Uplift resistance must be specified by DOR
- Warranty requirements

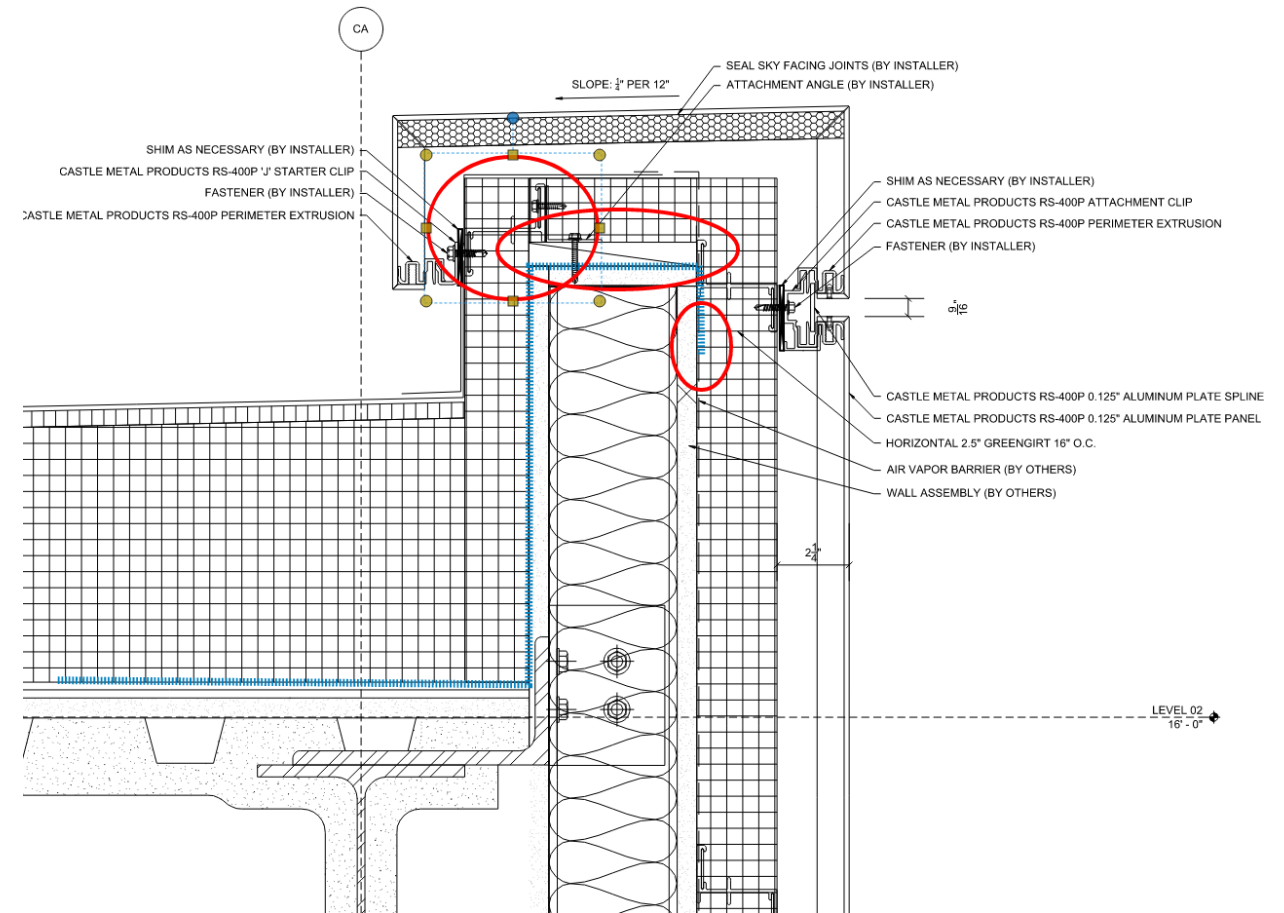
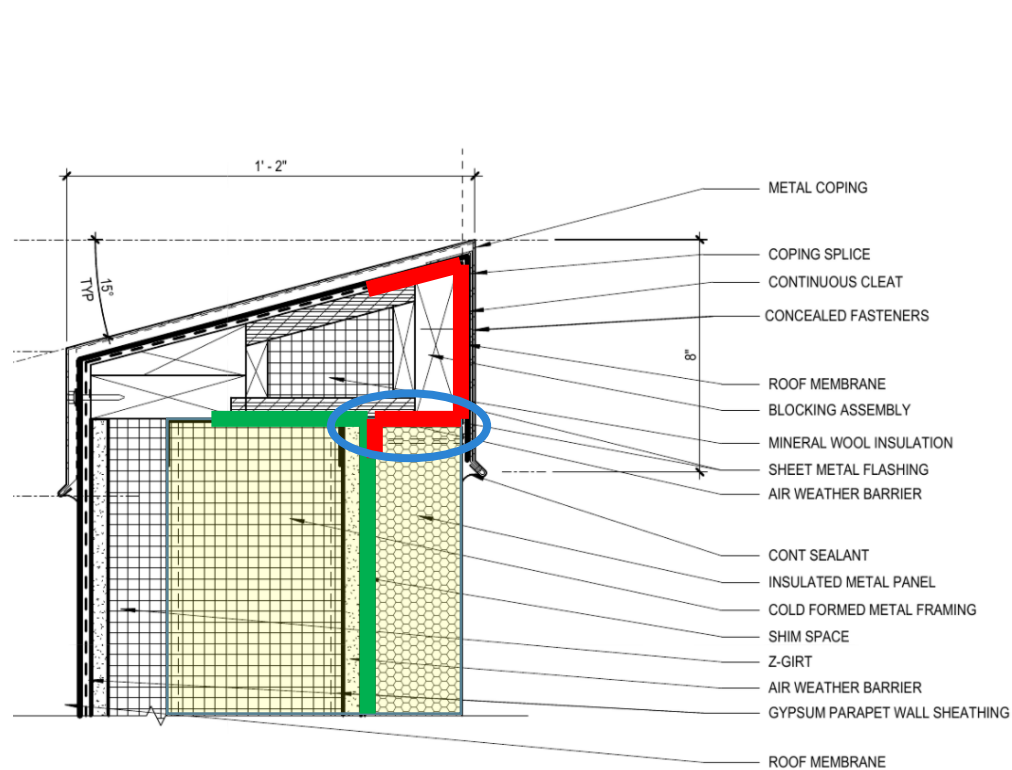


Roofing – Not Delegated

- Roof-to-Wall Interface
- Expansion Joints
- Glazing Curb Interface
- Coping
- Blocking



Roofing – Not Delegated



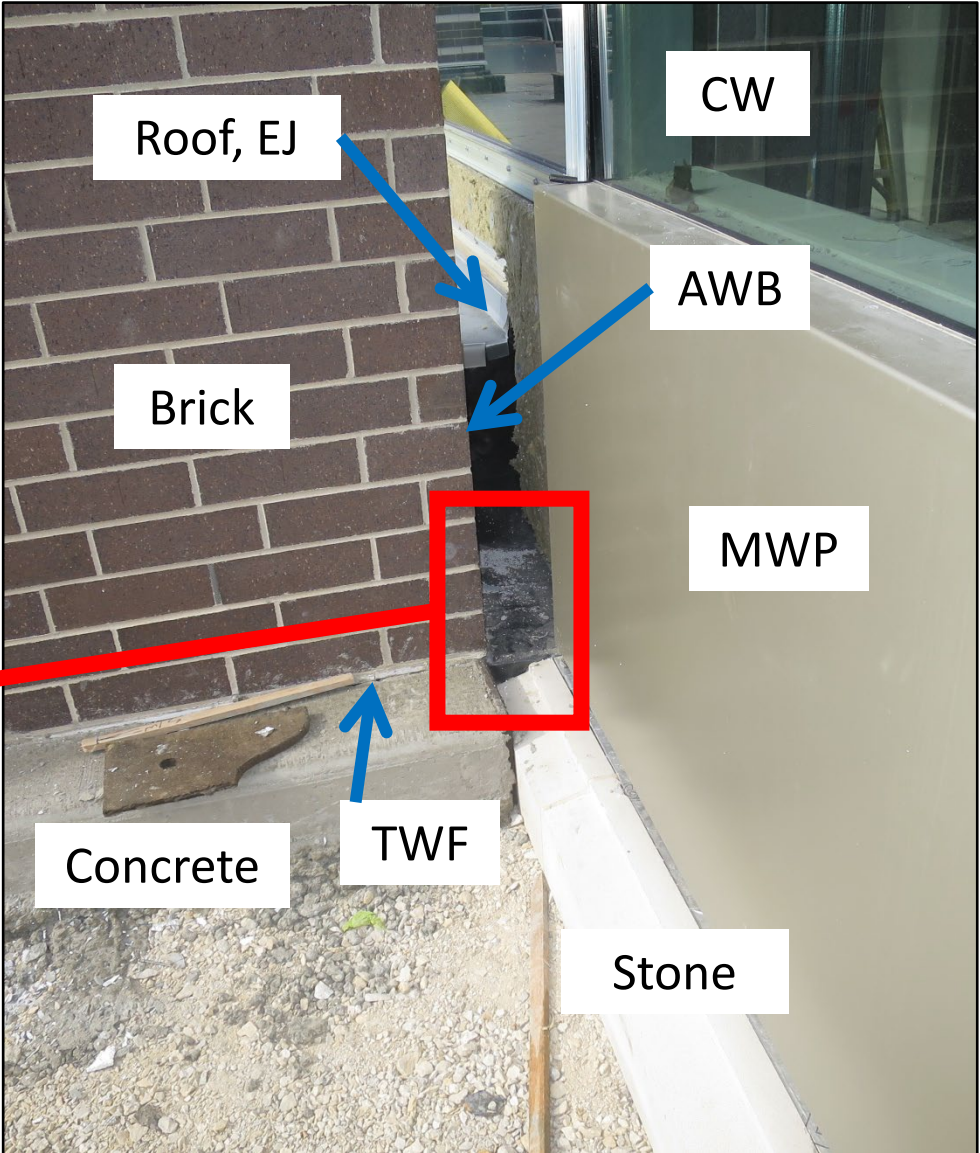
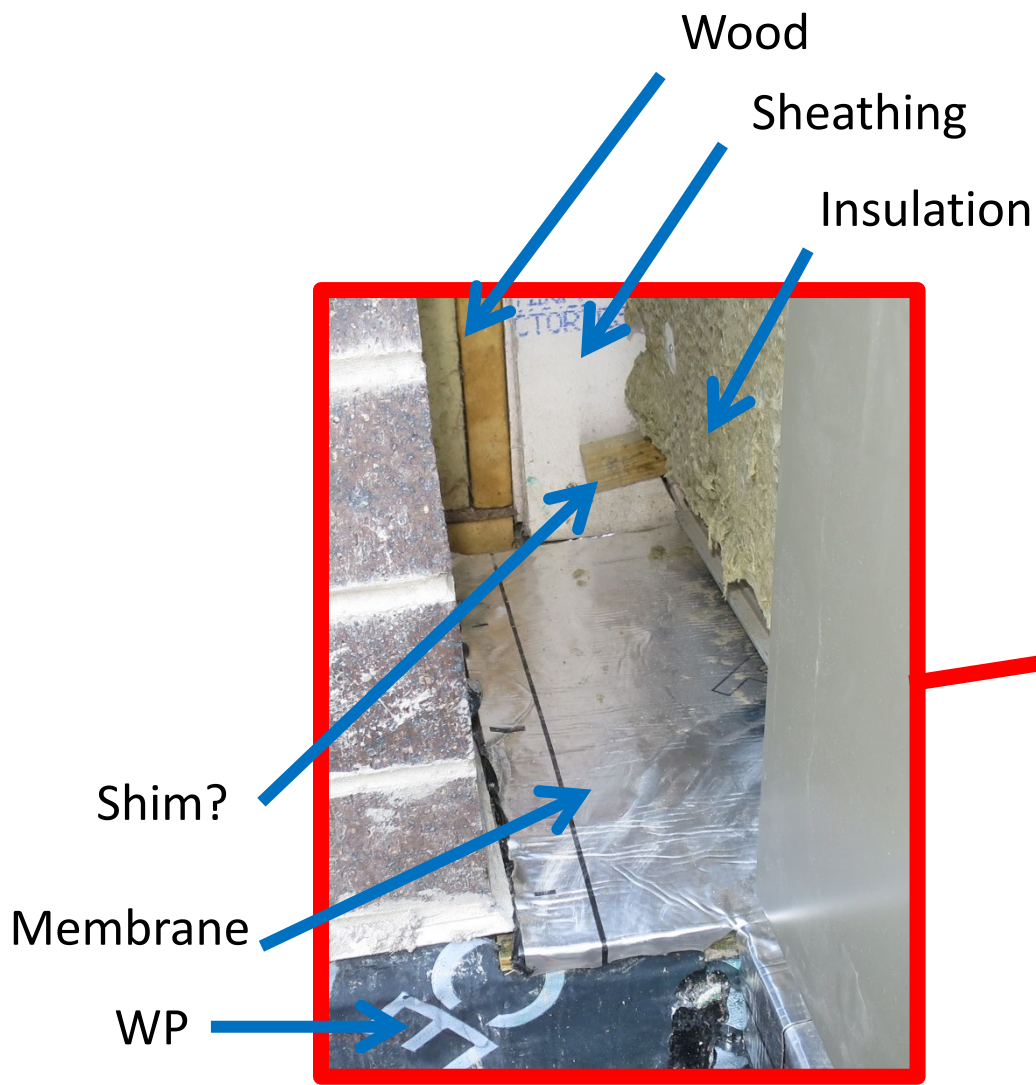
Expansion Joints



Expansion Joints

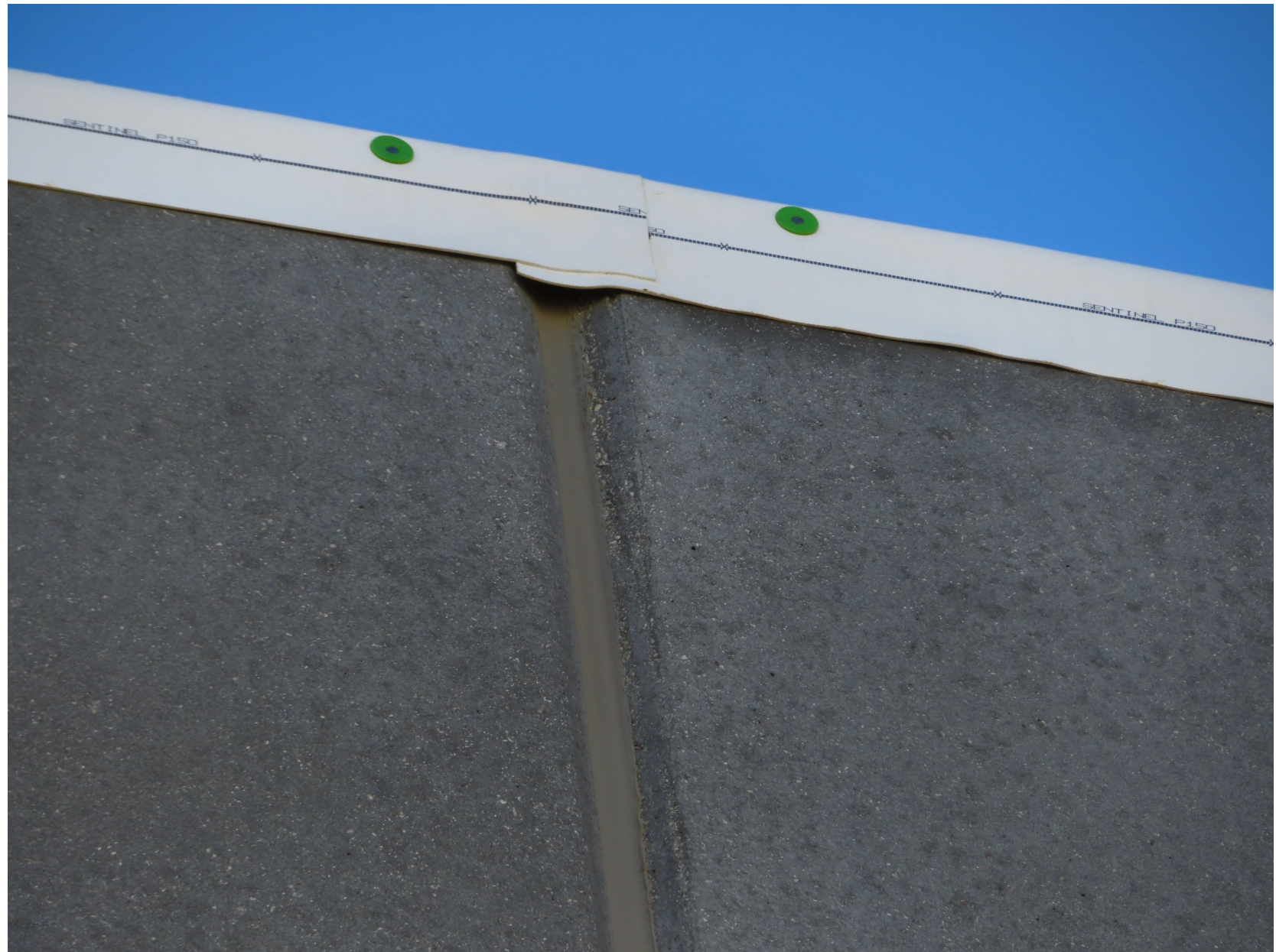


Expansion Joints



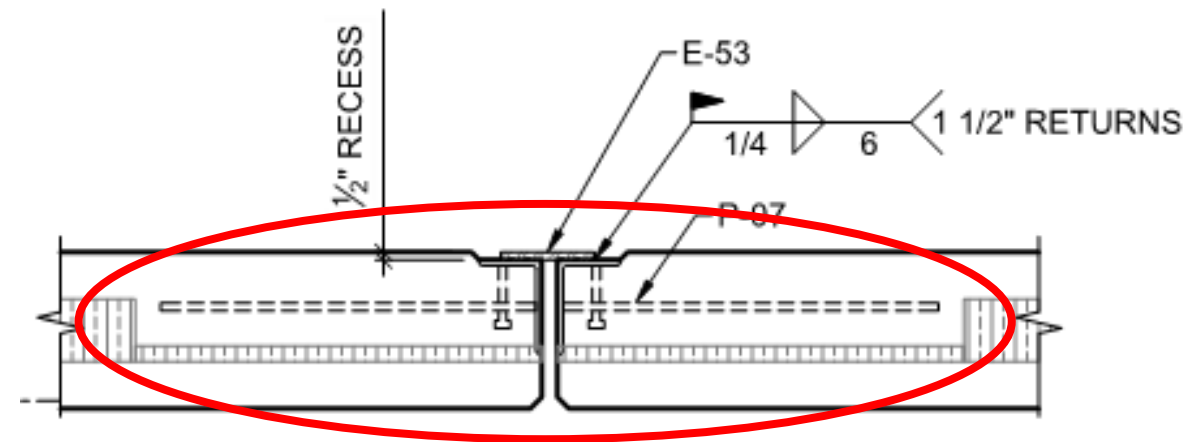
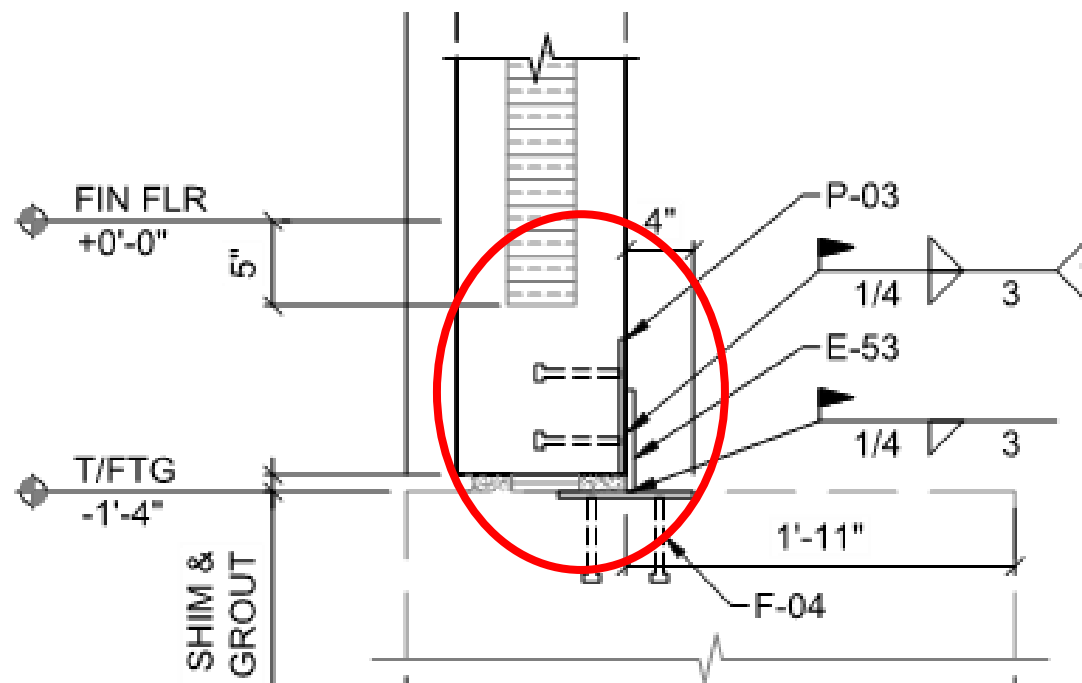
Precast

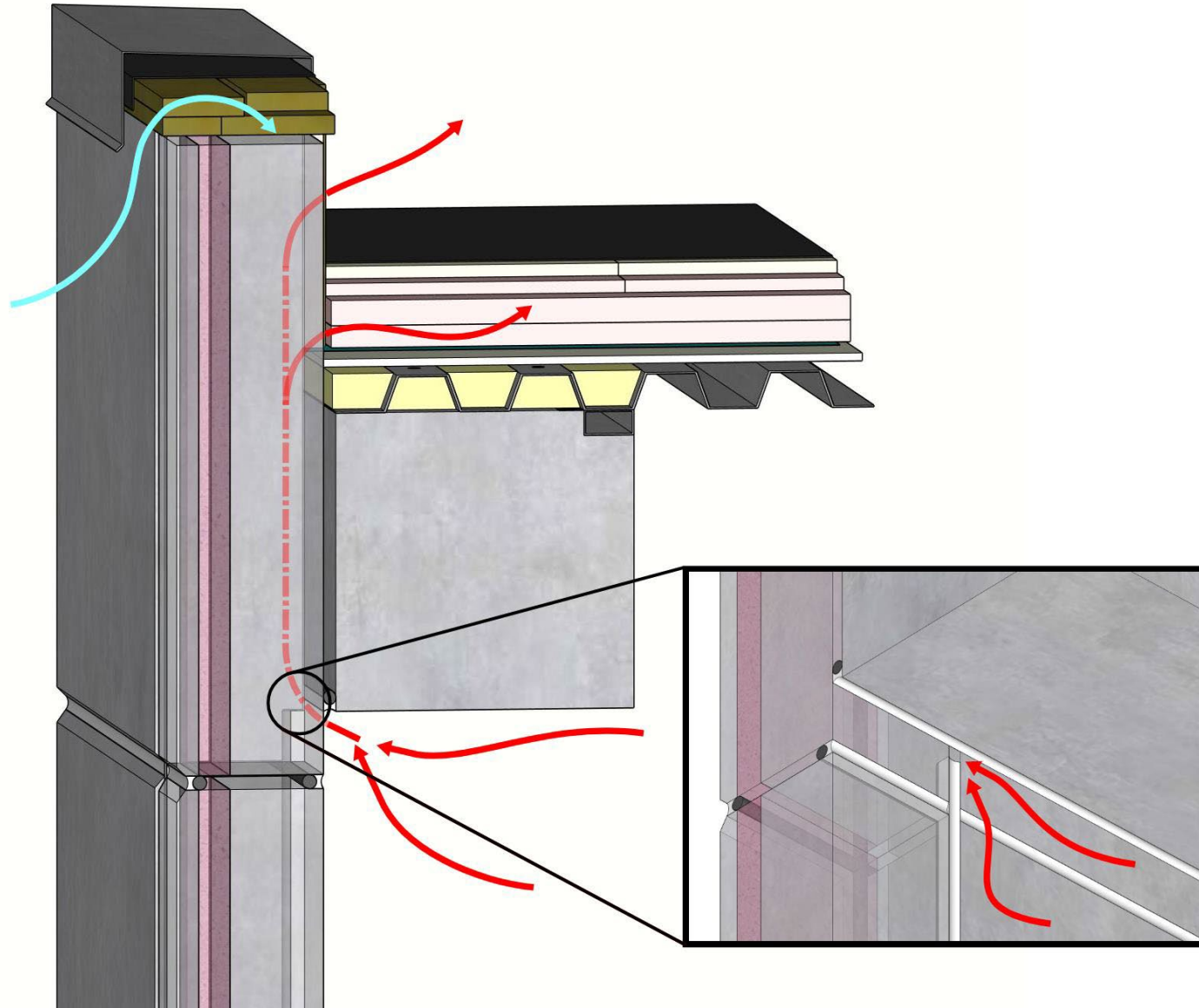
- Structural
- Fire-Resistance
- Deflection
- Condensation Resistance
- Cyclical deflection
- Interior air control



PRECAST ARCHITECTURAL CONCRETE

- F. Dew Point Calculations for Insulated Sandwich Wall System: Provide calculations complying with the ASHRAE Handbook of Fundamentals – Theory of Water Vapor Migration and confirming the requirements for effective moisture condensation prevention. **The construction of the wall panel and the building envelope must include adequate design to prevent the formation of frost or ice on any panel surface.**





Exterior Wall Prefabrication

- Back-up Panels: Framing, Sheathing, and (possibly) AWB
- Mega Panels: Framing, Sheathing, AWB, Insulation, Cladding, and (possibly) windows

Prefabrication is the practice of assembling components of a structure in a factory or other controlled manufacturing site and then transporting these completed assemblies or sub-assemblies to the construction site, where they can be erected or installed directly onto the structure.

Back-Up Panels

- Framing and sheathing
- Framing, sheathing, and AWB







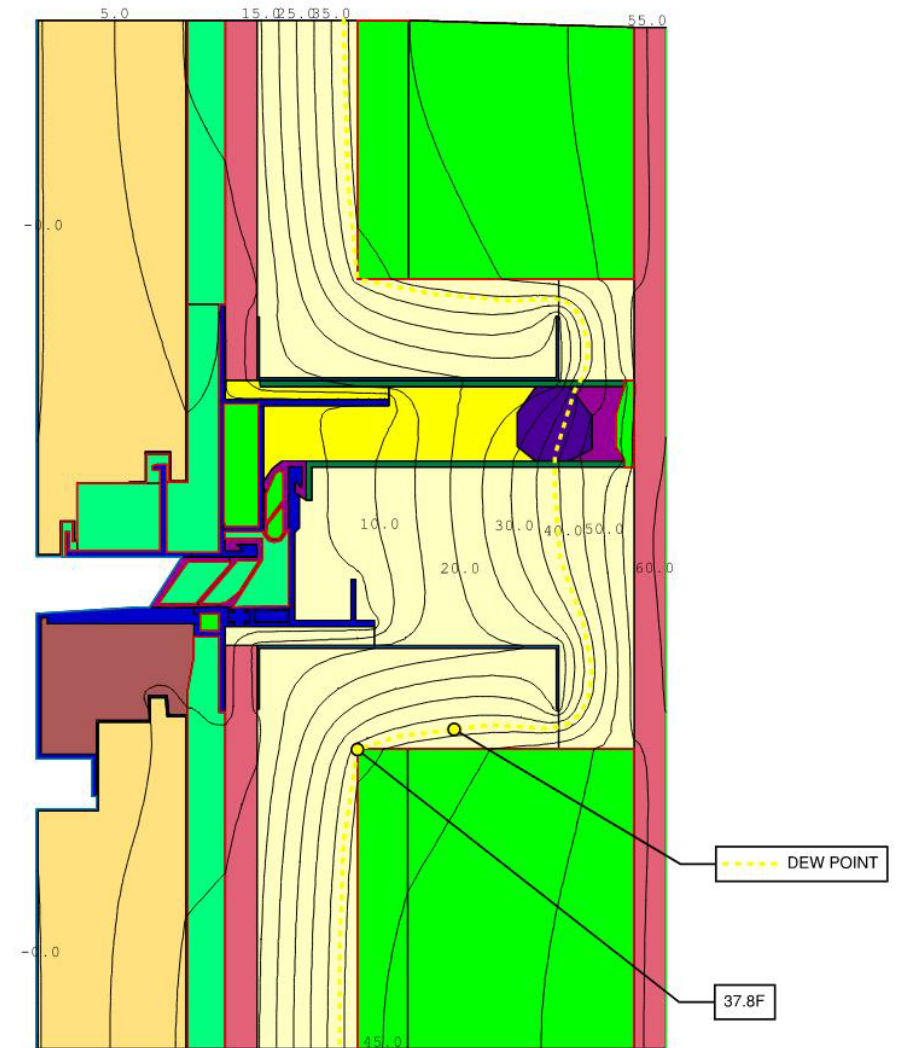
Mega Panels

- Framing, sheathing, AWB, insulation, and cladding
- Windows can also be preinstalled

Mega Panel - Joints

Considerations:

- Thermal
- Air
- Water
- Movement
- Construction Loads



Closing Thoughts

Delegated Design

Benefits

- Potential accelerated project schedule
- Specialty designs are prepared by entities with unique knowledge of materials, systems, and construction
- Contractor and specialty design professional familiarity with solution
- Potential for reduced design and construction costs

Outcome

- More project control ceded to the Contractor
- Greater need for early project coordination

Delegated Design

Pitfalls

- Owner expectations (Doesn't the DOR design the building?)
- Lack of clear, correct, concise, complete, and coordinated Contract Documents due to different designers and timing issues
- Contractual responsibility can be murky
- Competing performance and prescriptive requirements
- Blurred responsibility for interfaces between:
 - Multiple delegated design systems
 - Delegated design systems and DOR-designed systems
- "Undetailed" details addressed on the fly during construction
- Increased liability for contractor

CLOSING THOUGHTS

- Verify local code requirements.
- Assign responsibility for delegated design coordination.
- Be up-front with the owner regarding which elements will have delegated designs.
- Establish clear scope and performance requirements in contract documents.
- Require delegated design elements to be designed by a qualified licensed professional.
- Require stamped submittals – DOR must review them.
- Delegated design has many benefits for complex building enclosure projects. The potential pitfalls can be limited when all parties understand contract requirements.



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