PCI Architectural Certification Program

Supplemental Requirements

New Certification
Category Descriptions

December 2019

Revised June 2020

Precast/Prestressed Concrete Institute

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PCI® Precast/Prestressed Concrete Institute

Introduction to the New PCI Architectural Certification Program Requirements

The PCI Architectural Certification Program is the first of its kind, backed by the reputation and expertise of the Precast/Prestressed Concrete Institute (PCI). Now, after more than 50 years, with feedback from both producers and design professionals, PCI has enhanced its certification program to better serve the design and construction communities. These new and improved certification criteria differentiate PCI producers in the marketplace and more accurately categorize their products in better alignment with the markets they serve.

These changes will affect how architects and engineers specify and use the program. The PCI Architectural Certification Program will now include four new categories of certification, AA, AB, AC, and AD, and will also include the architectural trim category (AT) requirements, which remain unchanged. This five-category platform enables architects and other industry specifiers to define a category of certification that aligns with their project requirements. It is important to note that all categories of certification result in high-quality precast concrete, but that the differences between categories address the differences in project requirements. Specifiers will select the appropriate A category (AA-AT) based on project finish requirements such as tolerance, finish-type, and level of architectural complexity (for example, form and texture). This change has been driven by extensive input from the architectural community and is consistent with the other multitier categories of PCI certification.

These new specification categories provide value to various construction industry stakeholders by enabling PCI-certified producers to provide the most appropriate products to best meet the specific demands of each project, thereby reducing project risk, while better assuring desired quality, cost-effectiveness, schedule adherence, and improved long-term performance.

All PCI-certified architectural producers are required to choose their new certification category by April 1, 2020.

This document is intended to provide the background and guidance necessary for each PCI-certified architectural producer to understand the full scope of changes to the PCI Architectural Certification Program and identify the certification category for which they wish to apply. Enclosed are detailed descriptions of the requirements of each initial certification category for architectural precast concrete panels. Also enclosed are drawings and descriptions of the features to be incorporated into mock-up panels that must be produced to demonstrate the capabilities needed to meet the criteria for the selected certification category. All PCI-certified architectural producers must complete the enclosed application form and return it to PCI no later than **April 1, 2020.**

Current A1, BA, CA, and existing AT categories will be discontinued as of June 30, 2021.

Previously, Group A consisted of two categories—A1 and AT. Beginning **July 1, 2020**, all plants with "**Group A** — Architectural Products" certification will be required to begin transitioning to certification under the new audit criteria, within one of five categories, to maintain PCI architectural certification. There will be no default categories or grandfathering. Every currently PCI-certified architectural producer must recertify under this new program. PCI Plant Certification contracts issued effective **July 1, 2021**, will be based on the new program categories and requirements.

Timing of Program Rollout

Certifications issued effective July 1, 2020, will include the current certification categories. Plant audits under the new program will begin **July 1, 2020**. Plants will have until June 30, 2021, to meet the requirements of the new certification categories. Plants that do not meet the requirements for one of the new architectural certification categories will not have Group A certification effective July 1, 2021.

The initial new program audit will need to be scheduled in advance, as all categories require two mock-up panels to be produced before the scheduled plant audit, with one remaining panel produced and finished during the audit. In some cases, an additional audit day may need to be requested to ensure the panel produced during the audit is properly cured and finished for review by the plant auditor.

Summary of Architectural Certification Categories

The specific requirements of each of the five certification categories under the new program are outlined in the following sections. A producer certified in a category that includes more complex products shall be deemed certified in categories that include less complex products, as represented by the ascending second letter in the category designation; that is, an AB-certified producer is certified for AB, AC, AD, and AT, but not AA.

TABLE OF CONTENTS

Revision Log

Revision Number	Date	Description
0	December 2019	Initial issue
1	April 2020	Page vii – Revision Log added Page 2-13 – Dimensions of “frame” revised in Section A and Section B of Drawing AA Type 3 Page 3-7 – Texture callout revised in lower section of Front View of Drawing AB Type 1 Page 3-10 – Dimension between brick edge and reveal added in Detail 1 of Drawing AB Type 2 Chapter 8 – Drawing AA Type 3, Drawing AB Type 1, and Drawing AB Type 2 revised, as noted above.
2	June 2020	Page 2-7 – Clarified chord dimension in Section A Page 2-13 – Changed draft in Section B Page 2-20 – Revised two dimension labels in Figure 6 Page 3-10 – Corrected the panel height Page 8-2 – Clarified chord dimension in Section A Page 8-4 – Changed draft in Section B Page 8-6 – Corrected the panel height

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Chapter 1 – General Information on the New PCI Architectural Certification Program

1.1 General Description of the Contents of this Publication

This publication is designed to provide PCI-certified architectural concrete producers with the information necessary to understand the changes to the PCI Architectural Certification Program as well as the steps that need to be followed to apply for and obtain architectural certification under the new requirements. All producers currently certified in the A1, BA, CA, or AT categories must apply for initial certification under the requirements of this new program by **April 1, 2020**.

This chapter provides an overview of the scope of the new program. It includes a table that compares the details for each of the five certification categories. The mandatory process for initial certification is described, including important dates, and a critical path timeline that identifies the important steps that will need to be followed to enable timely certification. Any delays in submitting the initial application or completing preaudit requirements could result in failure of the producer to obtain their desired architectural certification designation by July 1, 2021, which will be the end of the current A1, BA, and CA certification categories.

There are separate chapters (2 through 6) that describe the unique requirements of each certification category included within the new program. Chapter 7 contains the form that will be used to apply for initial certification, as well as other documents that support the initial certification process and subsequent recertification under the program. Chapter 8 includes 11 × 17 in. format drawings for the construction of the mock-up panels for all five categories.

1.2 New Architectural Certification Category Requirements

Table 1 presents the full scope of the program described within this document. Requirements for the program are listed in the first two columns, with the five certification categories listed as headings across the top of the next five columns. Solid boxes within each column indicate the requirements that apply to that certification category. The last column provides notes for further clarification where necessary.

Table 1. PCI architectural certification category requirements

Requirements		Certification Category*					Notes
		AA	AB	AC	AD	AT	
Color and Finish	More than one colored mixture (admixture) and texture per panel (capability for white cement) (must include different texturing method)	■	■				
	One colored mixture (admixture) and texture per panel (gray cement allowed)			■	■	■	
Embedded Material and Veneer	Brick, tile, stone, terra cotta	■	■				
	Thin brick			■	■		
Panel Geometry	Flat panels	■	■	■	■	■	
	Flat panels with sequential returns	■	■				Two-part returns
	Flat panels with single pour returns			■		■	
	3-D form surface (buildups, liners, projections on face)	■	■				
	3-D form surface (reveals and liners only)			■	■	■	
	3-D panels and radius (concave, convex)	■	■			■	
Technology	3-D/BIM precast concrete submittals	■	■				Must demonstrate LOD 350 element modeling minimum
Production Capability	Cement types in face mixture: capability for both white and gray	■	■			■	
	Cement types in face mixture: gray allowed in face mixture if project spec allows			■			
	Cement types in face mixture: gray allowed in face mixture				■		
	Batching operation: face mixture: plant-batched and mixed, no truck mixing	■	■				
	Batching operation: face mixture: plant-batched and mixed, no truck mixing; ready-mix allowed in backup mixture			■			
	Batching operation: face or backup mixture: ready-mix allowed				■		
	Covered protection: all product must be produced under mobile, temporary cover, or better	■	■				
Key Feature Evaluation during Plant Audit Cycle	Required number of key features must be demonstrated over a two-year period for recertification	■	■	■	■	■	
Production Tolerances	MNL 135 AA (modified MNL 117)	■					
	MNL 135 (current MNL 117)		■	■		■	
	MNL 135 (current MNL 116)				■		
Plant Audit Frequency	Two audits per year	■	■	■	■	■	

Requirements		Certification Category*					Notes
		AA	AB	AC	AD	AT	
Minimum Quality Personnel Level	For precast concrete product plants: (1) PCI Level 1 and (1) PCI Concrete Mix Design Training Program certificate holder, or (1) PCI Level 3 For prestressed concrete product plants: (1) PCI Level 2 and (1) PCI Concrete Mix Design Training Program certificate holder, or (1) PCI Level 3	■	■				
	(1) Level 1 (for precast concrete products) (1) Level 2 (for prestressed concrete products)			■	■	■	
Post-Occupancy Evaluation	Surveys for AA and AB projects; site evaluations for AA projects	■					
	Survey of AB projects (site evaluation only required if failed surveys)		■				
	No surveys or site evaluations required			■	■	■	Customer feedback to be obtained per Quality System Manual requirements
Erection Tolerances	MNL 135 AA (modified MNL 117)	■					
	MNL 135 (current MNL 117)		■			■	
	MNL 135 (current MNL 117 with modification for maximum jog)			■			
	MNL 135 (current MNL 116)				■		
PCI-Certified Erector	Required as of 07/01/2021	■	■	■			

Note: 3-D = three-dimensional; BIM = building information modeling.

* Solid boxes within each column indicate the requirements that apply to that certification category.

1.3 Certification Process

1.3.1 Initial Certification

Each Category A1, BA, CA, or AT PCI-certified producer is required to apply for certification in this program by completing the application form provided in chapter 7, indicating the requested certification category, and identifying the earliest and latest dates between which the plant would be ready for a two-day initial audit after July 1, 2020.

The certification process requires a total of three mock-up panels to be produced to demonstrate the proficiencies needed for the desired category. Two of the panels can be produced before the initial audit. The third mock-up panel must be produced during the initial audit. Producers are also requested to indicate on the form if an additional day will be necessary to complete production of the third mock-up during the initial audit. Full production of the third panel must be reviewed during the initial audit, from initial casting through curing, form stripping, and post-pour inspection.

The molds used to fabricate the mock-up panels are intended to demonstrate an individual plant's current capability to produce panels consistent with the complexity required for that category. Therefore, each plant must fabricate its own mock-up panel molds. This is not intended to prohibit the subcontracting of mold fabrication or the fabrication of molds at a single location for shipment to separate plants, if that is the normal practice of the plant. Mock-up panel molds cannot be shared between plants. Similarly, mock-up panel molds cannot be fabricated for use during initial certification and then stored and reused during a subsequent recertification.

These initial audits will be coordinated with the plant to ensure the plant has sufficient time to prepare the required mock-up panels. The initial audit dates selected by the auditing organization will consider:

- the dates requested by the producer,
- the requirements of PCI Policy 20, PCI Plant Certification Program (audits are to be four to eight months from the previous audit),
- the ability to group plants in a geographic area, for efficiency of travel,
- the order in which the producer's complete application was received, and
- whether the producer's complete application was received by the April 1, 2020, deadline.

Producers who submit their application after the April 1, 2020, deadline may not be able to schedule the necessary initial audit early enough to become certified under the new program before the end of the current PCI Architectural Certification Program on June 30, 2021. This could result in a gap in certification in the architectural group. Any producer who fails to submit an application will lose PCI architectural certification when the current A1, BA, and CA certification categories are discontinued at the end of June 2021.

Table 2. Required steps and timing for initial certification

Date/Timing	Step	Notes
Mid-January 2020	Publication outlining the details of the new PCI Architectural Certification Program made available to all PCI producers currently certified in Categories A1, BA, CA, and AT	Application period begins.
February 2020	Webinar on the new program requirements held for interested PCI producers currently certified in Categories A1, BA, CA, and AT	Exact date to be determined
March 5, 2020	Presentation on the new program requirements at the 2020 PCI Convention	
April 1, 2020	Final day for submission of required application to PCI indicating: • choice of new certification category • earliest audit date producer can have two of three required mock-up panels ready for audit and be ready for audit • latest audit date preferred • whether a producer needs a third audit day to complete the required final mock-up panel	Dates will be set to promote audit schedule efficiency, in accordance with Policy 20, and in the order in which applications are received.
Mid-May 2020	PCI notifies all applicants of earliest and latest date of audit.	Plants will be provided with a two-week time window for their audit.

Date/Timing	Step	Notes
45 days before confirmed earliest audit date	Applicant submits mixture proportions and plant produced drawings for all three mock-up panels in requested category.	Needed for auditors to confirm audit date and conformance with mock-up requirements.
30 days before confirmed earliest audit date	Confirmation that mixture proportions and plant-produced drawings meet mock-up panel requirements for requested category.	
Before confirmed earliest audit date	Applicant builds formwork for all three required mock-ups and produces two of three required mock-up panels for desired certification category.	
Earliest audit date – latest audit date	Plant audit and mock-up review occur.	
Within 45 days post audit	Plant audit report issued by PCI.	
Within 30 days after receiving audit report	Plant submits corrective action response (CAR), if needed.	
Following CAR review; timing will vary	Architectural Certification Review Board (ACRB) review of results and issuance of certification recommendation.	
July 1, 2021	New certification issued by PCI.	Certificates to new categories will be issued concurrently to all producers with the 2021-2022 renewals.

1.3.2 Recertification

Proficiency in a certification category must be verified every two years. While initial certification in a category must include production of the three mock-up panels in accordance with the mock-up drawings and instructions for that category, thereafter, capability to produce these category products can be demonstrated by a producer using examples of plant production panels that contain the key features listed for the relevant category. (For more information on the types and quantities of features that must be included in the audited production panels, see the “recertification review features” provided in the tables in each category’s chapter.)

A requisite number of key features must be demonstrated over the course of a two-year period to maintain certification in the category (see the “recertification review key features” provided in the tables for each of the respective certification categories in chapters 2 to 6). If the key feature requirement cannot be met due to lack of specific products, timing of product production and shipping, or other reasons, the producer must construct the necessary mock-up panel(s) to demonstrate the key features.

During the opening meeting for each unannounced, semiannual audit, there should be a discussion regarding Group A products that have been produced by the producer since the previous audit. This will allow the PCI plant auditor an opportunity to review and record any key features for that category. Drawings of the production panels (or mock-ups) must be provided to the auditor to confirm they include the key features required for continued certification in the category.

If the plant demonstrates compliance with the requirements for key features, recertification in that category can occur earlier than the two years.

1.3.3 Fee Schedule

All PCI-certified plants are assessed annual certification fees as prescribed by PCI's Board of Directors, calculated through the annual sales declaration process. These fees cover the semiannual audits and administration of the certification program.

In addition to the standard PCI certification fees, there is an annual surcharge applicable to plants certified in Categories AA and AB. This surcharge is intended to cover the additional cost incurred by PCI for the annual site evaluations of completed projects required as part of the Category AA certification, and the administration of the architect and general contractor/construction manager (GC/CM) project surveys that are required as part of Category AA and AB certification. This surcharge will be assessed to Category AA- and AB-certified plants beginning with the 2021-2022 fiscal/certification year, which begins July 1, 2021. Although the exact surcharge has not been finalized, it will be in the range of $8000 to $10,000 for each Category AA plant and $4000 to $5000 for each Category AB plant. There are no annual surcharges applicable to plants certified in the AC, AD, or AT categories beyond the standard PCI certification fees.

The PCI certification program includes other standard fees that are charged when applicable. These include fees for special, unscheduled audits due to requested changes of category, special audits due to failed audits, requests to extend audits when a full production cycle is not able to be reviewed, or other such situations.

Other fees (when applicable)

Special audit (two-day). $6000

Special audit (one-day) $4000

Extra day added to in-schedule audit $1800

Supplemental site evaluation due to failed initial evaluation or project surveys . . . $5000
(Categories AA and AB only)

(This fee schedule is applicable through the 2020-2021 fiscal year and will be reviewed annually thereafter.)

1.4 Architectural Certification Review Board

An Architectural Certification Review Board (ACRB) has been established to support the program. Figure 1 gives an overview of the architectural certification process and the role of the ACRB in the process.

PCI staff will assemble all required documents for initial certification (application, plant audit results, and the results of the mock-up panels review). If these documents indicate compliance with the program requirements for initial certification in the requested category, PCI staff will confirm all other certification requirements have been met, make a certification decision, and notify the producer accordingly. If there are questions about compliance or the documents indicate that compliance has not been achieved for the requested category, PCI staff will provide the information to the ACRB for their review. The ACRB will review all certification recommendations for recertification.

During the initial certification process, the ACRB is responsible for reviewing the plant's initial certification application and the results of the initial audit, including the review of the mock-up panels. During recertifications, the ACRB will review the results of the plant audits, including the summary of demonstrated key features, the results of site evaluations (if applicable), the results of architect and GC/CM surveys (if applicable), and any other relevant information. For both initial certification and recertification, the ACRB will make a certification recommendation to PCI staff, who will make the final certification decision, in accordance with PCI Policy 20 requirements.

The ACRB includes one individual from each of the following categories:

- architect with knowledge and experience with architectural precast concrete building projects
- qualified architectural producer representative from the Plant Certification Committee or the Architectural Certification Committee, as appointed by the chair of the Plant Certification Committee
- site evaluator
- auditing organization representative
- PCI Director, Architectural Precast Systems (review board administrator)

Review board members are to be recused from discussions where a conflict of interest exists.

The ACRB will meet via web-conference or face-to-face on an approximately monthly basis. Actions the review board can take regarding a plant's certification include:

- recommendation for certification in the requested category;
- recommendation for a plant reaudit, project reevaluation or both:
  - a site evaluation may be required if the architect/GC/CM surveys are failed (Categories AA and AB only);
  - an additional site evaluation may be required if the initial site evaluation is failed (Category AA only);
- recommendation for plant certification in an alternative category.

1.5 Appeals Process

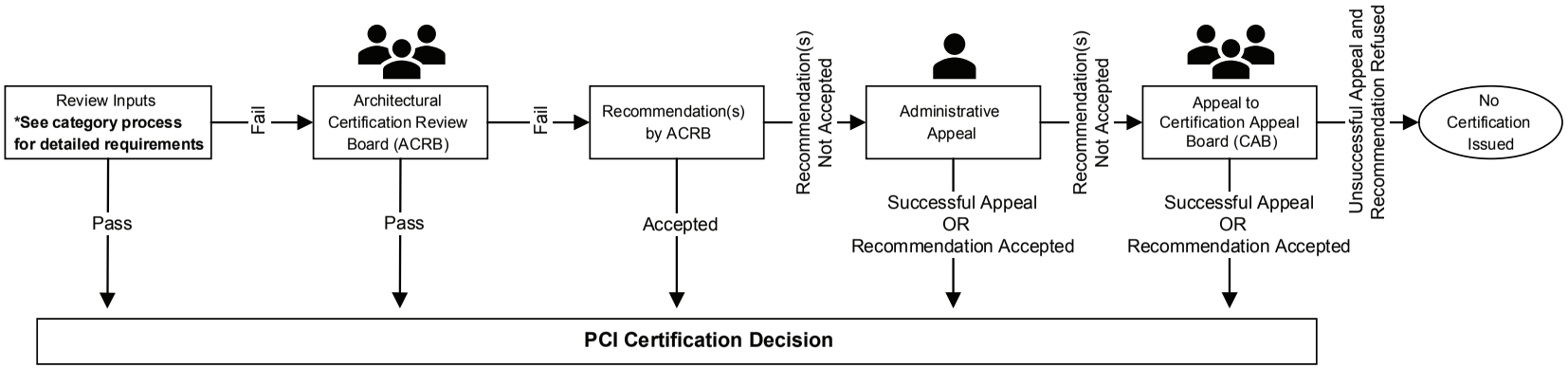
If the producer objects to the certification recommendation of the ACRB, the producer can request an administrative appeal, to be conducted per section 20.11.2 of PCI Policy 20. The appeal is initiated by submitting a written request with substantiating information to the PCI Director of Quality Programs within 30 calendar days of receipt of the audit report. The PCI Director of Quality Programs will forward the appeal to the auditing organization for their written response and seek advice from the PCI Technical Director or PCI Architectural Director. The PCI Director of Quality Programs will issue a written report of findings within 15 working days of receipt of the appeal.

If the producer does not agree with the findings in the response from PCI, the producer

may request a hearing by the Certification Appeal Board, in accordance with the requirements of section 20.11.3 of PCI Policy 20, summarized as follows:

- The request shall be made in writing within 15 working days of receipt of the written report of findings of the administrative appeal.
- The Certification Appeal Board shall consist of three members:
  - o chair of the Plant Certification Committee, who shall also chair the appeal hearing
  - o either the PCI Director of Quality Programs, Technical Director, or Architectural Director as appointed by the PCI President
  - o producer-member representative of the Plant Certification Committee to be chosen by the Plant Certification Committee Chair and approved by the appellant, having background in the question under consideration, and in the employ of a PCI-certified plant located outside the normal market area of the appellant
- The Certification Appeal Board shall hear the appeal within 30 calendar days of receipt of the plant's request for a hearing and the hearing shall be conducted at PCI headquarters, whenever possible.
- The results of the Certification Appeal Board hearing shall be forwarded to the appellant within 15 calendar days of the conclusion of the hearing.
- The findings of the Certification Appeal Board shall be final.
- PCI and the appellant shall equally share the costs for travel and lodging for Certification Appeal Board members.

Architectural Plant Certification Process Overview



Process Description

- This architectural plant certification process overview (read left to right) starts with a document review of applicable inputs (audit reports, etc.) by PCI staff. If all documentation is in order, a certification decision can be made by PCI. If the information presented does not appear to meet the requirements, it is forwarded to the ACRB. If the ACRB determines that all criteria have been met, the ACRB recommends certification in the requested category to PCI.
- If the ACRB confirms that the certification category requirements have not been met, the ACRB can provide recommendations (listed below) that, if accepted and implemented by the producer, lead to PCI staff review and a certification decision.
- If the applicant does not accept the ACRB recommendation, the applicant can submit an administrative appeal, per Policy 20, to the PCI Director of Quality programs. This appeal will be conducted per 20.11.2 of Policy 20. The PCI Director of Quality Programs will issue a written report of findings, which may recommend certification, reject certification or recommend additional acceptance requirements.
- If the producer does not accept the Administrative Appeal decision, the producer may appeal to the Certification Appeal Board, per Policy 20.11.3. The findings of the Certification Appeal Board shall be final.
- In all PCI Certification decisions, PCI staff shall confirm that all certification program requirements have been met before issuing certification.

ACRB Composition

The ACRB is administered by the PCI Architectural Director. It includes one individual from each of the following categories:

- Architect with knowledge and experience in precast concrete projects
- A qualified architectural producer representative from the Plant Certification Committee or Architectural Certification Committee, as appointed by the Chair of the Plant Certification Committee
- Site evaluator
- Plant audit agency representative

*Review board members are recused from discussions where a conflict of interest exists.

ACRB Possible Actions

- Recommendation for certification
- Recommendation of plant reaudit and/or site evaluation
  - Site evaluation may be required if architect/general contractor/construction manager surveys failed (AA/AB categories only)
- Recommend plant certification in an alternative category

Administrative Appeal

The administrative appeal will be conducted by the PCI Director of Quality Programs, in accordance with Policy 20, based upon input from the auditing organization and the PCI staff Technical Director and/or Architectural Director.

Certification Appeal Board

Should the administrative appeal recommendation(s) be rejected by the producer, it may advance its appeal to the Certification Appeal Board. This board will consist of the three members outlined below:

- Chairperson, Plant Certification Committee, who shall also chair the appeal hearing
- Either the PCI Director of Quality Programs, the Technical Director or the Architectural Director, as appointed by the PCI President
- Producer member representative of the Plant Certification Committee
  - Chosen by the Plant Certification Committee chairperson
  - Approved by the appellant
  - Must have background in the question under consideration
  - Employed by a PCI-certified plant located outside the normal market area of the appellant

Figure 1. Overview of the architectural certification process and role of the Architectural Certification Review Board.

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Chapter 2 – Category AA Requirements

2.1 General Description

This category covers the certification of plants producing architectural products with multiple concrete mixtures and textures, a variety of three-dimensional projections, radiused mold surfaces, or sequential returns. Some of the required production tolerances for this production category are more stringent than the previous requirements for PCI-certified architectural precast concrete production under PCI MNL 135, *Tolerances for Precast and Prestressed Concrete Construction,* and the quality requirements of PCI MNL 117, *Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products*.

To ensure production capability for the types of products covered within this category, plant requirements for different cement types, colored mixtures, covered production, and additional quality control (QC) proficiencies must be demonstrated.

Additional requirements for renewing certification within this category after June 30, 2021, include:

- Surveys of all projects completed since the last certification audit (applicable for all projects with more than 5000 ft^2 [465 m^2] of wall panel area)
  - o The designer and the GC/CM of record will be surveyed to identify their perceptions of producer performance and product quality on all projects completed by the plant since their last audit under this program. PCI will distribute the surveys. Producers are required to notify PCI of all completed projects.
- Site evaluation
  - o At least one completed project will be evaluated by an independent consultant experienced with architectural precast concrete for conformance with the acceptability of appearance criteria in section 2.10 of MNL 117.

Certification under Category AA will incur additional surcharges and fees to cover the added costs of the project surveys and project evaluations, or special or extra audits. See section 1.3.3 for more information.

Reference the general requirements, dates, and other information presented in chapter 1, which supplement the specific requirements of this chapter.

2.2 List of Capabilities Category AA-Certified Facilities Must Demonstrate

Category AA-certified facilities must meet the following requirements:

- capability of batching both white and gray cement
- all face mixtures to be plant-batched and mixed (premixed, no mixer-truck mixing)
- all production to be under mobile temporary cover or better, as required to ensure consistent panels

- building information modeling (BIM) capacity for LOD 350 element modeling (https://bimforum.org/wp-content/uploads/2019/04/LOD-Spec-2019-Part-I-and-Guide-2019-04-29.pdf)
- provide information to PCI to facilitate conducting project surveys on all completed projects with more than 5000 ft^2 (465 m^2) of wall panel area with Category AA and AB product
- post-occupancy site evaluation on one project from previous year
- production tolerances that meet or exceed current MNL 135 (MNL 117) requirements

2.3 Required QC Personnel (minimum qualifications)

For plants producing precast concrete product only:

- at least one individual who holds PCI Level 1 (or higher) personnel certification
- at least one individual who holds PCI Concrete Mix Design Training Program certificate or PCI Level 3 personnel certification

For plants producing prestressed concrete product:

- at least one individual who holds PCI Level 2 (or higher) personnel certification
- at least one individual who holds PCI Concrete Mix Design Training Program certificate or PCI Level 3 personnel certification

2.4 Erection/Installation Requirements

The use of a PCI-Certified Erector Category A is required on all Category AA, AB, and AC projects effective July 1, 2021.

Erection tolerances per MNL 135 are required for Category AA architectural products (some tolerances are tighter than previous PCI certification requirements; see attachment 2, section 2.11).

2.5 Project Designer and GC/CM Survey Requirements

The architect of record and the general contractor or construction manager for all completed projects with more than 5000 ft^2 (465 m^2) of wall panel area with Category AA and AB product are required to be surveyed to identify their perceptions of the performance of the Category AA-certified producer. Both will be asked a series of questions to identify:

- at what phase of the design process the producer became involved in the project,
- the producer's level of involvement during the pre-bid/design phase,
- the designer's assessment of the producer's performance after the contract for the project was awarded,
- the designer's assessment of the installation if the producer provided erection services,
- a final overall assessment as to the willingness of the architect to use the precaster again.

Chapter 7 provides copies of the architect project survey form and the GC/CM project survey form.

To facilitate these surveys, the Category AA-certified producer must notify PCI of all completed Category AA and AB projects. Auditors will verify compliance with this requirement during the semiannual plant audits.

2.6 Site Evaluation Process

Each year, at least one completed project must be evaluated by a PCI-assigned site evaluator experienced with architectural precast concrete. The evaluator will be assessing the quality and look of the installed product based on the acceptability of appearance criteria of MNL 117. The project will typically be selected based on the results of the surveys. The producer must submit, at a minimum, the following project documentation to the PCI Director of Quality Programs, within one month of request:

- name and contact information for appropriate personnel whom the evaluator should work with at the site
- project site plan with address
- floor plans
- building elevations
- one set of architectural panel production drawings

PCI will contact the site evaluator to arrange for the evaluation when all of the above materials have been provided.

See the "PCI Architectural Certification Site Evaluation" form in chapter 7 for the complete list of acceptability of appearance criteria to serve as the basis for the site evaluation.

2.7 Certification Process

Refer to section 1.3 for the general requirements to apply for initial certification and the procedures for recertification under the new PCI Architectural Certification Program. For initial certification, the information provided in the producer's application, the results of the plant's initial audit, and the results of the review of the mock-up panel construction will be reviewed to determine eligibility for certification in Category AA. For recertification, the Architectural Certification Review Board (ACRB) will consider the following when determining eligibility for a recommendation of continued certification in Category AA:

- whether the producer has notified PCI of all completed projects to facilitate project surveys and the results of those surveys
- the results of the annual site evaluation of a completed project
- the results of the plant audits
- compliance with the requirements for Category AA key features

Figure 2 illustrates the initial certification and recertification process flow chart for Category AA.

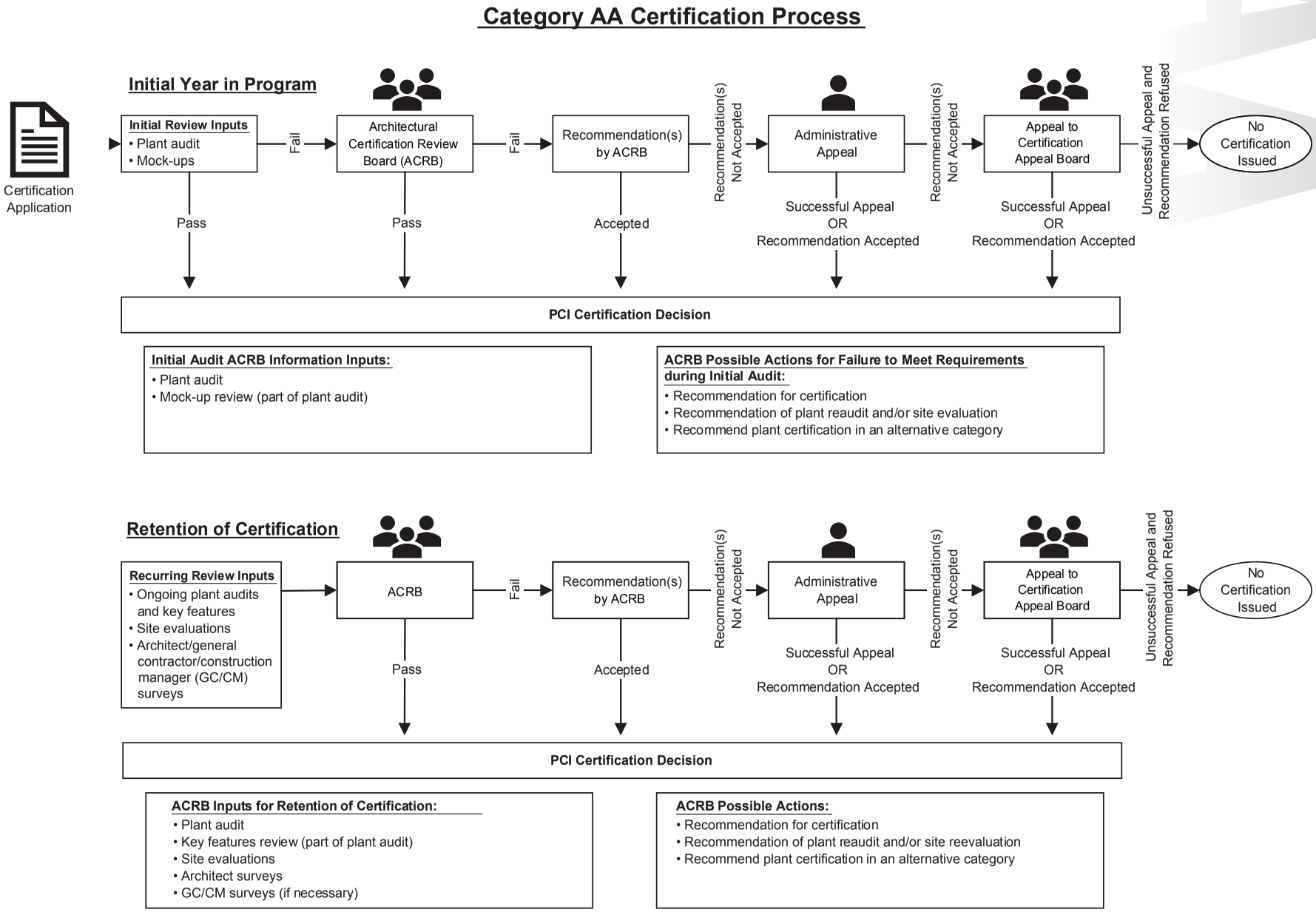

Figure 2. Initial certification and recertification process for Category AA.

2.8 Initial Certification

Forty-five days before the confirmed earliest initial audit date, the producer must create and submit to PCI for approval mock-up production drawings for the three panels required for initial certification. These drawings must document the key features, reinforcement, pickups, and embeds as would be done for typical production panels, based on the Category AA drawings in section 2.10. Concrete mixture proportions for each mock-up must also be submitted in advance of the audit. Production and QC staff, as well as the auditors, will refer to these drawings for fabrication, finishing, and inspection purposes. Typical QC records will need to be produced per the plant's Quality System Manual for all mock-up panel production.

All details, exactly as depicted and dimensioned on the mock-up drawings, including their location, quantity, size, depth, or projection dimensions, must be incorporated into the mock-ups fabricated for the initial audit. Before the initial audit, formwork construction for all three required mock-up panels and production of any two of the three required panel types must be completed. The remaining panel must be produced and finished for viewing during the two-day initial certification audit.

All three mock-up panels must demonstrate adherence to the Category AA dimensional tolerances outlined in section 2.11. The panels must have a unique identification traceable to the production and quality records.

2.9 Recertification

For subsequent plant audits for recertification, the producer can once again construct the formwork and produce the mock-up panels identified in section 2.10, or the producer can make current production panels available for inspection that contain the minimum number of Category AA key features required and meet the required Category AA tolerances. If current production panels are to be used, drawings of the panels must be provided to the PCI plant auditor during any audit, to confirm they include the key features required for recertification.

New mock-up panels or subsequent certification production panels are required at a minimum of every two years to maintain certification. During any audits following the initial audit, the auditor will ask the producer if there are any key features that should be reviewed and noted. See the list of Category AA recertification review key features at the end of section 2.10.

Audit panels must demonstrate:

- plant-batched face mixture, two concrete face colors within same panel,
- multitexture face,
- embed material or veneer (such as brick, tile, stone, or terra cotta),
- two-part returns (two-piece return corner),
- three-dimensional projected face/bullnose or cornice,
- radiused casting surface,
- tolerance requirements per MNL 135 for Category AA architectural products (some tolerances tighter than previous PCI certification requirements; see section 2.11).

2.10 Category AA Mock-up Drawings and Key Features

The following reference items are included in this section:

- Category AA Type 1 mock-up drawing
- Key features – mock-up Category AA – Type 1
- Category AA Type 2 mock-up drawing
- Key features – mock-up Category AA – Type 2
- Category AA Type 3 mock-up drawing
- Key features – Mock-up Category AA – Type 3
- Category AA recertification review key features

For initial certification, all details as depicted and dimensioned on the enclosed mock-up drawings, including their location, quantity, size, and depth or projection dimension, must be incorporated into the panels fabricated for audit.

For recertification, produced panels must contain the required number of key features with dimensions at least equal to or greater than, and profile to match those depicted and dimensioned on the enclosed mock-up drawings.

Detail depictions on the drawings supersede the descriptions in the accompanying key features lists.

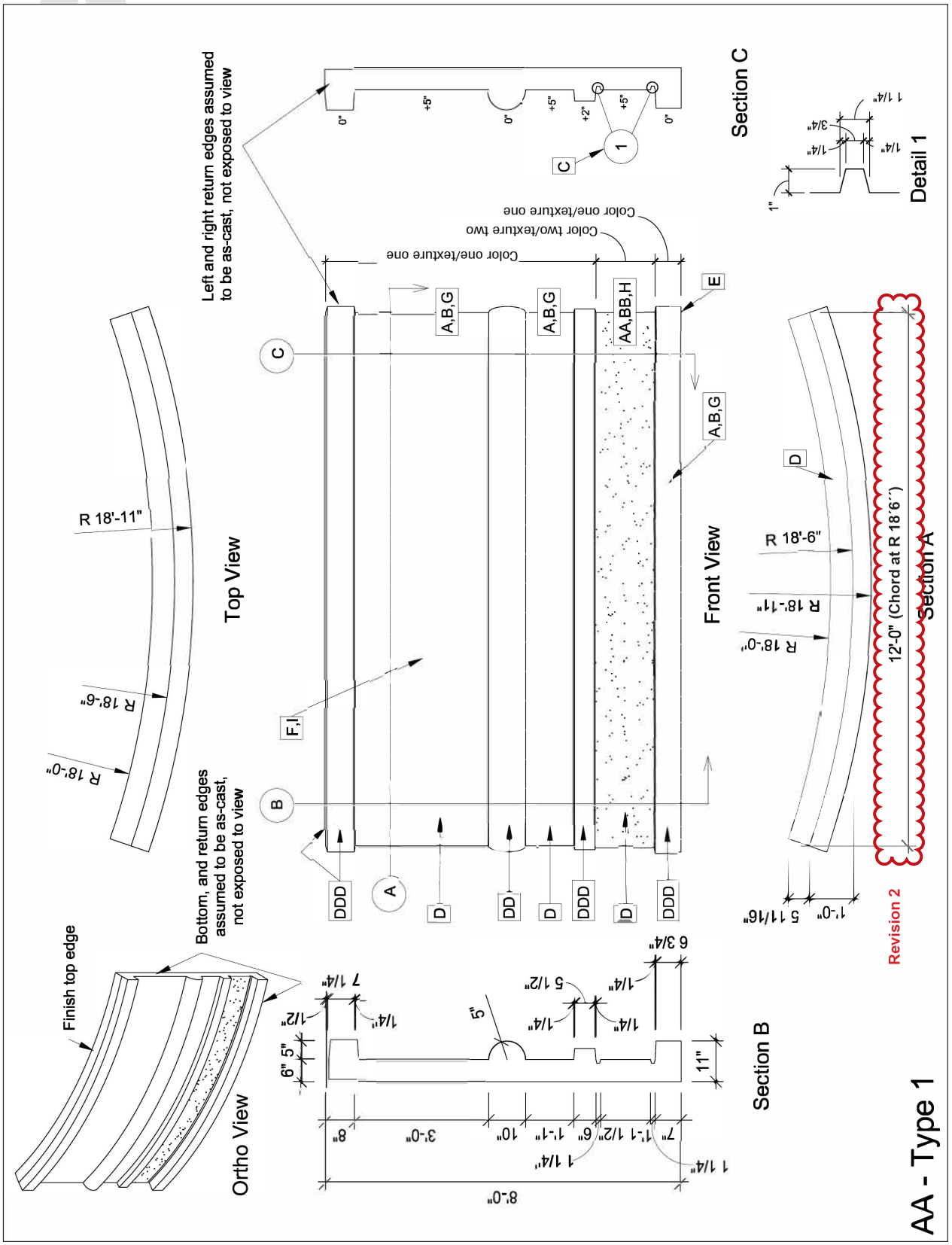

Figure 3. Category AA Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AA – Type 1

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Texture one – smooth form casting surface		Texture one – smooth form casting surface, minimum 80 ft^2
AA	Texture two – smooth form casting surface		Texture two – smooth form casting surface, minimum 20 ft^2
B	Concrete mixture color one – specific mixture proportions contrasting with color two. Concrete mixtures are precaster's choice.	Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Concrete mixture color one – specific mixture proportions contrasting with color two, minimum 80 ft^2. Concrete mixtures are precaster's choice.
BB	Concrete mixture color two – specific mixture proportions contrasting with color one. Mixture proportions are precaster's choice.	Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Concrete mixture color two – specific mixture proportions contrasting with color one, minimum 20 ft^2. Mixture proportions are precaster's choice.
C	Rustication detail	Color and texture must be separated cleanly within the detail.	Rustication detail
D	Radiused mold surface	Plant must be capable of producing radius panels.	Radiused mold surface, minimum 100 ft^2 in finished area
DD	Bull nose projection	Plant must be capable of producing 3-D projections on the face of the radiused panels.	3-D projection of 5 in. minimum on the face of a radiused panel, minimum 12 ft in length
DDD	3-D projection with finished top edge	Plant must be capable of producing 3-D projections on the face of radiused panels. Plant must be capable of producing matching finishes on thickened panel edges of radiused panels.	3-D projection of 5 in. minimum on the face of a radiused panel, minimum 12 ft in length, with minimum 10 in. finished top or bottom edge
E	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
F	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing. No bleeding of one mixture into the other shall be apparent after finishing.	Concrete placement and consolidation
G	Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch	Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch
H	Smooth form panel finish – texture two shall be exposed aggregate.	Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Smooth form panel finish – texture two shall be exposed aggregate. Need not be radiused profile.

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
I	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at rustication details b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

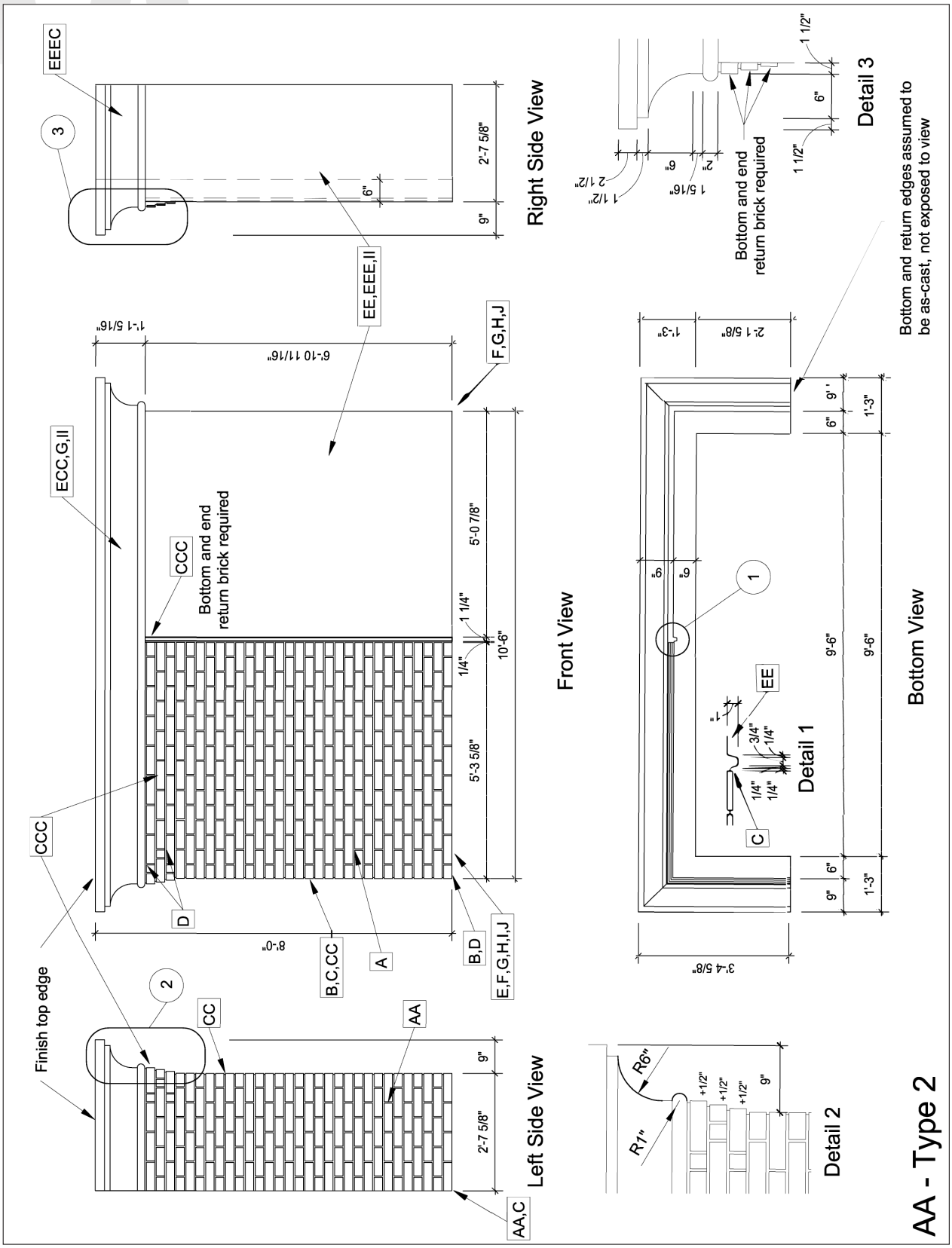

Figure 4. Category AA Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AA – Type 2

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Brick formliner – specific brick and brick liner are precaster's choice.		Brick formliner – specific brick and brick liner are precaster's choice, minimum 50 ft^2.
AA	Brick return (one side, not top and bottom) – return may be monolithically or sequentially cast.	Brick return may be monolithically or sequentially cast.	Brick return (one side, not top and bottom) – return may be monolithically or sequentially cast, minimum 3 ft high and 15 ft^2 in finished area.
B	Brick liner layout/spacing	Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return.	Brick liner layout/spacing
C	Brick liner termination at side rails and detail 1	Liner shall result in finished product with a crisp false joint and perimeter.	Brick liner termination at side rails and false joints
CC	Return brick at corner	Return brick and casting per PCI tolerances	Return brick at corner
CCC	Brick buildups with finished brick edges where exposed, brick with bottom and/or edge returns required at steps	Brick projections on face	Brick projections on face, minimum one change in plane by 5 ft long. Brick edges shall be a brick where exposed at projections.
D	Liner termination at heads and offsets	Liner shall result in finished product with a crisp perimeter.	Liner termination at heads and offsets
E	Liner seam shall be included in the liner layout.	Liner seams/joints shall not be visible after finishing.	Liner seam shall be included in the liner layout.
EE	Smooth form casting surface		Smooth form casting surface, adjacent to a thin-brick veneer, minimum 25 ft^2 in finished area
EEC	Cornice detail, smooth form, finished top surface to match face		Cornice detail shall include a radius and two additional 3-D features and be a minimum of 12 in. in height and thickness. Top surface to be finished to match face.
EEE	Smooth form return, sequentially cast	Return shall be sequentially cast.	Smooth form return, sequentially cast, minimum 3 ft high, minimum 15 ft^2 in finished area
EEEC	Cornice return, smooth form		Cornice shall return a minimum of 2 ft from the adjacent panel face.
F	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
G	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Mixture of AA – mock-up Type 2 must match mixture of AA – mock-up Type 3.	One mixture may be used for the entire panel. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Producer must be capable of producing consistent colors in multiple pieces.
H	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
I	Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.	a. Color and texture of brick joints shall be uniform across the face and return when viewed from various angles. b. Brick surfaces shall be free of concrete paste and wax/retarder coatings.	Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.
II	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch Color and texture of mixture of AA – mock-up Type 2 must match color and texture of AA – mock-up Type 3.	Color and texture of the finished surface shall be uniform across the face and return when viewed from various angles. Producer must be capable of producing consistent colors and textures in multiple pieces.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch Multiple pieces must be consistent in color and texture.
J	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances, including tipped brick tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

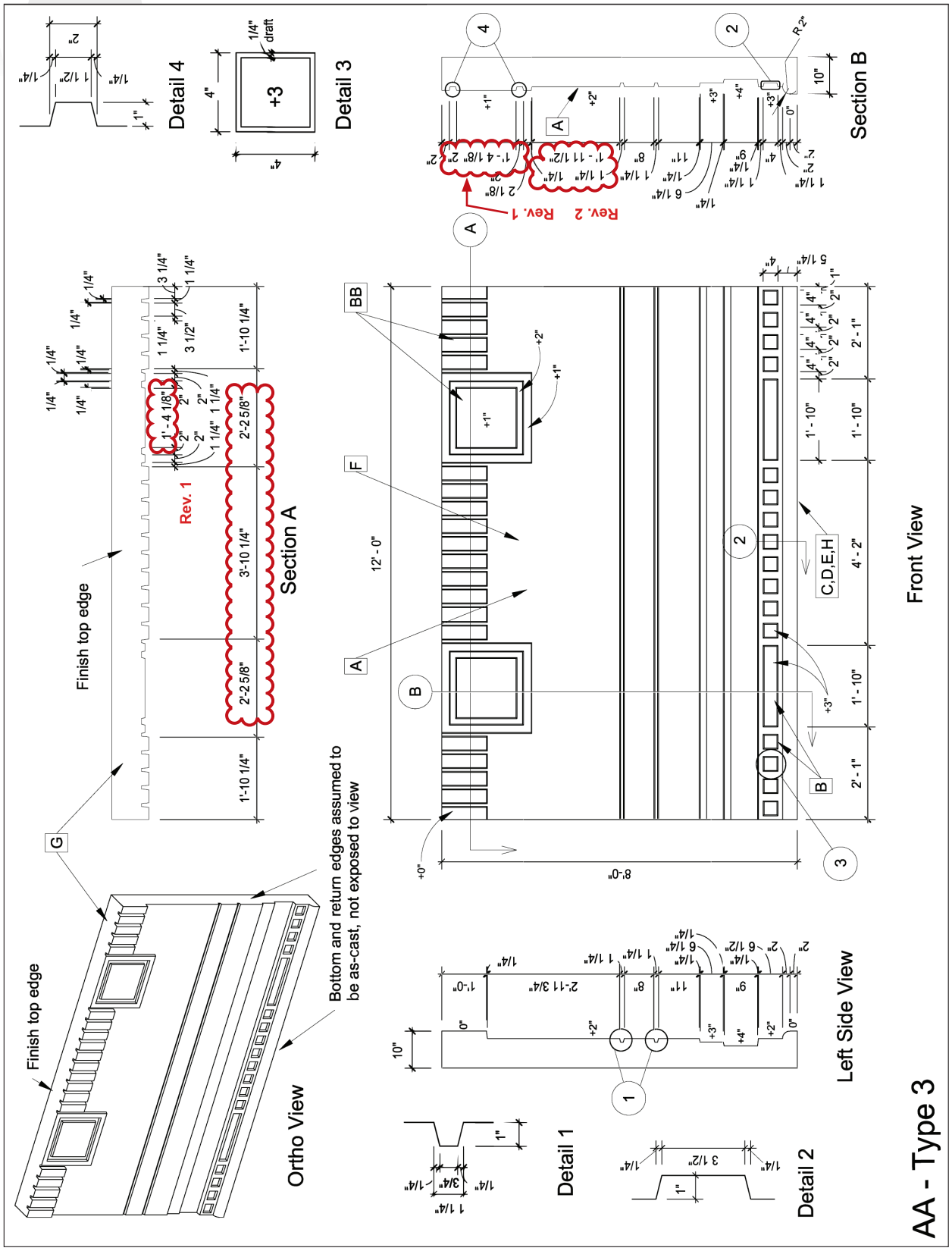

Figure 5. Category AA Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AA – Type 3

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface with multiple offset planes in the surface of the mold		One of the offset planes need not be smooth. Evaluated surface minimum 100 ft^2
B	Multiple smooth recesses in the surface of the panel	3-D form surfaces	Minimum two recesses in the surface of the panel. Recesses need not be smooth.
BB	Multiple smooth projections (dentils) in the surface of the panel	3-D form surfaces	Minimum five projections (dentils) in the surface of the panel
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Mixture of AA – mock-up Type 3 must match mixture of AA – mock-up Type 2.	Producer must be capable of batching and mixing white cement. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Producer must be capable of producing consistent colors in multiple pieces.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch
G	Finished faces shall match. Top edge shall be finished to match face. Color and texture of mixture of AA – mock-up Type 3 must match color and texture of AA – mock-up Type 2.	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles. Producer must be capable of producing consistent colors and textures in multiple pieces.	At minimum, 10 in. of one return edge to be finished to match face. Multiple pieces must be consistent in color and texture.
H	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

Category AA Recertification Review Features

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
1.	Two textures in the same panel (need not be radiused profile panel). Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Texture one – smooth form casting surface, minimum 80 ft^2	AA-1/A		1
		Texture two – smooth form casting surface, minimum 20 ft^2	AA-1/AA		
		Rustication detail	AA – 1/C		
		Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch	AA-1/G		
		Smooth form panel finish – texture two shall be exposed aggregate.	AA-1/H		
2.	Two concrete colors in the same panel Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Color one – Smooth form casting surface, minimum 80 ft^2	AA-1/A	Need not be radiused profile panel.	1
		Color two – smooth form casting surface, minimum 20 ft^2	AA-1/AA		
		Rustication detail	AA-1/C		
		Concrete mixture color one – specific mixture proportions contrasting with color two, minimum 80 ft^2. Mixture proportions are precaster's choice.	AA-1/B		
		Concrete mixture color two – specific mixture proportions contrasting with color one, minimum 20 ft^2. Mixture proportions are precaster's choice.	AA-1/BB		
		Smooth form panel finish – color one texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AA-1/G		
		Smooth form panel finish – color two texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AA-1/H		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
3.	Radiused mold surface, minimum 100 ft^2 in finished area	Radiused mold surface	AA-1/D	Can be radiused panel or column cover.	1
		Concrete mixture – specific mixture proportions are precaster's choice.	AA-1/B		
		Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	AA-1/G		
4.	Plant must be capable of producing 3-D projections on the face of radiused panels or flat panel.	3-D projection of 5 in. minimum on the face panel, minimum 12 ft in length	AA-1/DD AA-1/DDD	Any projected shape with minimum 5 in. dimension from the adjoining face	1
		Texture shall be one of the following: a. light abrasive blast b. light acid etch	AA-1/G		
5.	Plant must be capable of producing matching finishes on thickened panel edges of radiused panels.	Minimum 10 in. finished top or bottom edge by minimum 12 ft in length	AA-1/DDD	10 in. finished edge need not be the result of a projection.	1
		Texture shall be one of the following: a. light abrasive blast b. light acid etch	AA-1/G		
6.	Plant must be capable of producing brick clad or other veneer cladding.				
6a.	Plant must be capable of producing veneer clad panels with returns.	Brick return (one side, not top and bottom), return may be monolithically or sequentially cast, minimum 3 ft high and 15 ft^2 in finished area.	AA-2/AA		1
6b.	Plant must be capable of producing veneer clad panels with veneer offsets in the face.	Brick projections on face, minimum one change in plane by 5 ft long. Brick edges shall be finished brick where exposed at projections.	AA-2/CCC		1
	General brick veneer notes	Brick formliner – specific brick and brick liner is precaster's choice, minimum 50 ft^2.	AA-2/AA		
		Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return.	AA-2/B		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
		Liner shall result in finished product with a crisp false joint and perimeter.	AA-2/C		
		Return brick and casting per PCI tolerances	AA-2/CC		
		Liner seam shall be included in the liner layout. Liner seams/joints shall not be visible after finishing.	AA-2/E		
	Producer must be capable of producing consistent color and textures in multiple pieces.	Specific mixture proportions are precaster's choice.	AA-2/G		
		Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned. c. Color and texture of brick joints shall be uniform across the face and return when viewed from various angles. d. Brick surfaces shall be free of concrete paste and wax/retarder coatings.			
7.	Smooth form casting surface, adjacent to a thin brick-veneer. Producer must be capable of producing consistent color and textures in multiple pieces.	Minimum 25 ft^2 in finished area	AA-2/EE		1
		Specific mixture proportions are precaster's choice.	AA-2/II	Same mixture may be used for brick joints and adjacent smooth panel.	
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AA-2/II		
8.	Smooth form return, sequentially cast. Producer must be capable of producing consistent color and texture in multiple pieces.	Smooth form return, sequentially cast, minimum 3 ft high, minimum 15 ft^2 in finished area	AA-2/EEE		1
		Specific mixture proportions are precaster's choice.	AA-2/II		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AA-2/II		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
9.	Projections (cornice) at face	Cornice detail shall include a radius and two additional 3-D features and be a minimum of 12 in. in height and thickness. Top surface to be finished to match face.	AA-2/EEC		1
		Specific mixture proportions are precaster's choice.	AA-2/II		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AA-2/II		
10.	Return of face projection (cornice)	Smooth form return, sequentially cast, minimum 3 ft high, minimum 15 ft^2 in finished area	AA-2/EEEC		1
		Specific mixture proportions are precaster's choice.	AA-2/II		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AA-2/II		
11.	3-D form surfaces. Producer must be capable of producing consistent color and texture in multiple pieces.			Features 11a, 11b, and 11c need not be demonstrated in the same panel.	
11a.	Smooth form casting surface with minimum three offset planes in the surface of the mold	Evaluated surface minimum 100 ft^2	AA-3/A	One of the offset planes need not be smooth.	1
11b.	Multiple smooth recesses (pockets) in the surface of the panel	Minimum two recesses in the surface of the panel. Recesses need not be smooth.	AA-3/B		1
11c.	Multiple smooth projections (dentils) in the surface of the panel	Minimum five projections (dentils) in the surface of the panel	AA-3/BB		1
	General notes for 3-D form surfaces	Specific mixture proportions are precaster's choice.	AA-3/D		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AA-3/F		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
12.	Producer must be capable of batching and mixing white cement. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Minimum 100 ft² smooth form casting surface	AA-1/A, AA-2/EE, AA-3/A	Ability to batch white cement may also be demonstrated in any of the above panels with more than 100 ft² of finished panel.	1
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch			
				Total possible points	15

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft² = 0.0929 m².

Need 9/15 points to maintain AA certification.

2.11 Category AA Tolerance Requirements

The production and erection tolerance requirements of MNL 135 (same as current MNL 117) apply. The following supplemental requirements also apply to Category AA-specified projects and product.

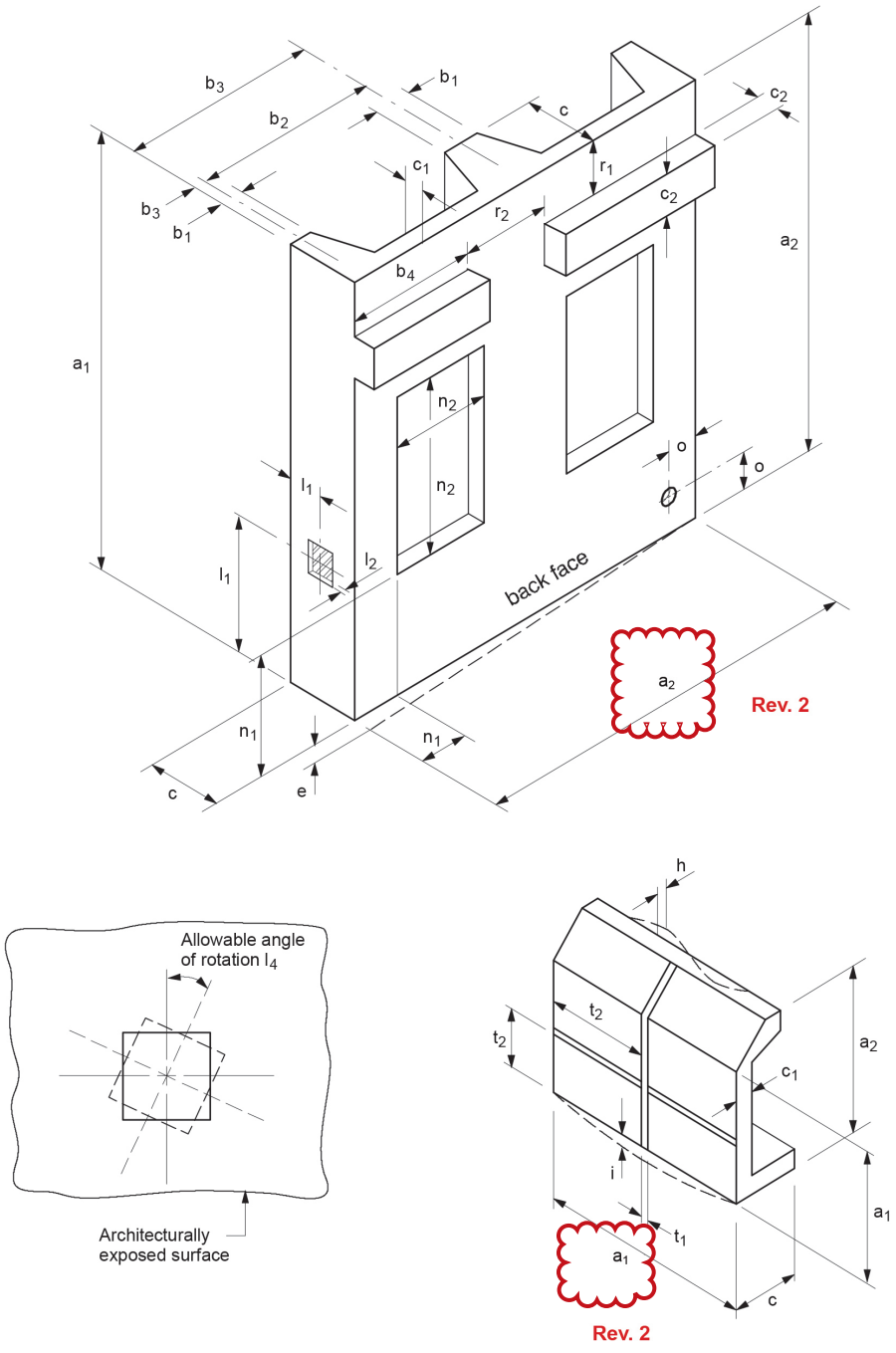

Figure 6. Architectural wall panels (MNL 135, Fig. 10.1.1).

Attachment 1 – Architectural Wall Panel Production Tolerances per PCI MNL 135, Fig. 10.1.1

(Tolerances apply to Categories AA, AB, AC, except where noted. Category AA tolerances tighter than previous MNL 135 for production are indicated in **bold**.)

A. Fabricate architectural precast concrete units to comply with the following product tolerances:

a_1 = overall height and width of units, measured at the face exposed to view

For AA:

10 ft (3 m) or under . . . . . ±1/8 in. (±3 mm)

10 to 20 ft (3 to 6 m) . . . . . +1/8 in. (+3 mm), -3/16 in. (-5 mm)

Greater than 20 ft (6 m) . . . . . ±1/16 in. per 10 ft (±1.5 mm per 3 m)

For AB, AC:

10 ft (3 m) or under . . . . . ±1/8 in. (±3 mm)

10 to 20 ft (3 to 6 m) . . . . . +1/8 in. (+3 mm), -3/16 in. (-5 mm)

20 to 40 ft (6 to 12 m) . . . . . ±1/4 in. (± 6 mm)

Greater than 40 ft (12 m) . . . . . ±1/16 in. per 10 ft (±1.5 mm per 3 m)

a_2 = overall height and width of units, measured at the face not exposed to view

For AA:

10 ft (3 m) or under . . . . . ±1/4 in. (±6 mm)

10 to 20 ft (3 to 6 m) . . . . . +1/4 in. (+6 mm), -3/8 in. (-10 mm)

Greater than 20 ft (6 m) . . . . . ±1/8 in. per 10 ft (±3 mm per 3 m)

For AB, AC:

10 ft (3 m) or under . . . . . ±1/4 in. (±6 mm)

10 to 20 ft (3 to 6 m) . . . . . +1/4 in. (+6 mm), -3/8 in. (-10 mm)

20 to 40 ft (6 to 12 m) . . . . . ±3/8 in. (± 6 mm)

Greater than 40 ft (12 m) . . . . . ±1/8 in. per 10 ft (±3 mm per 3 m)

b_1 = rib width . . . . . ±1/8 in. (±3 mm)

b_2 = distance between ribs . . . . . ±1/8 in. (±3 mm)

b_3 = rib to edge of flange . . . . . ±1/8 in. (±3 mm)

c, c_1 = total thickness or flange thickness for edges

For AA:

Exposed edge . . . . . ±1/8 in. (±3 mm)

Nonexposed (hidden) edge . . . . . +1/4 in. (+6 mm), -1/8 in. (-3 mm)

For AB, AC: . . . . . +1/4 in. (+6 mm), -1/8 in. (-3 mm)

c_2 = dimensions of haunches . . . . . ±1/4 in. (±6 mm)

e = variation from square or designated skew (applies to panel and major openings in panel and applies to the difference of two diagonal measurements). . . . . .greater of ±1/8 in. per 6 ft (±3 mm per 2 m) and ±1/2 in. (13 mm)

h = local smoothness exposed surfaces . . . . . 1/4 in. per 10 ft (6 mm per 3 m)

i = bowing . . . . . .length/360, maximum 1 in. (25 mm)

j = warping. . . 1/16 in. per ft (1.5 mm per 0.3m) from the nearest adjacent corner

m_2 = haunch bearing surface deviation from specified plane . . . . .±1/8 in. (±3 mm)

m_3 = difference in relative position of adjacent haunch bearing surfaces from specified relative position. . . . . .±1/4 in. (±6 mm)

n_1 = location of opening within panel . . . . . .±1/4 in. (±6 mm)

n_2 = length and width of blockouts and openings within one unit

For AA:

Maximum opening dimension 10 ft (3 m) or under . . . . . .±1/8 in. (±3 mm)

Maximum opening dimension greater than 10 ft (3 m) . . . . . +3/16 in. (+5 mm), -1/8 in. (-3 mm)

For AB, AC:

Length and width of blockouts and openings within one unit. . . . . .±1/4 in. (±6 mm)

n_3 = location and dimensions of blockouts hidden from view used for heating, ventilation, and air-conditioning and utility penetrations . . . .±3/4 in. (±19 mm)

B. Position tolerances for cast-in items

l_1 = weld plates. . . . . ±1 in. (±25 mm)

l_2 = tipping and flushness of plates . . . . . .±1/4 in. (±6 mm)

l_4 = allowable rotation of plate, channel inserts, electrical boxes. . . . . 2 degrees or 1/4 in. (6 mm) maximum measured at perimeter of insert

o = position of sleeve . . . . . .±1/2 in. (±13 mm)

p = inserts. . . . . .±1/2 in. (±13 mm)

q = handling devices . . . . . ±3 in. (±75 mm)

r_1 = location of bearing surface from end of member. . . . . .±1/4 in. (±6 mm)

s_1 = reinforcing steel and welded–wire reinforcement
Where position has structural implications or affects concrete cover . . . . . .±1/4 in. (±6 mm)
Otherwise . . . . . .±1/2 in. (±13 mm)

s_3 = reinforcing steel extending out of member . . . . . ±1/2 in. (±13 mm)

s_4 = prestressing reinforcement
perpendicular to panel . . . . . .±1/4 in. (±6 mm)
parallel to panel . . . . . ±1 in. (±25 mm)

t_1 = dimensions of architectural features and rustications . . . . . ±1/8 in. (±3 mm)
t_2 = location of rustication joints . . . . . ±1/8 in. (±3 mm)
w_1 = location of flashing reglets . . . . . ±1/4 in. (±6 mm)
w_2 = location of flashing reglets at edge of panel . . . . . ±1/8 in. (±3 mm)
w_3 = size of reglets for glazing gaskets . . . . . ±1/8 in. (±3 mm)
y = location of window washer track or buttons . . . . . ±1/8 in. (±3 mm)
z = electrical outlets, hose bibs . . . . . ±1/2 in. (±13 mm)

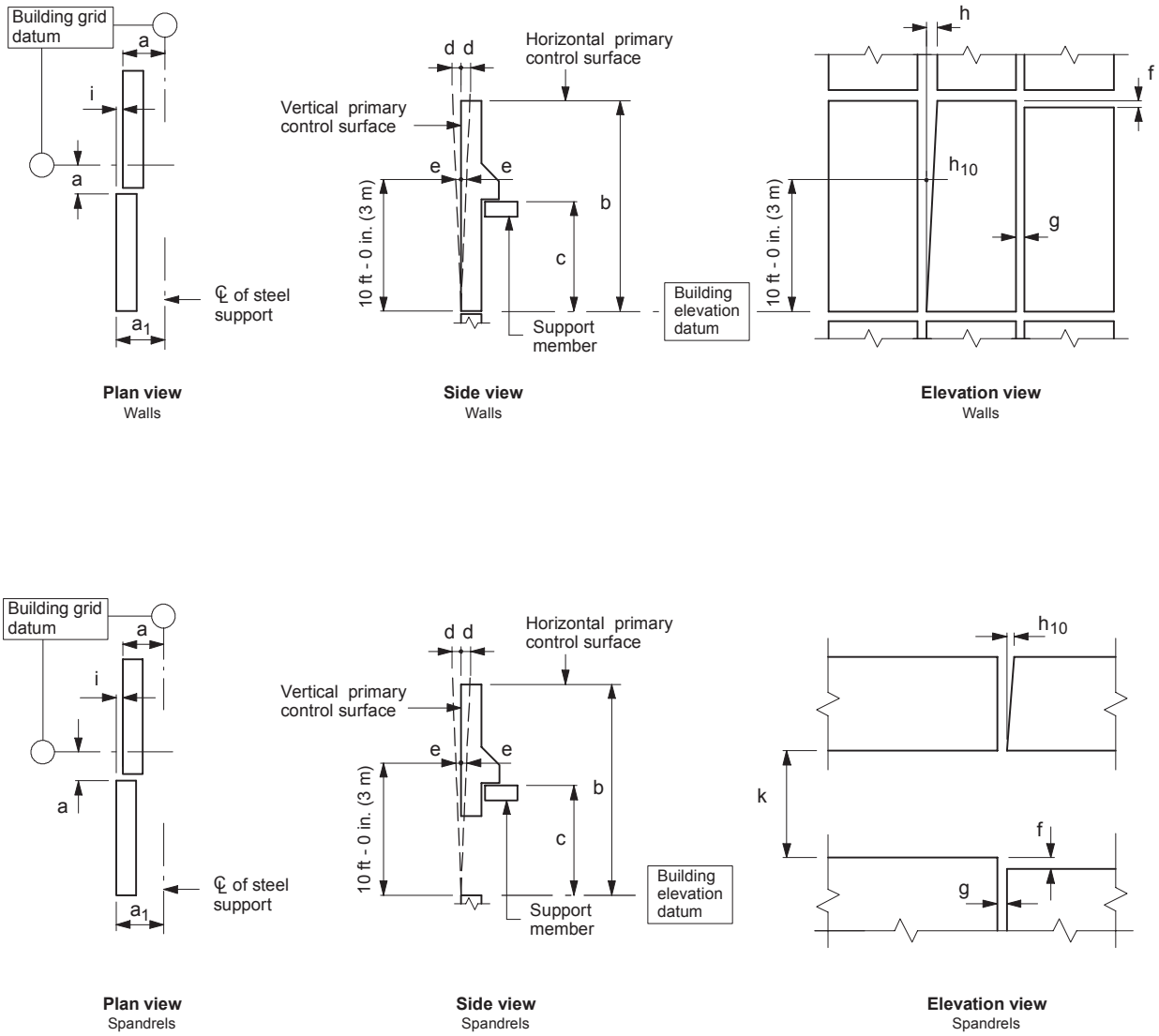

Figure 7. Architectural walls/spandrel erection tolerances (MNL 135, Fig. 12.5.1).

Attachment 2 – Architectural Wall Panel Erection Tolerances per PCI MNL 135, Fig. 12.5.1

(Category AA tolerances tighter than previous MNL 135 for erection are indicated in **bold.**)

To ensure successful adherence to the precast concrete erection tolerances outlined below, it is essential the architect/engineer and other parties responsible for the tolerances of the interfacing structure establish and document the overall project tolerance system that will allow the successful completion of the project within said tolerances. These interfacing structure tolerances will need to be more stringent than current standard practices or industry tolerances.

Erect architectural precast concrete units level, plumb, square, and in alignment without exceeding the following noncumulative erection tolerances:

a = plan location from building grid datum* . . . . . ±1/2 in. (±13 mm)

a_1 = plan location from centerline of steel support† . . . . . ±1/2 in. (±13 mm)

b = top elevation from nominal top elevation

Exposed individual panel. . . . . ±1/4 in. (±6 mm)

Nonexposed individual panel . . . . . ±1/2 in. (±13 mm)

c = support elevation from nominal support elevation

Maximum low . . . . . 1/2 in. (13 mm)

Maximum high . . . . . 1/4 in. (6 mm)

d = maximum plumb variation over the least of height of structure or 100 ft (30 m)* . . . . . .1 in. (25 mm)

e = plumb in any 10 ft (3 m) of unit height

For AA: . . . . . 1/4 in. (6 mm)

Additionally, a maximum of 1/2 in. (13 mm) over total height of the unit (see "d" for vertical stacked panels)

For AB, AC: . . . . . 1/4 in. (6 mm)

f = maximum jog in alignment of matching edges

Exposed panel relative to adjacent panel . . . . . 1/4 in. (6 mm)

Nonexposed panel relative to adjacent panel . . . . . 1/2 in. (13 mm)

For AC: Add 1/8 in. (3 mm) additional tolerance in the maximum jog for panels larger than 20 ft (6 m), per 10 ft (3 m) of additional height, up to a maximum tolerance of 1/2 in. (13 mm)

g = joint width (governs over joint taper)

For AA exposed to view:

Joints 10 ft (3 m) or less in length . . . . . ±3/16 in. (±5 mm)

Joints over 10 ft (3 m) in length . . . . . ±1/4 in. (±6 mm)

For AB, AC: . . . . . ±1/4 in. (±6 mm)

h = joint taper maximum

For AA exposed to view:

Joints 10 ft (3 m) or less in length . . . . . ±3/16 in. (±5 mm)

Joints over 10 ft (3 m) in length . . . . . ±1/4 in. (±6 mm)

For AB, AC: ±3/8 in. (±6 mm) but not more than 1/4 in. (6 mm) in 10 ft length

h_{10} = joint taper over 10 ft (3 m) length . . . . . 1/4 in. (6 mm)

i = maximum jog in alignment of matching faces . . . . . 1/4 in. (6 mm)

j = differential bowing or camber, as erected, between adjacent members of same design . . . . . 1/4 in. (6 mm)

k = opening height between spandrels . . . . . ±1/4 in. (± 6 mm)

* For precast concrete buildings over 100 ft (30 m) tall, tolerances for “a” and “d” can increase at the rate of 1/8 in. (3 mm) per story to a maximum of 2 in. (50 mm).

† For precast concrete elements erected on a steel frame, this tolerance takes precedence over tolerance on dimension “a.”

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Chapter 3 – Category AB Requirements

3.1 General Description

This category covers the certification of plants producing architectural products with multiple concrete mixtures and textures, a variety of three-dimensional projections, radiused mold surfaces, or sequential returns. Production tolerances for this production category are required to meet requirements of PCI MNL 135, *Tolerances for Precast and Prestressed Concrete Construction*, and the quality requirements of PCI MNL 117, *Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products*.

To ensure production capability for the types of product covered within this category, plant requirements for different cement types, colored mixtures, covered production, and additional QC proficiencies have been implemented.

Additional requirements for renewing certification within this category after June 30, 2021, include:

- Surveys of all projects completed since the last certification audit (applicable for all projects with more than 5000 ft^2 [465 m^2] of wall panel area)
  - o The designer and the GC/CM of record will be surveyed to identify their perceptions of producer performance and product quality on all projects completed by the plant since their last audit under this program. PCI will distribute the surveys. Producers are required to notify PCI of all completed projects.
- Site evaluation, when required
  - o One or more site evaluations may be required if project survey results indicate potential production deficiencies. If required, a completed Category AB project would be evaluated by an independent consultant experienced with architectural precast concrete for conformance with the acceptability of appearance criteria in section 2.10 of MNL 117.

Certification under Category AB will incur additional surcharges and fees to cover the added costs of the project surveys or special or extra audits. The cost of a site evaluation due to failure of the project surveys will be charged to the producer. See section 1.3.3 for more information.

Reference the general requirements, dates, and other information presented in chapter 1, which supplement the specific requirements of this chapter.

3.2 List of Capabilities Category AB-Certified Facilities Must Demonstrate

Category AB-certified facilities must meet the following requirements:

- capability of batching both white and gray cement
- all face mixtures to be plant-batched and mixed (premixed, no mixer-truck mixing)
- all production to be under mobile temporary cover or better as required to ensure consistent panels

- building information modeling (BIM) capacity for LOD 350 element modeling (https://bimforum.org/wp-content/uploads/2019/04/LOD-Spec-2019-Part-I-and-Guide-2019-04-29.pdf)
- provide information to PCI to facilitate conducting project surveys on all completed projects with more than 5000 ft^2 (465 m^2) of wall panel area with Category AB product
- post-occupancy site evaluation (only if required due to failed project surveys)
- tolerances that meet current MNL 135 (MNL 117) requirements

3.3 Required QC Personnel (minimum qualifications)

For plants producing precast concrete product only:

- at least one individual who holds PCI Level 1 (or higher) personnel certification
- at least one individual who holds PCI Concrete Mix Design Training Program certificate or PCI Level 3 personnel certification

For plants producing prestressed concrete product:

- at least one individual who holds PCI Level 2 (or higher) personnel certification
- at least one individual who holds PCI Concrete Mix Design Training Program certificate or PCI Level 3 personnel certification

3.4 Erection/Installation Requirements

The use of a PCI-Certified Erector (Category A) is required on all Category AB and AC projects effective July 1, 2021.

Erection tolerances per MNL 135 are required for Category AB architectural products.

3.5 Project Designer and GC/CM Survey Requirements

The architect of record and the general contractor or construction manager for all completed projects with more than 5000 ft^2 (465 m^2) of wall panel area with Category AB product are required to be surveyed by PCI to identify their perceptions of the performance of the Category AB-certified producer. Both will be asked a series of questions to identify:

- at what phase of the design process the producer became involved in the project,
- the producer's level of involvement during the pre-bid/design phase,
- their assessment of the producer's performance after the contract for the project was awarded,
- their assessment of the installation if the producer provided erection services,
- a final overall assessment as to the willingness of the architect to use the precaster again.

Chapter 7 provides copies of the architect project survey form and the GC/CM project survey form.

To facilitate these surveys, the Category AB-certified precaster must notify PCI of all completed Category AB and AC projects. Auditors will verify compliance with this requirement during the semiannual plant audits.

3.6 Site Evaluation Process (when required)

Annual site evaluations are not a requirement for Category AB certification. However, should surveys of project architects and/or GC/CM indicate potential production deficiencies, the Architectural Certification Review Board (ACRB) may require at least one completed project be evaluated by a PCI-assigned site evaluator experienced with architectural precast concrete. The evaluator would assess the quality and look of the installed product based on the acceptability of appearance criteria in section 2.10 of MNL 117. The project will typically be selected based on the results of the surveys. The producer must submit, at a minimum, the following project documentation to the PCI Director of Quality Programs within one month of request:

- name and contact information for appropriate personnel whom the evaluator should work with at the site
- project site plan with address
- floor plans
- building elevations
- one set of architectural panel production drawings

PCI will contact the site evaluator to arrange for the evaluation when all of the above materials have been provided.

See the "PCI Architectural Certification Site Evaluation" form in chapter 7 for the complete list of acceptability of appearance criteria to serve as the basis for a site evaluation.

3.7 Certification Process

Refer to section 1.3 for the general requirements to apply for initial certification and the procedure for recertification under the new PCI Architectural Certification Program. For initial certification, the information provided in the producer's application, the results of the plant's initial audit, and the results of the review of the mock-up panel construction will be reviewed to determine eligibility for certification in Category AB. For recertification, the ACRB will consider the following when determining eligibility for a recommendation of continued certification in Category AB:

- whether the producer has notified PCI of all completed projects to facilitate project surveys and the results of those surveys
- the results of the annual site evaluation of a completed project, if required
- the results of the plant audits
- compliance with the requirements for Category AB key features

Figure 8 illustrates the initial certification and recertification process flow chart for Category AB.

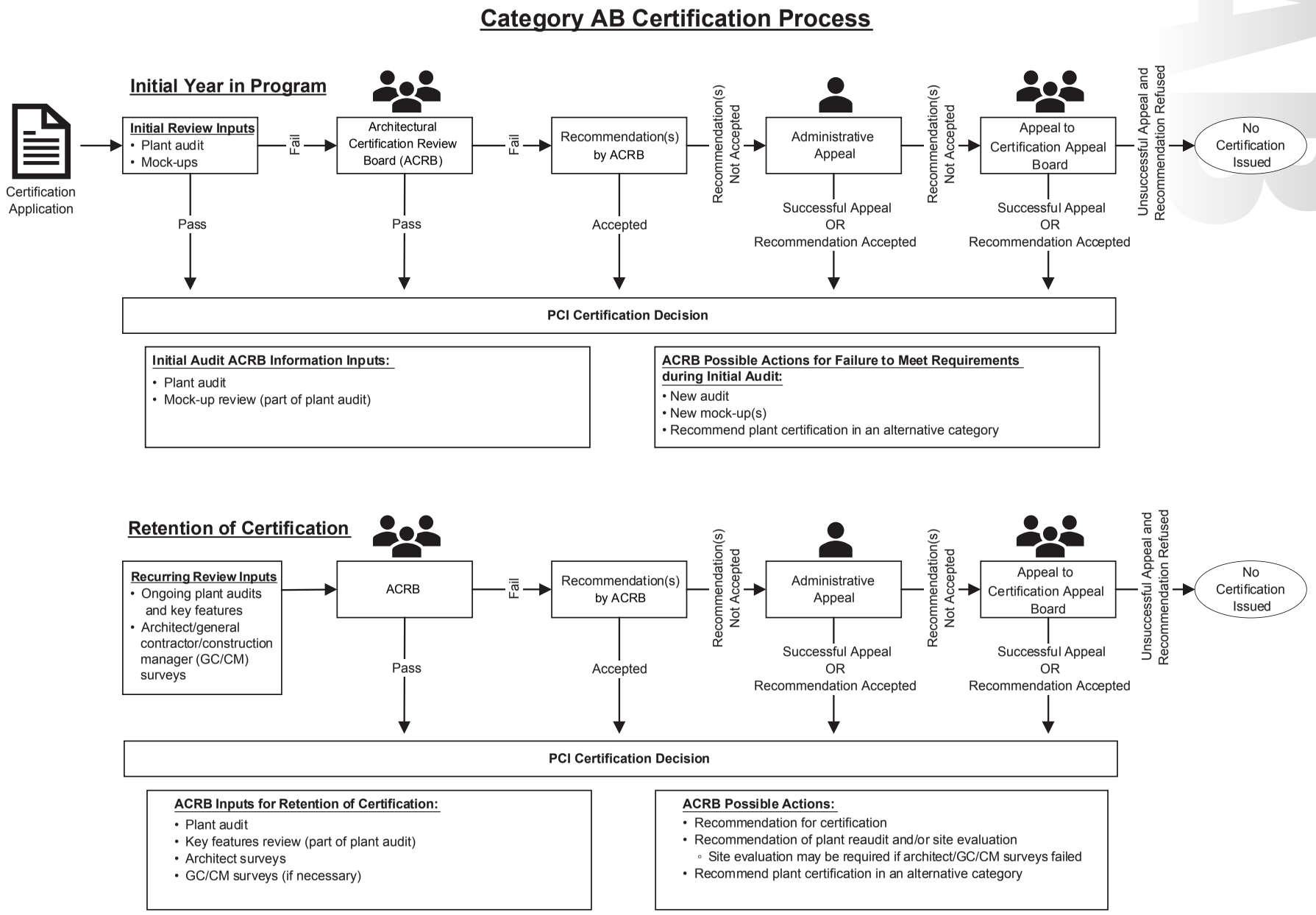

Figure 8. Initial certification and recertification process for Category AB.

3.8 Initial Certification

Forty-five days before the confirmed earliest initial audit date, the producer must create and submit to PCI for approval, mock-up production drawings for the three panels required for initial certification. These drawings must document the key features, reinforcement, pickups, and embeds as would be done for typical production panels, based on the Category AB drawings in section 3.10. Concrete mixture proportions for each mock-up must also be submitted in advance of the audit. Production and QC staff, as well as the auditors, will refer to these drawings for fabrication, finishing, and inspection purposes. Typical QC records will need to be produced per the plant's Quality System Manual for all mock-up panel production.

All details, exactly as depicted and dimensioned on the mock-up drawings, including their location, quantity, size, depth, or projection dimensions, must be incorporated into the mock-ups fabricated for the initial audit. Before the initial audit, formwork construction for all three required mock-up panels and production of any two of the three required panel types must be completed. The remaining panel must be produced and finished for viewing during the two-day initial audit.

All three mock-up panels must demonstrate adherence to existing MNL 135 dimensional tolerances outlined in section 3.11. The panels must have a unique identification traceable to the production and quality records.

3.9 Recertification

For subsequent plant audits for recertification, the producer can once again construct the formwork and produce the mock-up panels identified in section 3.10, or the producer can make current production panels available for inspection that contain the minimum number of Category AB key features required and meet the required Category AB tolerances. If current production panels are to be used, drawings of the panels must be provided to the PCI plant auditor during any audit, to confirm they include the key features required for recertification.

New mock-up panels or subsequent certification production panels are required at a minimum of every two years to maintain certification. During any unannounced audits following the initial audit, the auditor will ask the producer if there are any key features that should be reviewed and noted. See the list of Category AB recertification review key features at the end of section 3.10.

Audit panels must demonstrate:

- plant-batched face mixture, two concrete face colors within same panel,
- multitexture face
- embed material or veneer (such as brick, tile, stone, or terra cotta),
- two-part returns (two-piece return corner),
- three-dimensional projected face/bullnose or cornice,
- radiused casting surface,
- compliance with the tolerance requirements per MNL 135.

3.10 Category AB Mock-up Drawings and Key Features

The following reference items are included in this section:

- Category AB Type 1 mock-up drawing
- Key features – mock-up Category AB – Type 1
- Category AB Type 2 mock-up drawing
- Key features – mock-up Category AB – Type 2
- Category AB Type 3 mock-up drawing
- Key features – mock-up Category AB – Type 3
- Category AB recertification review key features

For initial certification, all details as depicted and dimensioned on the enclosed mock-up panel drawings, including their location, quantity, size, and depth or projection dimension, must be incorporated into the panels fabricated for audit.

For recertification, produced panels must contain the required number of key features with dimensions at least equal to or greater than, and profile to match those depicted and dimensioned on the enclosed mock-up drawings.

Detail depictions on the drawings supersede the descriptions in the accompanying key features lists.

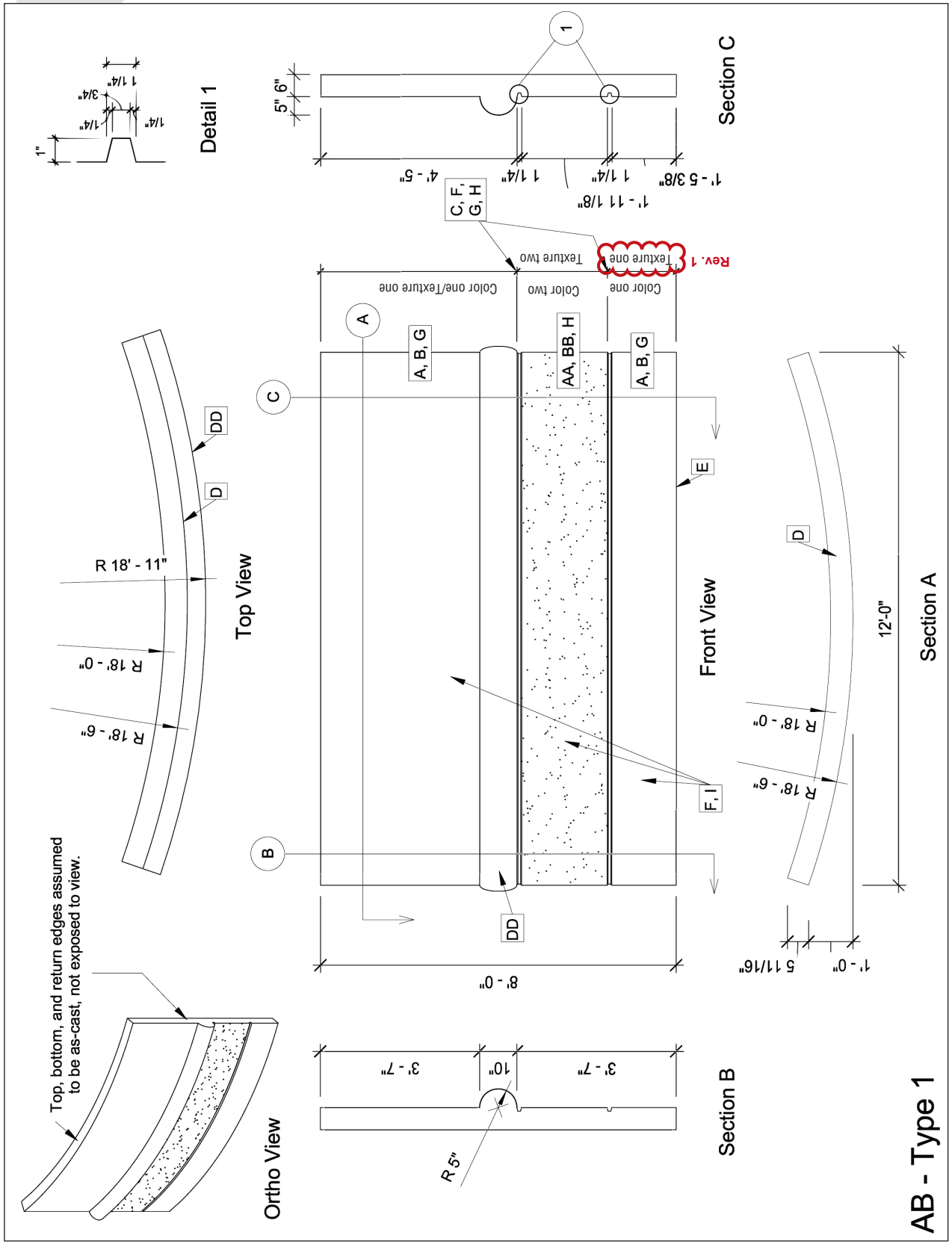

Figure 9. Category AB Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AB – Type 1

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Texture one – smooth form casting surface		Texture one – smooth form casting surface, minimum 80 ft^2
AA	Texture two – smooth form casting surface		Texture two – smooth form casting surface, minimum 20 ft^2
B	Concrete mixture color one – specific mixture proportions contrasting with color two. Mixture proportions are precaster's choice.	Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Concrete mixture color one – specific mixture proportions contrasting with color two, minimum 80 ft^2. Mixture proportions are precaster's choice
BB	Concrete mixture color two – specific mixture proportions contrasting with color one. Mixture proportions are precaster's choice.	Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Concrete mixture color two – specific mixture proportions contrasting with color one, minimum 20 ft^2. Mixture proportions are precaster's choice.
C	Rustication detail	Color and texture must be separated cleanly within the detail.	Rustication detail
D	Radiused mold surface	Plant must be capable of producing radius panels.	Radiused mold surface, minimum 100 ft^2 in finished area
DD	Bull nose projection	Plant must be capable of producing 3-D projections on the face of the panels.	3-D projection of 5 in. minimum on the face of the panel on a radiused or flat panel, minimum 12 ft in length
E	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
F	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing. No bleeding of one mixture into the other shall be apparent after finishing.	Concrete placement and consolidation
G	Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch	Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch
H	Smooth form panel finish – texture two shall be exposed aggregate.	Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Smooth form panel finish – texture two shall be exposed aggregate. Need not be radiused profile.

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
I	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at rustication details b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances, including tipped brick tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

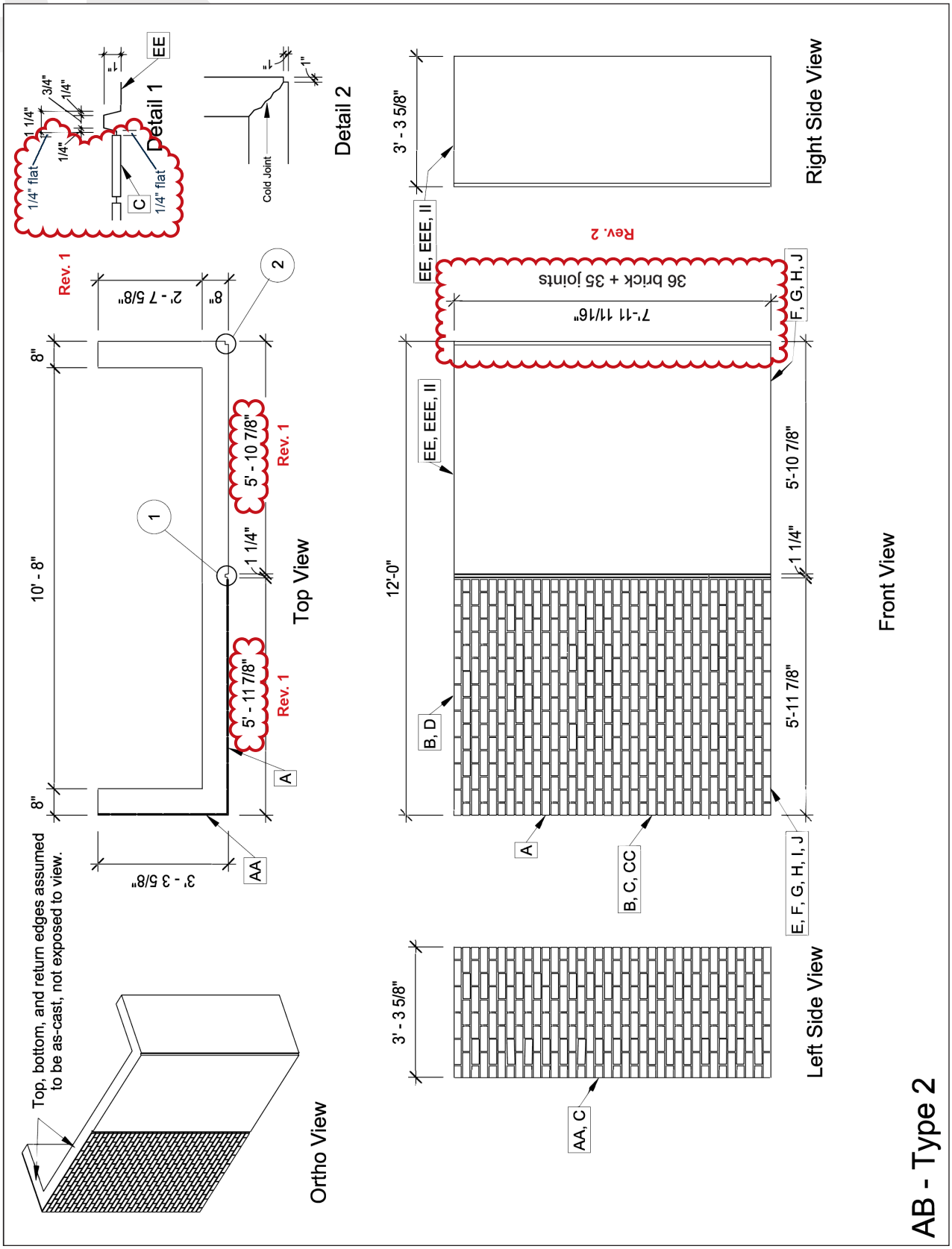

Figure 10. Category AB Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AB – Type 2

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Brick formliner – specific brick and brick liner are precaster's choice.		Brick formliner – specific brick and brick liner are precaster's choice, minimum 50 ft^2.
AA	Brick return (one side, not top and bottom) – return may be monolithically or sequentially cast.	Brick return may be monolithically or sequentially cast.	Brick return (one side, not top and bottom) – return may be monolithically or sequentially cast, minimum 3 ft high and 15 ft^2 in finished area
B	Brick liner layout/spacing	Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return	Brick liner layout/spacing
C	Brick liner termination at side rails and detail 1	Liner shall result in finished product with a crisp false joint and perimeter.	Brick liner termination at side rails and false joint
CC	Return brick at corner	Return brick and casting per PCI tolerances	Return brick at corner
D	Liner termination at heads	Liner shall result in finished product with a crisp perimeter.	Liner termination at heads
E	Liner seam shall be included in the liner layout.	Liner seams/joints shall not be visible after finishing.	Liner seam shall be included in the liner layout.
EE	Smooth form casting surface		Smooth form casting surface, adjacent to a thin-brick veneer, minimum 25 ft^2 in finished area
EEE	Smooth form return, sequentially cast	Return shall be sequentially cast.	Smooth form return, sequentially cast, minimum 3 ft high, minimum 15 ft^2 in finished area
F	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
G	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Mixture of AB – mock-up Type 2 must match mixture of AB – mock-up Type 3.	One mixture may be used for the entire panel. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Producer must be capable of producing consistent colors in multiple pieces.
H	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
I	Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.	a. Color and texture of brick joints shall be uniform across the face and return when viewed from various angles . b. Brick surfaces shall be free of concrete paste and wax/retarder coatings.	Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
II	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch Color and texture of mixture of AB – mock-up Type 2 must match color and texture of AB – mock-up Type 3.	Color and texture of the finished surface shall be uniform across the face and return when viewed from various angles. Producer must be capable of producing consistent colors and textures in multiple pieces.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch Multiple pieces must be consistent in color and texture.
J	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances, including tipped brick tolerances.	Additional evaluation criteria

Note: 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

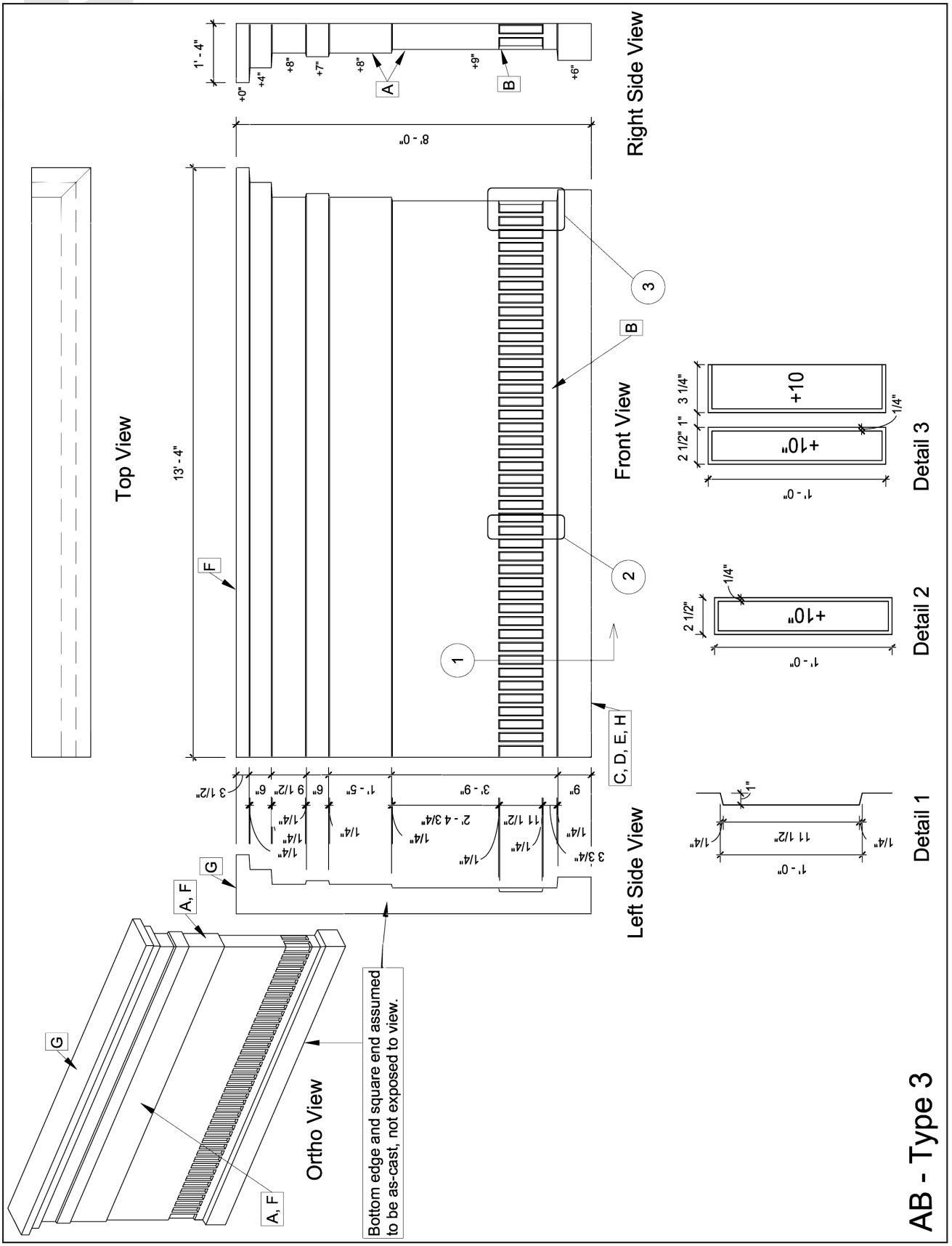

Figure 11. Category AB Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AB – Type 3

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface with multiple offset planes in the surface of the mold		Smooth form casting surface with minimum three offset planes in the surface of the mold. One of the offset planes need not be smooth. Evaluated surface minimum 100 ft^2
B	Multiple smooth recesses in the surface of the mold		Minimum two recesses in the surface of the mold. Recesses need not be smooth.
BB	Cornice detail, smooth form, finished top surface and side return to match face		Cornice detail, smooth form, finished top surface and return to match face shall include minimum two offsets and be a minimum of 8 in. in height and thickness. Top surface to be finished to match face.
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Mixture of AB – mock-up Type 3 must match mixture of AB – mock-up Type 2.	Producer must be capable of batching and mixing white cement. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Producer must be capable of producing consistent colors in multiple pieces.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch
G	Finished faces shall match. Top edge shall be finished to match face. Color and texture of mixture of AB – mock-up Type 3 must match color and texture of AB – mock-up Type 2.	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles. Producer must be capable of producing consistent colors and textures in multiple pieces.	10 in. minimum edge finished to match face. Multiple pieces must be consistent in color and texture.
H	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

Category AB Recertification Review Features

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
1.	Two textures in the same panel (need not be radiused profile panel). Precaster must be capable of achieving two separate textures in the same panel. Demarcation between the two finishes must be cleanly executed within the rustication.	Texture one – smooth form casting surface, minimum 80 ft^2	AB-1/A		1
		Texture two – smooth form casting surface, minimum 20 ft^2	AB-1/AA		
		Rustication detail	AB – 1/C		
		Smooth form panel finish – texture one shall be one of the following contrasting with texture two: a. light abrasive blast b. light acid etch	AB-1/G		
		Smooth form panel finish – texture two shall be exposed aggregate.	AB-1/H		
2.	Two concrete colors in the same panel Producer must be capable of batching and placing two different mixtures within the same panel. Demarcation between the two mixtures must be cleanly executed within the rustication.	Color one – smooth form casting surface, minimum 80 ft^2	AB-1/A	Need not be radiused profile panel.	1
		Color two – smooth form casting surface, minimum 20 ft^2	AB-1/AA		
		Rustication detail	AB-1/C		
		Concrete mixture color one – specific mixture proportions contrasting with color two, minimum 80 ft^2. Mixture proportions are precaster's choice.	AB-1/B		
		Concrete mixture color two – specific mixture proportions contrasting with color one, minimum 20 ft^2. Mixture proportions are precaster's choice.	AB-1/BB		
		Smooth form panel finish – color one texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AB-1/G		
		Smooth form panel finish – color two texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AB-1/H		
3.	Radiused mold surface, minimum 100 ft^2 in finished area	Radiused mold surface	AB-1/D	Can be radiused panel or column cover	1
		Concrete mixture – specific mixture proportions are precaster's choice.	AB-1/B		
		Smooth form panel finish –texture shall be one of the following: a. light abrasive blast b. light acid etch	AB-1/G		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
4.	Plant must be capable of producing 3-D projections on the face of a radiused or flat panel.	3-D projection of 5 in. minimum on the face of a panel, minimum 12 ft in length	AB-1/DD AB-1/DDD	Any projected shape with minimum 5 in. dimension from the adjoining face	1
		Texture shall be one of the following: a. light abrasive blast b. light acid etch	AB-1/G		
5.	Plant must be capable of producing matching finishes on thickened panel edges of radiused or flat panels.	Minimum 10 in. finished top or bottom edge by minimum 12 ft in length	AB-3/G	10 in. finished edge need not be the result of a projection	1
		Texture shall be one of the following: a. light abrasive blast b. light acid etch	AB-1/G		
6.	Plant must be capable of producing brick clad or other veneer cladding.				1
6a.	Plant must be capable of producing veneer clad panels with returns.	Brick return (one side, not top and bottom), return may be monolithically or sequentially cast, minimum 3 ft high and 15 ft^2 in finished area.	AB-2/AA		1
	General brick veneer notes	Brick formliner – specific brick and brick liner is precaster's choice, minimum 50 ft^2.	AB-2/AA		
		Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return	AB-2/B		
		Liner shall result in finished product with a crisp false joint and perimeter.	AB-2/C		
		Return brick and casting per PCI tolerances	AB-2/CC		
		Liner seam shall be included in the liner layout. Liner seams/joints shall not be visible after finishing.	AB-2/E		
	Producer must be capable of producing consistent color and textures in multiple pieces.	Specific mixture proportions are precaster's choice.	AB-2/G		
		Brick veneer finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned. a. Color and texture of brick joints shall be uniform across the face and return when viewed from various angles. b. Brick surfaces shall be free of concrete paste and wax/retarder coatings.			

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
7.	Smooth form casting surface, adjacent to a thin-brick veneer. Producer must be capable of producing consistent color and textures in multiple pieces.	Minimum 25 ft^2 in finished area	AB-2/EE		1
		Specific mixture proportions are precaster's choice.	AB-2/II	Same mixture may be used for brick joints and adjacent smooth panel.	
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AB-2/II		
8.	Smooth form return, sequentially cast. Producer must be capable of producing consistent color and texture in multiple pieces.	Smooth form return, sequentially cast, minimum 3 ft high, minimum 15 ft^2 in finished area	AB-2/EEE		1
		Specific mixture proportions are precaster's choice.	AB-2/II		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AB-2/II		
9.	Projections (cornice) at face	Cornice detail shall include two additional 3-D features and be a minimum of 12 in. in height and thickness. Top surface to be finished to match face	AB-3/G		1
		Specific mixture proportions are precaster's choice.	AB-3/D		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AB-3/F		
10.	Return of face projection (cornice)	Smooth form return, sequentially or monolithically cast, minimum 12 in.	AB-3/G		1
		Specific mixture proportions are precaster's choice.	AB-3/D		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AB-3/F		
11.	3-D form surfaces. Producer must be capable of producing consistent color and texture in multiple pieces.			Features 11a, 11b, and 11c need not be demonstrated in the same panel.	
11a.	Smooth form casting surface with minimum three offset planes in the surface of the mold	Evaluated surface minimum 100 ft^2	AB-3/A	One of the offset planes need not be smooth	1

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
11b.	Multiple recesses in the surface of the panel	Minimum two recesses in the surface of the panel. Recesses need not be smooth.	AB-3/B		1
11c.	Multiple smooth projections (dentils) in the surface of the panel	Minimum five projections (dentils) in the surface of the panel	AA-3/BB		1
	General notes for 3-D form surfaces	Specific mixture proportions are precaster's choice.	AB-3/D		
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch	AB-3/F		
12.	Producer must be capable of batching and mixing white cement. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Minimum 100 ft^2 smooth form casting surface	AB-1/A, AB-2/EE, AB-3/A	Ability to batch white cement may also be demonstrated in any of the above panels with more than 100 ft^2 of finished panel.	1
		Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch			
				Total possible points	15

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

Need 9/15 points to maintain AB certification.

3.11 Category AB Tolerance Requirements

The production and erection tolerance requirements of MNL 135 (same as current MNL 117) apply.

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Chapter 4 – Category AC Requirements

4.1 General Description

This category covers the certification of plants producing products with architectural finishes such as cladding and wall panels with plant-applied finishes including brick veneers and formliners. Production tolerances for this production category are required to meet requirements of PCI MNL 135, *Tolerances for Precast and Prestressed Concrete Construction*, and the quality requirements of PCI MNL 117, *Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products.*

To ensure production capability for the types of products covered within this category, plant requirements for different cement types and colored mixtures have been implemented.

Certification under Category AC will not incur additional surcharges, but plants may incur additional fees to cover added costs of additional special or extra audits. See section 1.3.3 for more information.

Reference the general requirements, dates, and other information presented in chapter 1, which supplement the specific requirements of this chapter.

4.2 List of Capabilities Category AC-Certified Facilities Must Demonstrate

Category AC-certified facilities must meet all of the following requirements:

- capability of batching both white and gray cement
- all face mixtures to be plant-batched and mixed (premixed, no mixer-truck mixing)

4.3 Required QC Personnel (minimum qualifications)

For plants producing precast concrete product only, at least one individual who holds PCI Level 1 (or higher) personnel certification is required.

For plants producing prestressed concrete products, at least one individual who holds PCI Level 2 (or higher) personnel certification is required.

4.4 Erection/Installation Requirements

The use of a PCI-Certified Erector (Category A) is required on all Category AC projects effective July 1, 2021.

Tolerance requirements per MNL 135 are required for Category AC architectural products.

4.5 Certification Process

Refer to section 1.3 for the general requirements to apply for initial certification and recertification under the new PCI Architectural Certification Program. For initial certification, the information provided in the producer's application, the results of the plant's initial audit, and the results of the review of the mock-up panel construction will be reviewed to determine eligibility for certification in Category AC. For recertification, the Architectural Certification Review Board (ACRB) will consider the following when determining eligibility for a recommendation of continued certification in Category AC:

- the results of the plant audits
- compliance with the requirements for Category AC key features

Figure 12 illustrates the initial certification and subsequent recertification process flow chart for Category AC.

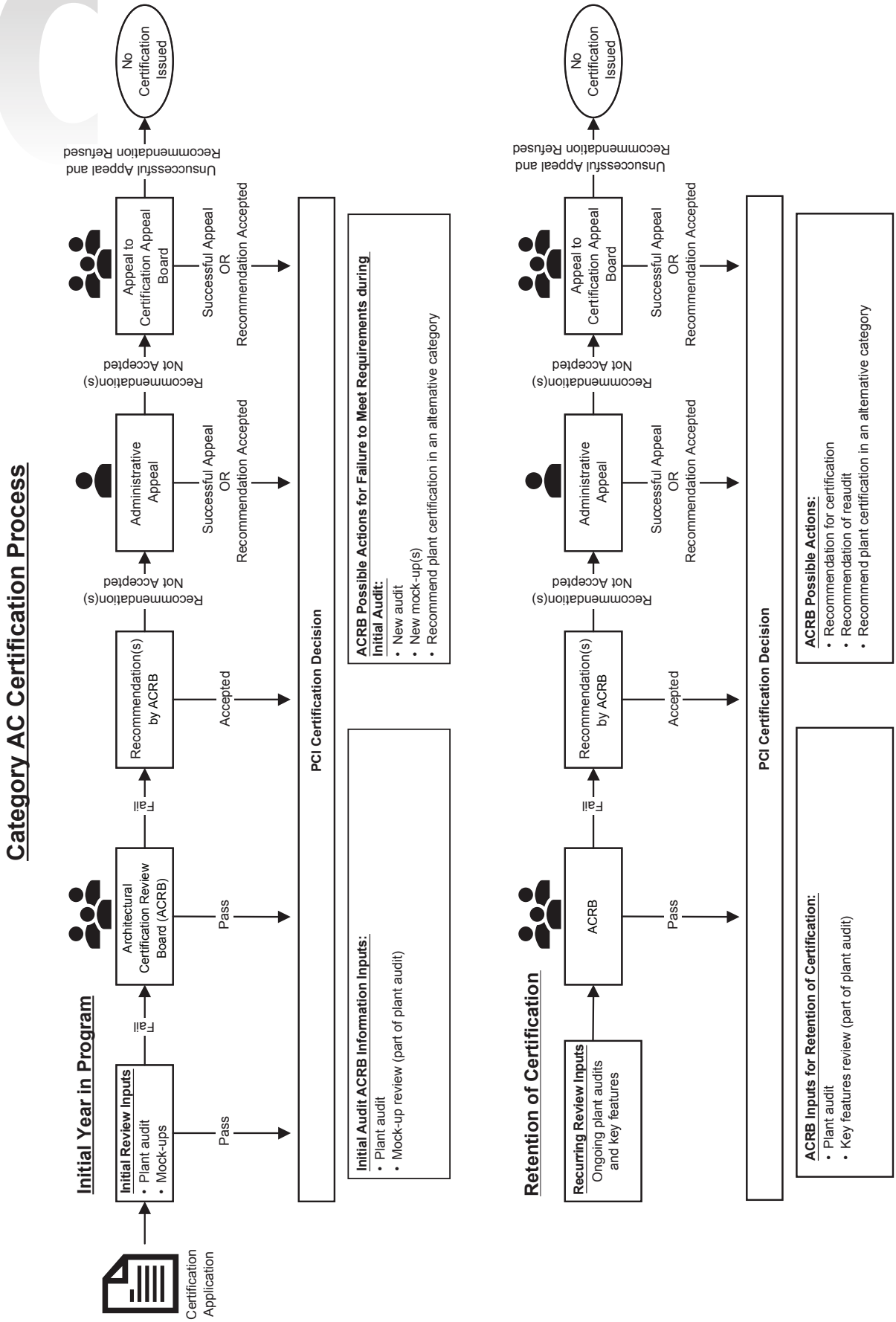

Figure 12. Initial certification and recertification process for Category AC.

4.6 Initial Certification

Forty-five days before the confirmed earliest initial audit date, the producer must create and submit to PCI for approval, mock-up production drawings for the three panels required for initial certification. These drawings must document the key features, reinforcement, pickups, and embeds as would be done for typical production panels, based on the Category AC drawings in section 4.8. Concrete mixture proportions for each mock-up must also be submitted in advance of the audit. Production and QC staff, as well as the auditors, will refer to these drawings for fabrication, finishing, and inspection purposes. Typical QC records will need to be produced per the plant's Quality System Manual for all mock-up panel production.

All details, exactly as depicted and dimensioned on the mock-up drawings, including their location, quantity, size, depth, or projection dimensions, must be incorporated into the mock-ups fabricated for the initial audit. Before the initial audit, formwork construction for all three required mock-ups, and production of any two of the three required panel types must be completed. The remaining panel will be produced and finished for viewing during the two-day initial audit.

All three mock-ups must demonstrate adherence to existing MNL 135 dimensional tolerances outlined in section 4.9. The panels must have a unique identification traceable to the production and quality records.

4.7 Recertification

For subsequent plant audits for recertification, the producer can once again construct the formwork and produce the mock-up panels identified in section 4.8, or the producer can make current production panels available for inspection that contain the minimum number of Category AC key features required and meet the required Category AC tolerances. If current production panels are to be used, drawings of the panels must be provided to the PCI plant auditor during any audit, to confirm they include the key features required for recertification.

New mock-up panels or subsequent certification production panels are required at a minimum of every two years to maintain certification. During any audits following the initial audit, the auditor will ask the producer if there are any key features that should be reviewed and noted. See the list of Category AC recertification review key features at the end of section 4.8.

Audit panels must demonstrate:

- plant-batched face mixture, colored mixture on one of the mock-ups,
- white cement-based face mixture,
- multitexture face,
- texture face with feature strips (such as sandblast, acid wash, or similar),
- embed brick veneer with return veneer one edge,
- formliner-faced panel,

- monolithic return (two-piece return optional),
- compliance with the tolerance requirements per MNL 135 for Category AC architectural products.

4.8 Category AC Mock-up Drawings and Key Features

The following reference items are included in this section:

- Category AC Type 1 mock-up drawing
- Key features – mock-up Category AC – Type 1
- Category AC Type 2 mock-up drawing
- Key features – mock-up Category AC – Type 2
- Category AC Type 3 mock-up drawing
- Key features – mock-up Category AC – Type 3
- Category AC recertification review key features

For initial certification, all details as depicted and dimensioned on the enclosed mock-up panel drawings, including their location, quantity, size, and depth or projection, dimension must be incorporated into the panels fabricated for audit.

For recertification, produced panels must contain the required number of key features with dimensions at least equal to or greater than, and profile to match those depicted and dimensioned on the enclosed mock-up drawings.

Detail depictions on the drawings supersede the descriptions in the accompanying key features lists.

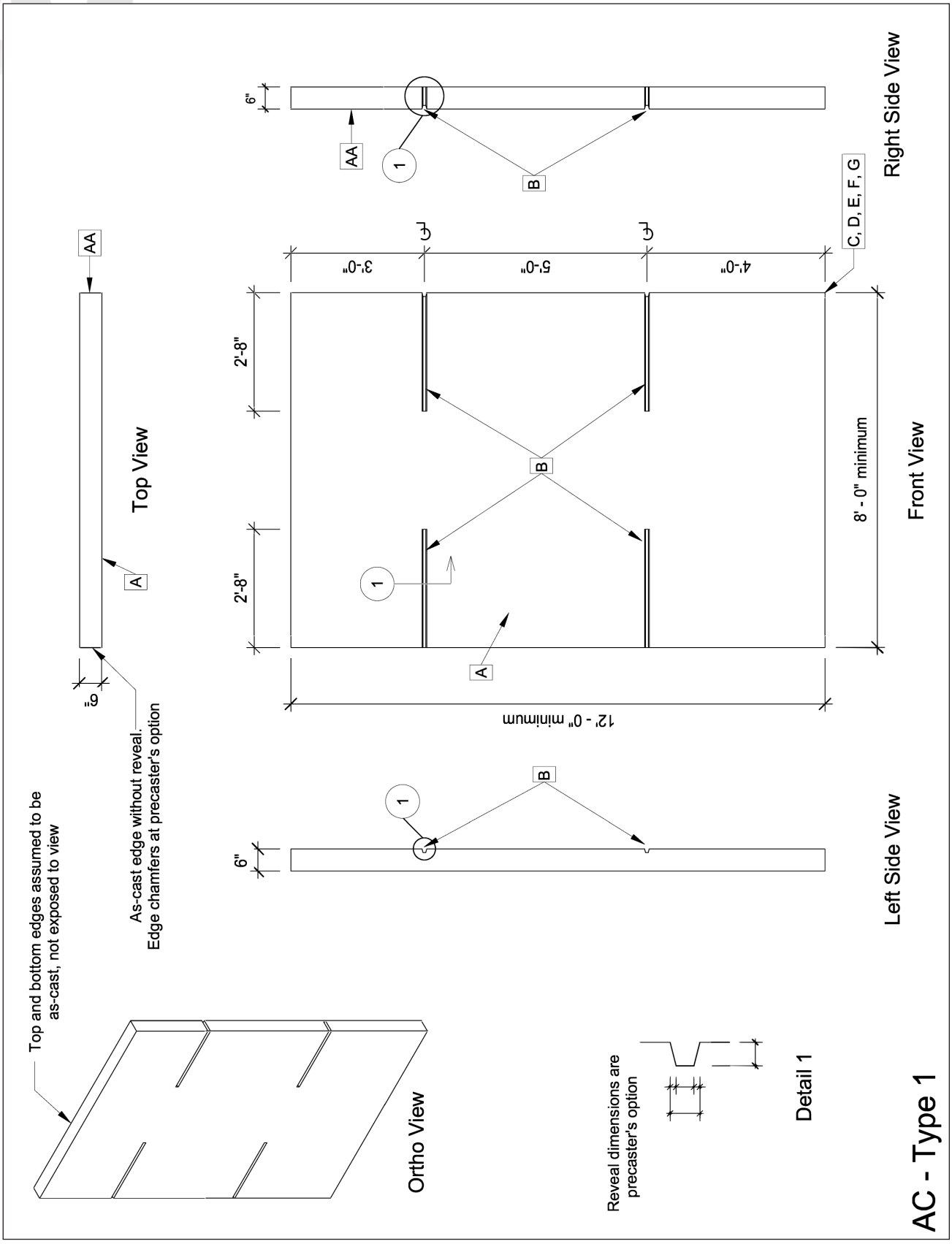

Figure 13. Category AC Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AC – Type 1

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface		Smooth form casting surface, minimum 100 ft^2
AA	Smooth form edge return (required one side only)		Smooth form edge return, minimum 6 in. (required one side only)
B	Rustication detail (detail 1)		Rustication detail, minimum 10 ft
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – specific mixture proportions are precaster's choice; must include white cement.		Concrete mixture – specific mixture proportions are precaster's choice; must include white cement.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Panel finish – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate	Color and texture of the finished panel shall be uniform across all surfaces when viewed from various angles.	Panel finish – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate
G	Additional evaluation criteria	The following post-finishing defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges and details f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

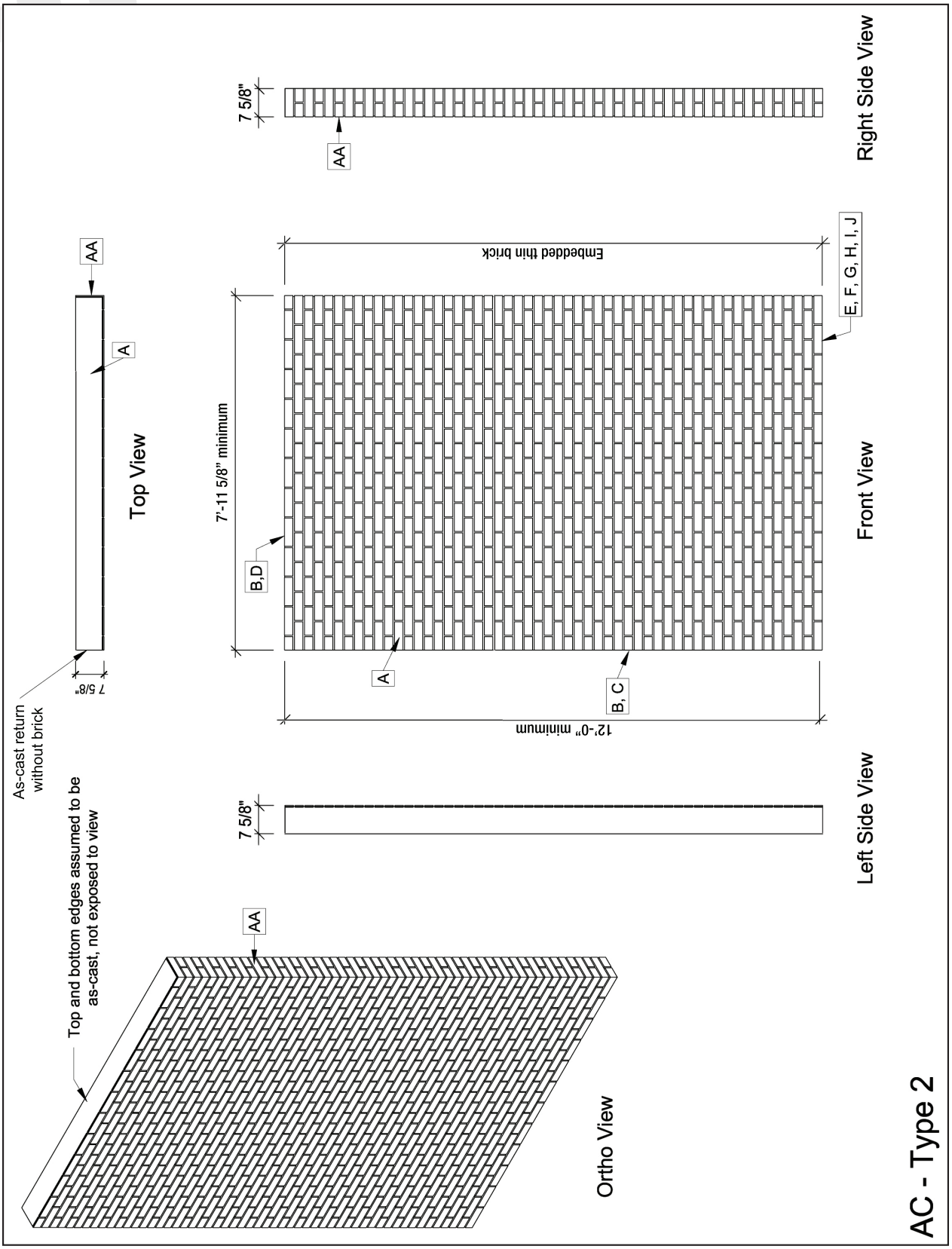

Figure 14. Category AC Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AC – Type 2

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Brick formliner – specific brick and brick liner are precaster's choice.		Brick formliner, minimum 100 ft^2 – specific brick and brick liner are precaster's choice.
AA	Brick return (one side only required, not required at top and bottom)		Brick return, minimum 7$\frac{5}{8}$ in. (one side only required, not required at top and bottom)
B	Brick liner layout/spacing	Brick liner mortar joints shall parallel across panel width and 90 degrees to panel sides.	Brick liner layout/spacing
C	Brick liner termination at side rails	Liner shall result in finished product with a crisp perimeter.	Brick liner termination at side rails
D	Brick liner termination at heads	Liner shall result in finished product with a crisp perimeter.	Brick liner termination at heads
E	Liner seam shall be included in the liner layout.	Liner seams/joints shall not be visible after finishing.	Brick liner seam shall be included in the liner layout.
F	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
G	Concrete mixture – specific mixture proportions are precaster's choice.		Concrete mixture – specific mixture proportions are precaster's choice.
H	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
I	Panel finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.	a. Color and texture of brick joints shall be uniform when viewed from various angles. b. Brick surfaces shall be free of concrete paste and wax/retarder coatings.	Panel finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.
J	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances, including tipped brick tolerances.	Additional evaluation criteria

Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

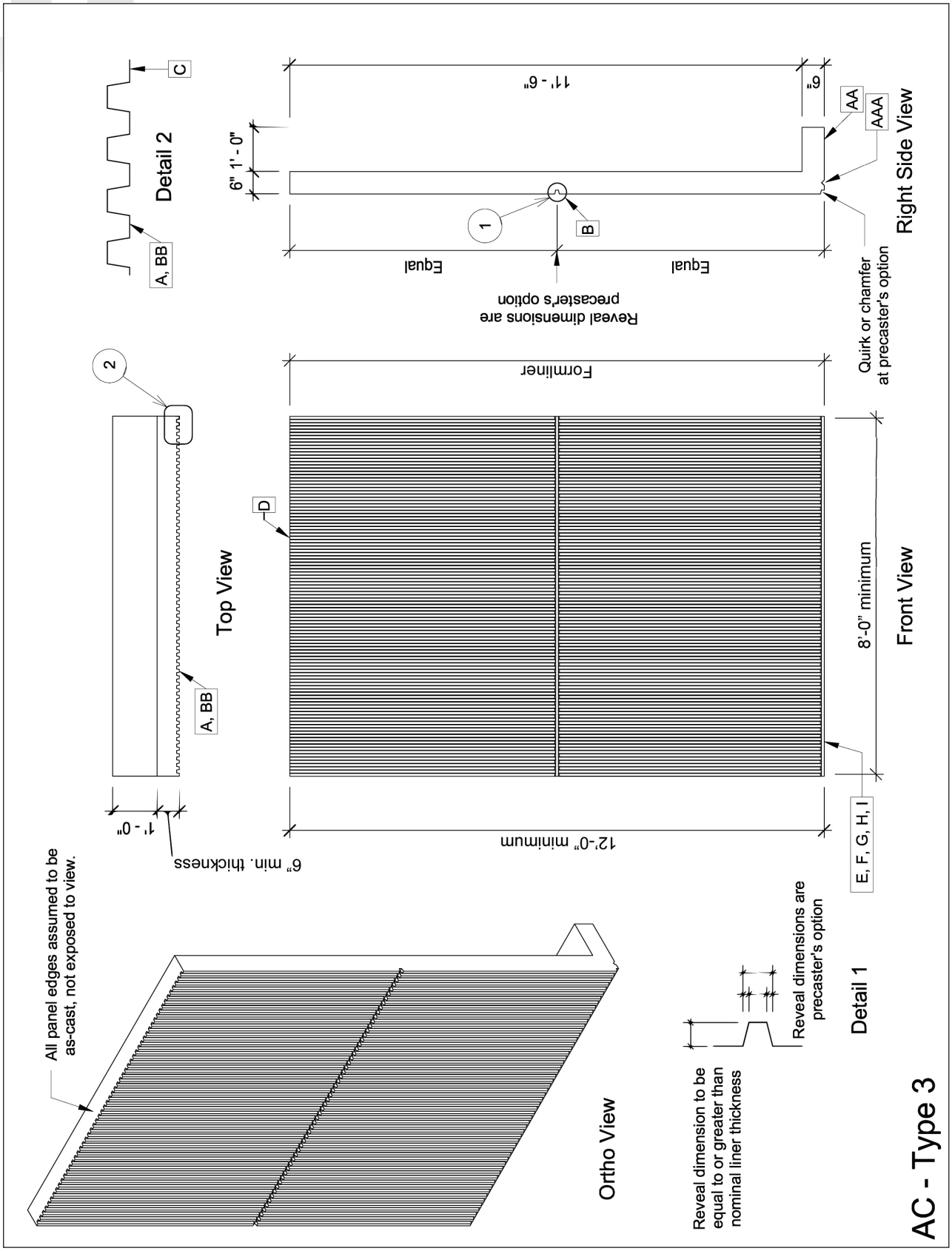

Figure 15. Category AC Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AC – Type 3

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Linear formliner – specific linear liner is precaster's choice.		Linear formliner, minimum 100 ft^2 – specific linear liner is precaster's choice.
AA	Smooth form return. Return finish to be same as face finish. Return may be cast monolithically or sequentially.		Smooth form return. Return finish to be same as face finish. Return may be cast monolithically or sequentially. Return must be minimum 1 ft 6 in. and 15 ft^2.
AAA	Drip – profile is precaster's choice.		Drip – profile is precaster's choice.
B	Liner layout/spacing	Liner ribs shall line up across each side of detail 1.	Liner layout/spacing
BB	Vertical liner seam shall be included in the liner layout.	Joints between pieces of liner shall not be visible after finishing.	Vertical liner seam shall be included in the liner layout.
C	Liner profile termination at side rails	Termination of liner profile shall be consistent on both sides of mock-up.	Liner profile termination at side rails
D	Liner profile termination at heads	Liner profile shall terminate cleanly.	Liner profile termination at heads
E	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
F	Concrete mixture – specific mixture proportions are precaster's choice.		Concrete mixture – specific mixture proportions are precaster's choice.
G	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
H	Panel finish including return – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate	Color and texture of each similarly oriented surface (that is, face when compared with angled return) shall be uniform across all surfaces when viewed from various angles.	Panel finish including return – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate
I	Additional evaluation criteria	The following post-finishing defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges and details f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

Category AC Recertification Review Features

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
1.	Finished smooth form panel with rustication detail and finished edge. Producer must be capable of producing consistent color and textures in multiple pieces.	Smooth form panel finish, minimum 100 ft² – texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AC-1/A		1
		Smooth form edge return, minimum 6 in. (required one side only)	AC-1/AA		1
		Rustication detail	AC–1/B		1
		Concrete mixture – specific mixture proportions are precaster's choice.	AC-1/D		
2.	Brick clad panels				
2a.	Plant must be capable of producing brick clad panels using formliner.	Brick clad panel, 100 ft² minimum	AC-2/A		1
2b.	Plant must be capable of producing brick clad panels with side returns.	Brick return, minimum 7 5/8 in. (one side only required, not required at top and bottom)	AC-2/AA		1
	General brick veneer notes	Brick formliner – specific brick and brick liner are precaster's choice, minimum 100 ft².	AC-2/A		
		Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return.	AC-2/B		
		Liner shall result in finished product with a crisp false joint and perimeter.	AC-2/C		
		Return brick and casting per PCI tolerances	AC-2/AA		
		Liner seam shall be included in the liner layout. Liner seams/joints shall not be visible after finishing.	AC-2/B		
3.	Linear formliner	Linear formliner, minimum 100 ft² – specific linear liner is precaster's choice.	AC-3/A		1
		Liner ribs shall line up across each side of rustication detail.	AC-3/B		
		Joints between pieces of liner shall not be visible after finishing.	AC-3/BB		
		Termination of liner profile shall be consistent on both sides of mock-up.	AC-3/C		
		Liner profile shall terminate cleanly.	AC-3/D		
		All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	AC-3/E		
	Producer must be capable of producing consistent color and textures in multiple pieces.	Specific mixture proportions are precaster's choice.	AC-3/F		
		Panel finish – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate	AC-3/A		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
4.	Smooth form return with drip				
4a.	Smooth form return	Smooth form return. Return finish to be same as face finish. Return may be cast monolithically or sequentially. Return must be minimum 1 ft 6 in. and 15 ft^2. Quirk or other details are at precaster's option.	AC-3/AA		1
4b.	Drip	Drip – profile is precaster's choice.	AC-3/AAA		1
		Specific mixture proportions are precaster's choice.	AC-3/AA		
		Smooth form panel finish – texture shall be one of the following to match the panel face: a. abrasive blast b. acid etch c. exposed aggregate	AB-3/H		
				Total possible points	8

Note: 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

Need 6/8 points to maintain AC certification.

4.9 Category AC Tolerance Requirements

The production and erection tolerances of MNL 135 (same as current MNL 117) apply, with the following erection tolerance exception (changes noted in bold text).

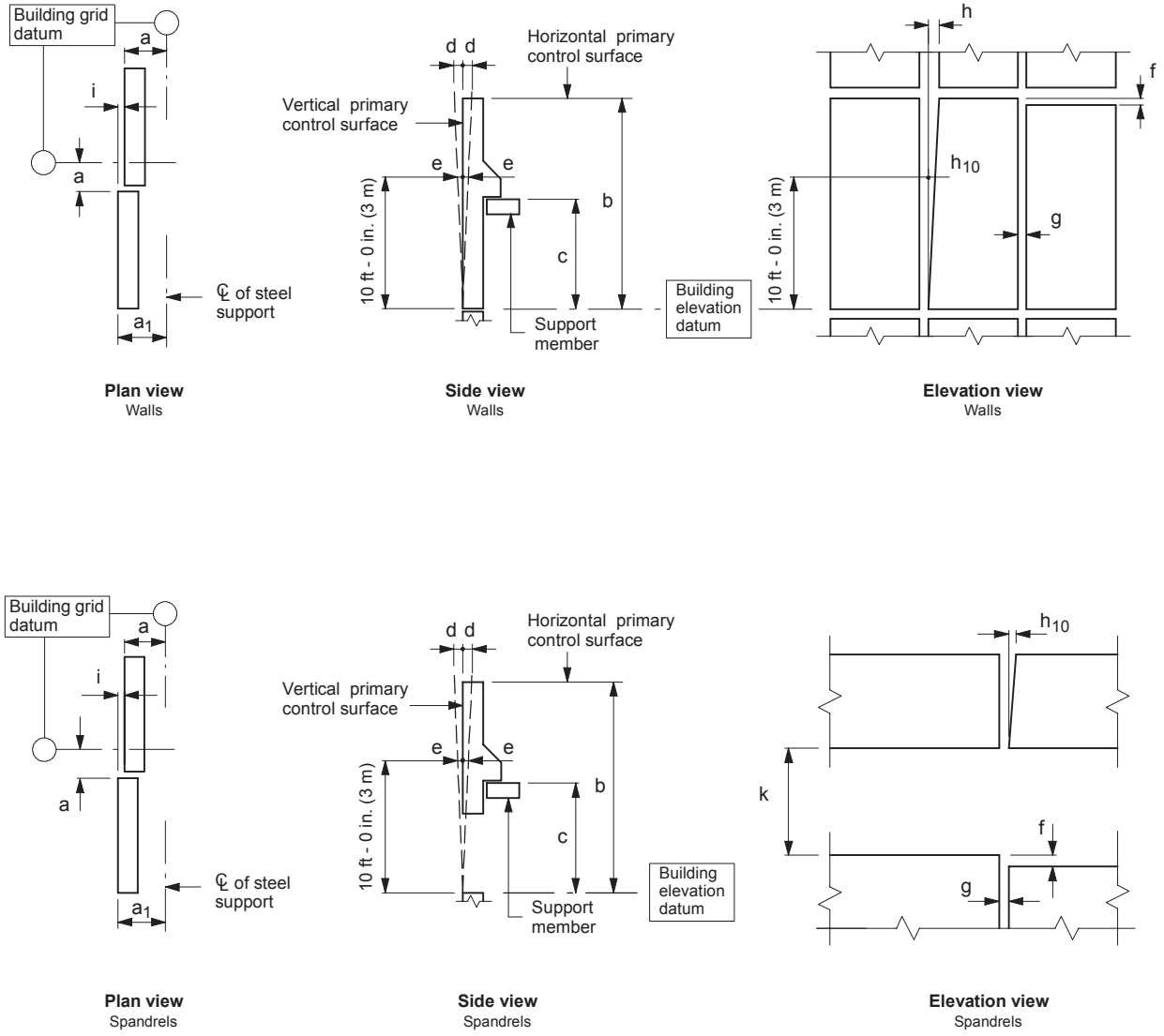

Figure 16. Architectural walls/spandrel erection tolerances (MNL 135, Fig. 12.5.1).

Attachment 3 – Architectural Wall Panel Erection Tolerances per PCI MNL 135, Fig. 12.5.1

To ensure successful adherence to precast erection tolerances outlined below, it is essential the architect/engineer and other parties responsible for the tolerances of the interfacing structure establish and document the overall project tolerance system that will allow the successful completion of the project within said tolerances. These interfacing structure tolerances will need to be more stringent than current standard practices or industry tolerances.

Erect architectural precast concrete units level, plumb, square, and in alignment without exceeding the following noncumulative erection tolerances:

a = plan location from building grid datum* . . . . . ±1/2 in. (±13 mm)

a_1 = plan location from centerline of steel support† ... . ±1/2 in. (±13 mm)

b = top elevation from nominal top elevation

Exposed individual panel. . . . . ±1/4 in. (±6 mm)

Nonexposed individual panel . . . . . ±1/2 in. (±13 mm)

c = support elevation from nominal support elevation

Maximum low . . . . . 1/2 in. (13 mm)

Maximum high . . . . . 1/4 in. (6 mm)

d = maximum plumb variation over the least of height

of structure or 100 ft (30 m)* . . . . . .1 in. (25 mm)

e = plumb in any 10 ft (3 m) of unit height . . . . . 1/4 in. (6 mm)

f = maximum jog in alignment of matching edges

Exposed panel relative to adjacent panel: . . . . . 1/4 in. (6 mm)

Nonexposed panel relative to adjacent panel: . . . . . 1/2 in. (13 mm)

For AC: Add 1/8 in. (3 mm) additional tolerance in the maximum jog for panels larger than 20 ft (6 m), per 10 ft (3 m) of additional height, up to a maximum tolerance of 1/2 in. (13 mm)

g = joint width (governs over joint taper) . . . . . .±1/4 in. (±6 mm)

h = joint taper maximum. . . . . .±3/8 in. (±6 mm) but not more than 1/4 in. (6 mm) in 10 ft length

h_{10}= joint taper over 10 ft (3 m) length . . . . . 1/4 in. (6 mm)

i = maximum jog in alignment of matching faces . . . . . 1/4 in. (6 mm)

j = differential bowing or camber, as erected, between adjacent members of same design . . . . . 1/4 in. (6 mm)

k = opening height between spandrels . . . . . ±1/4 in. (± 6 mm)

* For precast concrete buildings over 100 ft (30 m) tall, tolerances for “a” and “d” can increase at the rate of 1/8 in. (3 mm) per story to a maximum of 2 in. (50 mm).

† For precast concrete elements erected on a steel frame, this tolerance takes precedence over tolerance on dimension “a.”

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Chapter 5 – Category AD Requirements

5.1 General Description

This category covers the certification of plants producing structural product with an architectural finish such as wall panels with plant-applied finishes, including structural products with brick veneers and formliners or extruded profiles. Product type tolerance requirements of PCI MNL 135, *Tolerances for Precast and Prestressed Concrete Construction*, and quality requirements of PCI MNL 116, *Manual for Quality Control for Plants and Production of Structural Precast Concrete Products*, apply.

To ensure production capability for the types of products covered within this category, plant requirements for different cement types and colored mixtures have been implemented.

Certification in Category AD will not incur additional surcharges, but plants may incur additional fees to cover added costs of additional special or extra audits. See section 1.3.3 for more information.

Reference the general requirements, dates, and other information presented in chapter 1, which supplement the specific requirements of this chapter.

5.2 List of Capabilities Category AD-Certified Facilities Must Demonstrate

Category AD-certified facilities must meet the following requirements:

- proper form setup and panel removal
- proper concrete placement and vibration
- proper finished face (per mock-up panel criteria)

5.3 Required QC Personnel (minimum qualifications)

For plants that produce precast concrete product only, at least one individual who holds PCI Level 1 (or higher) personnel certification is required.

For plants that produce prestressed concrete product, at least one individual who holds PCI Level 2 (or higher) personnel certification is required.

5.4 Erection/Installation Requirements

The use of a PCI-Certified Erector is preferred but not required for plants certified in Category AD.

Erection tolerance requirements per MNL 135 are required for structural products.

5.5 Certification Process

Refer to section 1.3 for the general requirements to apply for initial certification and recertification under the new PCI Architectural Certification Program. For initial certification, the information provided in the producer's application, the results of the plant's initial audit, and the results of the review of the mock-up panel construction will be reviewed to determine eligibility for certification in Category AD. For recertification, the Architectural Certification Review Board (ACRB) will consider the following when determining eligibility for a recommendation of continued certification in Category AD:

- the results of the plant audits
- compliance with the requirements for Category AD key features

Figure 17 illustrates the initial certification and recertification process flow chart for Category AD.

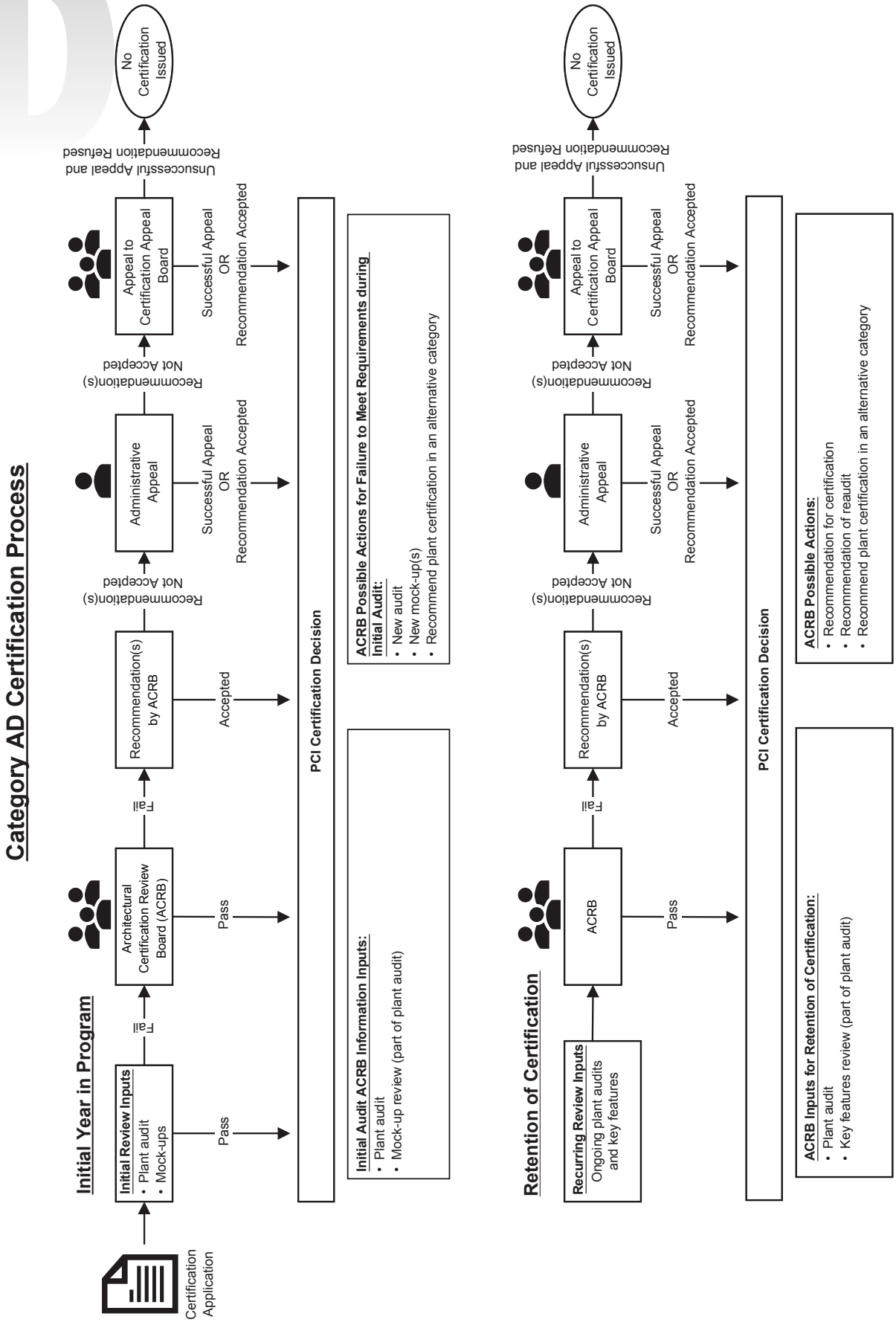

Figure 17. Initial certification and recertification process for Category AD.

5.6 Initial Certification

Forty-five days before the confirmed earliest initial audit date, the producer must create and submit to PCI for approval, mock-up production drawings for the three panels required for initial certification. These drawings must document the key features, reinforcement, pickups, and embeds as would be done for typical production panels, based on the Category AD drawings in section 5.8. Concrete mixture proportions for each mock-up must also be submitted in advance of the audit. Production and QC staff, as well as the plant auditors, will refer to these drawings for fabrication, finishing, and inspection purposes. Typical QC records will need to be produced per the plant's Quality System Manual for all mock-up panel production.

All details, exactly as depicted and dimensioned on the mock-up drawings, including their location, quantity, size, depth or projection dimensions, must be incorporated into the mock-ups fabricated for the initial audit. Before the initial audit, formwork construction for all three required mock-ups and production of any two of the three required panel types must be completed. The remaining panel must be produced and finished for viewing during the two-day initial audit.

All three mock-ups must demonstrate adherence to existing MNL 135 Category AD dimensional tolerances outlined in section 5.9. The panels must have a unique identification traceable to the production and quality records.

5.7 Recertification

For subsequent plant audits for recertification, the producer can once again construct the formwork and produce the mock-up panels identified in section 5.8, or the producer can make current production panels available for inspection that contain the minimum number of Category AD key features required and meet the required Category AD tolerances. If current production panels are to be used, drawings of the panels must be provided to the PCI plant auditor during any audit, to confirm they include the key features required for recertification.

New mock-up panels or subsequent certification production panels are required at a minimum of every two years to maintain certification. During any audits following the initial audit, the auditor will ask the producer if there are any key features that should be reviewed and noted. See the list of Category AD recertification review key features at the end of section 5.8.

Audit panels must demonstrate:

- colored mixture on one of the mock-ups,
- textured face with feature strips (sandblast, acid wash, or similar),
- embed brick veneer,
- formliner-faced panel,
- compliance with the tolerance requirements per MNL 135 for structural products.

5.8 Category AD Mock-up Drawings and Key Features

The following reference items are included in this section:

- Category AD Type 1 mock-up drawing
- Key features – mock-up Category AD – Type 1
- Category AD Type 2 mock-up drawing
- Key features – mock-up Category AD – Type 2
- Category AD Type 3 mock-up drawing
- Key features – mock-up Category AD – Type 3
- Category AD recertification review key features

For initial certification, all details as depicted and dimensioned on the mock-up panel drawings, including their location, quantity, size, and depth or projection dimension must be incorporated into the panels fabricated for audit.

For recertification, produced panels must contain the required number of key features with dimensions at least equal to or greater than, and profile to match those depicted and dimensioned on the enclosed mock-up drawings.

Detail depictions on the drawings supersede the descriptions in the accompanying key features lists.

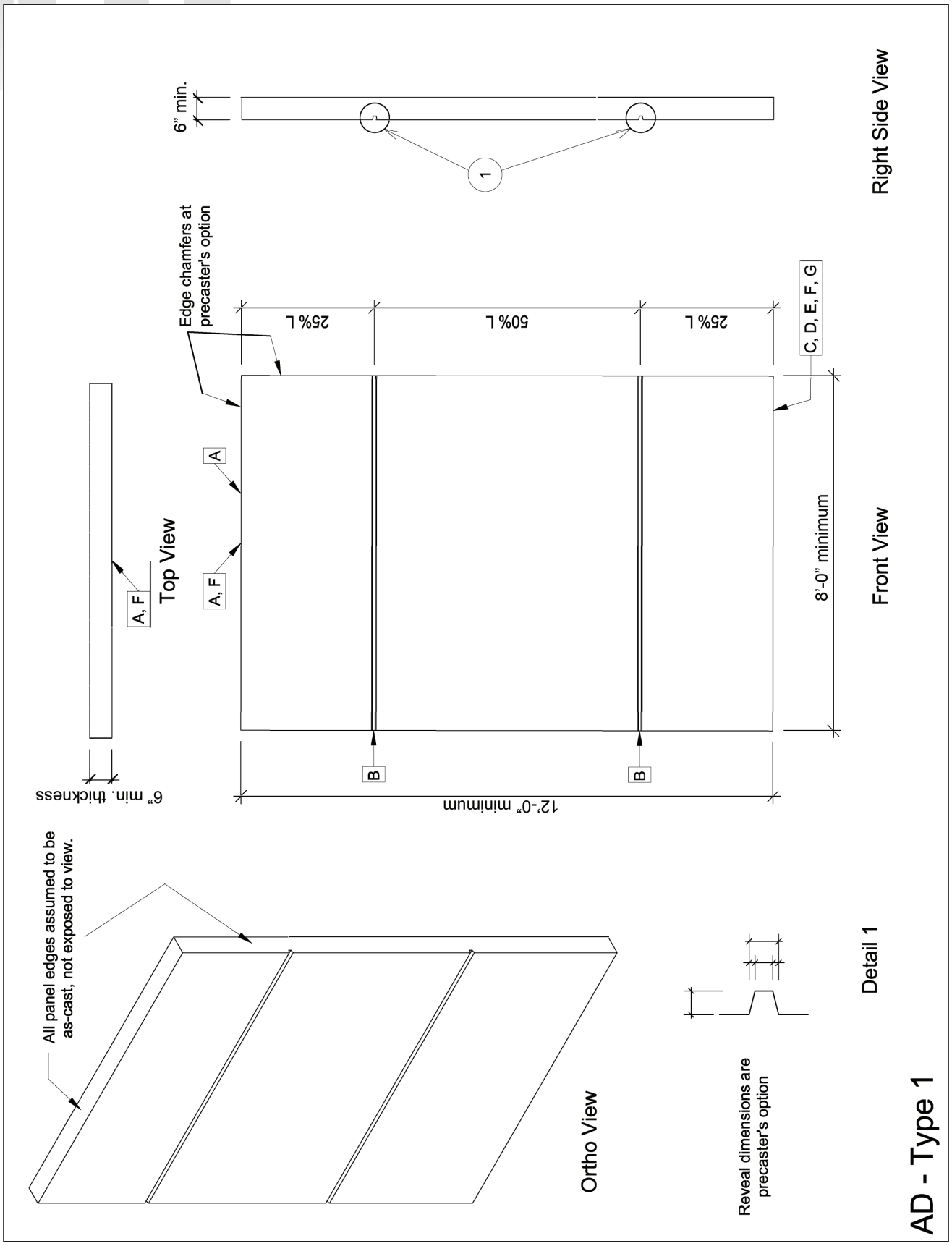

Figure 18. Category AD Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AD – Type 1

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface		Smooth form casting surface, minimum 100 ft^2
B	Rustication detail (detail 1)		Rustication detail, minimum 8 ft (detail 1)
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – specific mixture proportions are precaster's choice; must include pigment dosed at a minimum of 3% (not gray or black pigment).		Concrete mixture – specific mixture proportions are precaster's choice; must include a pigment dosed at a minimum of 3% (not gray or black pigment).
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Panel finish – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate	Color and texture of the finished panel shall be uniform across all surfaces when viewed from various angles.	Panel finish – texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate
G	Additional evaluation criteria	The following post-finishing defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges and details f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

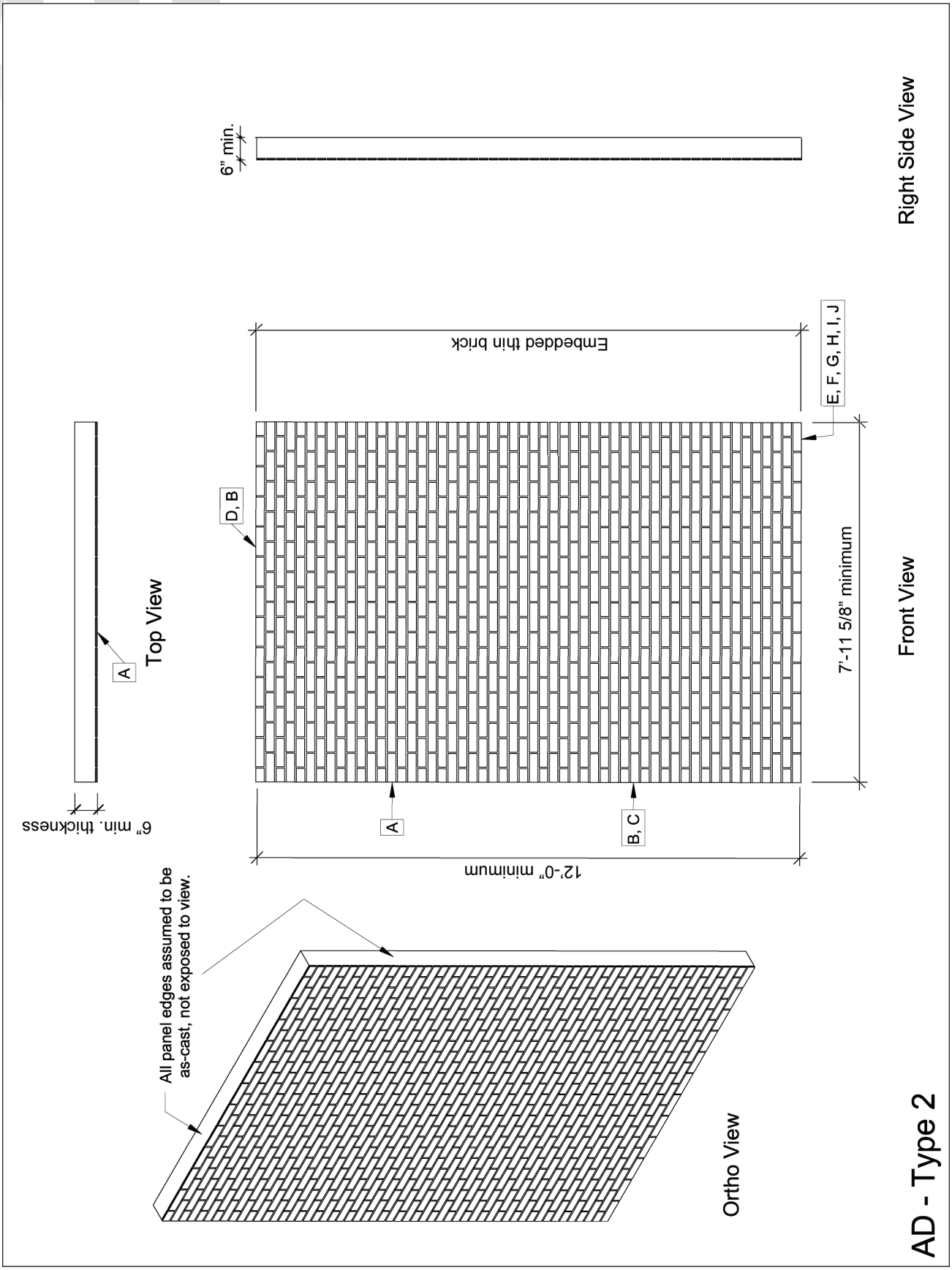

Figure 19. Category AD Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AD – Type 2

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Brick formliner – specific brick and brick liner is precaster's choice.		Brick formliner, minimum 100 ft^2 – specific brick and brick liner is precaster's choice.
B	Brick liner layout/spacing	Brick liner mortar joints shall parallel across panel width and 90 degrees to panel sides.	Brick liner layout/spacing
C	Brick liner termination at side rails	Liner shall result in finished product with a crisp perimeter.	Brick liner termination at side rails
D	Brick liner termination at heads	Liner shall result in finished product with a crisp perimeter.	Brick liner termination at heads
E	Brick liner seam shall be included in the liner layout.	Liner seams/joints shall not be visible after finishing.	Brick liner seam shall be included in the liner layout.
F	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
G	Concrete mixture – specific mixture proportions are precaster's choice		Concrete mixture – specific mixture proportions are precaster's choice
H	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
I	Panel finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.	a. Color and texture of brick joints shall be uniform when viewed from various angles. b. Brick surfaces shall be free of concrete paste and wax/retarder coatings.	Panel finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.
J	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances, including tipped brick tolerances.	Additional evaluation criteria

Note: 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

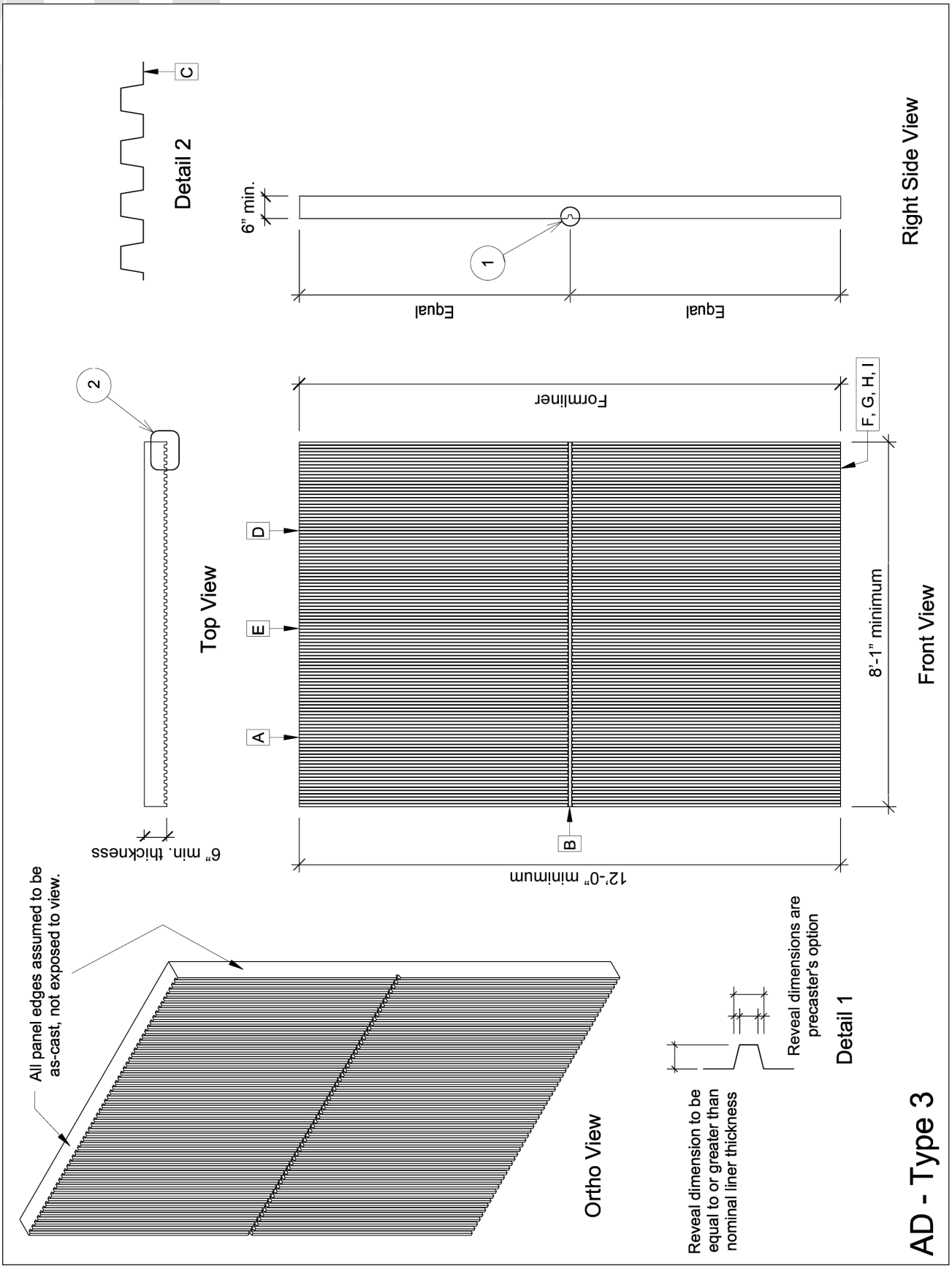

Figure 20. Category AD Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AD – Type 3

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Linear formliner or linear extrusion – specific linear profile is precaster's choice.		Linear formliner or linear extrusion, minimum 100 ft^2 – specific linear profile is precaster's choice.
B	Linear layout/spacing	Linear ribs shall line up across each side of detail 1	Liner layout/spacing
C	Linear profile termination at side rails	Termination of linear profile shall be consistent on both sides of mock-up.	Linear profile termination at side rails
D	Linear profile termination at heads	Linear profile shall terminate cleanly.	Linear profile termination at heads
E	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
F	Concrete mixture – specific mixture proportions are precaster's choice.		Concrete mixture – specific mixture proportions are precaster's choice.
G	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
H	Panel finish – texture shall be one of the following: a. as-cast b abrasive blast c. acid etch d. exposed aggregate	Color and texture of each similarly oriented surface (that is, face when compared with angled return) shall be uniform across all surfaces when viewed from various angles.	Panel finish – texture shall be one of the following: a. as-cast b. abrasive blast c. acid etch d. exposed aggregate
I	Additional evaluation criteria	The following post-finishing defects are not acceptable: a. discoloration in the face of the finished panel b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged panel edges and details f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

Category AD Recertification Review Features

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
1.	Finished smooth form panel with rustication detail. Producer must be capable of producing consistent color and textures in multiple pieces.	Smooth form panel finish, minimum 100 ft^2 – texture shall be one of the following: a. light abrasive blast b. light acid etch c. exposed aggregate	AD-1/A		1
		Concrete mixture – specific mixture proportions are precaster's choice.	AD-1/D		
		Rustication detail, minimum 8 ft	AD – 1/B		1
2.	Plant must be capable of producing brick clad panels using formliner.	Brick clad panel, 100 ft^2 minimum	AD-2/A		1
	General brick veneer notes	Brick formliner – specific brick and brick liner are precaster's choice, minimum 100 ft^2.	AD-2/A		
		Brick liner mortar joints shall be parallel across panel width and 90 degrees to the face of the panel at the return.	AD-2/B		
		Liner shall result in finished product with a crisp false joint and perimeter.	AD-2/C		
		Liner seam shall be included in the liner layout. Liner seams/joints shall not be visible after finishing.	AD-2/E		
		Concrete mixture – specific mixture proportions are precaster's choice.	AD-2/G		
		Panel finish a. Brick joint finish may be as-cast or acid etch. b. Brick surfaces shall be cleaned.	AD-2/I		

Review Item Number	Recertification Review Features	Recertification Key Features	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
3.	Linear form liner or linear extrusion – specific linear profile is precaster's choice.	Linear form liner or linear extrusion, minimum 100 ft^2 – specific linear profile is precaster's choice.	AD-3/A		1
		Liner ribs shall line up across each side of rustication detail.	AD-3/B		
		Termination of liner profile shall be consistent on both sides of mock-up.	AD-3/C		
		Liner profile shall terminate cleanly	AD-3/D		
		All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	AD-3/E		
	Producer must be capable of producing consistent color and textures in multiple pieces.	Specific mixture proportions are precaster's choice.	AD-3/F		
		Panel finish– texture shall be one of the following: a. abrasive blast b. acid etch c. exposed aggregate d. as-cast	AD-3/H		
				Total possible points	4

Note: 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

Need 3/4 points to maintain AD certification.

5.9 Category AD Tolerance Requirements

The production and erection tolerances of MNL 135 (same as current MNL 116) apply.

Chapter 6 – Category AT Requirements

6.1 General Description

This category covers the certification of plants producing architectural trim products such as coping and lintels with plant-applied finishes. Product type tolerance requirements of PCI MNL 135, *Tolerances for Precast and Prestressed Concrete Construction*, and quality requirements of PCI MNL 117, *Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products*, apply.

To ensure production capability for the types of products covered within this category, plant requirements for different cement types and colored mixtures have been implemented.

Certification under Category AT will not incur additional surcharges, but plants may incur additional fees to cover added costs of additional special or extra audits. See section 1.3.3 for more information.

Reference the general requirements, dates, and other information presented in chapter 1, which supplement the specific requirements of this chapter.

6.2 List of Capabilities Category AT-Certified Facilities Must Demonstrate

Category AT-certified facilities must meet all of the following requirements:

- formwork, stripping, and finishing of Category AT units
- proper storage of units

6.3 Required QC Personnel (minimum qualifications)

All plants are required to have at least one individual who holds PCI Level 1 (or higher) personnel certification.

6.4 Erection/Installation Requirements

Not applicable.

6.5 Certification Process

Refer to section 1.3 for the general requirements to apply for initial certification and recertification under the new PCI Architectural Certification Program. For initial certification, the information provided in the producer's application, the results of the plant's initial audit, and the results of the review of the mock-up unit construction will be reviewed to determine eligibility for certification in Category AT. For subsequent recertification, the Architectural Certification Review Board (ACRB) will consider the following when determining eligibility for a recommendation of continued certification in Category AT:

- the results of the plant audits
- compliance with the requirements for Category AT key features

Figure 21 illustrates the initial certification and recertification process flow chart for Category AT.

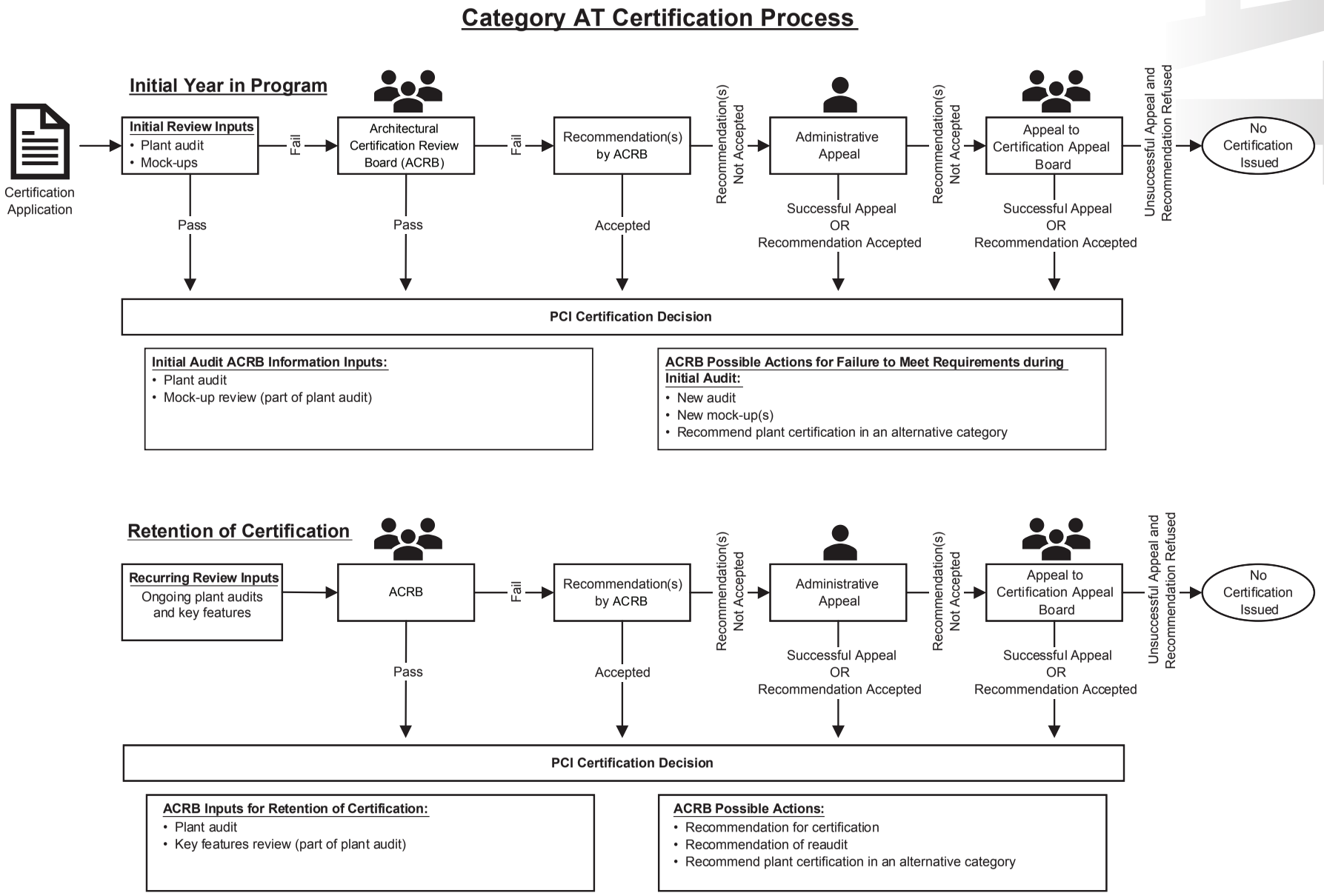

Figure 21. Initial certification and recertification process for Category AT.

6.6 Initial Certification

Forty-five days before the confirmed earliest initial audit date, the producer must create and submit to PCI for approval, mock-up production drawings for the three units required for initial certification. These drawings must document the key features, reinforcement, pickups, and embeds as would be done for typical production units, based on the Category AT drawings in section 6.8. Concrete mixture proportions for each mock-up must also be submitted in advance of the audit. Production and QC staff, as well as the plant auditors, will refer to these drawings for fabrication, finishing, and inspection purposes. Typical QC records will need to be produced per the plant's Quality System Manual for all mock-up unit production.

All details, exactly as depicted and dimensioned on the mock-up drawings, including their location, quantity, size, depth, or projection dimensions, must be incorporated into the mock-ups fabricated for initial audit. Before the initial audit, formwork construction for all three required mock-ups, and production of any two of the three required mock-up unit types must be completed. The remaining unit will be produced and finished for viewing during the two-day initial audit.

All three mock-ups must demonstrate adherence to existing MNL 135 Category AT dimensional tolerances outlined in section 6.9. The units must have a unique identification traceable to the production and quality records.

6.7 Recertification

For subsequent plant audits for recertification, the producer can once again construct the formwork and produce the mock-up units identified in section 6.8, or the producer can make current production units available for inspection that contain the minimum number of Category AT key features required and meet the required Category AT tolerances. If current production units are to be used, drawings of the units must be provided to the PCI plant auditor at the start of the audit, to confirm they include the key features required for recertification.

New mock-up units or subsequent certification production units are required at a minimum of every two years to maintain certification. During any audits following the initial audit, the plant auditor will ask the producer if there are any key features that should be reviewed and noted. See the list of Category AT recertification review key features at the end of section 6.8.

Audit units must demonstrate:

- colored mixture on two of the mock-ups to confirm color repeatability (sill and header),
- texture face (such as sandblast or acid wash),
- matching header and sill (such as length, style, color, and texture),
- curved coping,
- compliance with the tolerance requirements per MNL 135 for Category AT type products.

6.8 Category AT Mock-up Drawings and Key Features

The following reference items are included in this section:

- Category AT Type 1 mock-up drawing
- Key features – mock-up Category AT – Type 1
- Category AT Type 2 mock-up drawing
- Key features – mock-up Category AT – Type 2
- Category AT Type 3 mock-up drawing
- Key features – mock-up Category AT – Type 3
- Category AT recertification review key features

For initial certification, all details as depicted and dimensioned on the enclosed mock-up drawings, including their location, quantity, size, and depth or projection dimension, must be incorporated into the units fabricated for audit.

For recertification, produced units must contain the required number of key features with dimensions at least equal to or greater than, and profile to match those depicted and dimensioned on the enclosed mock-up drawings.

Detail depictions on the drawings supersede the descriptions in the accompanying key features lists.

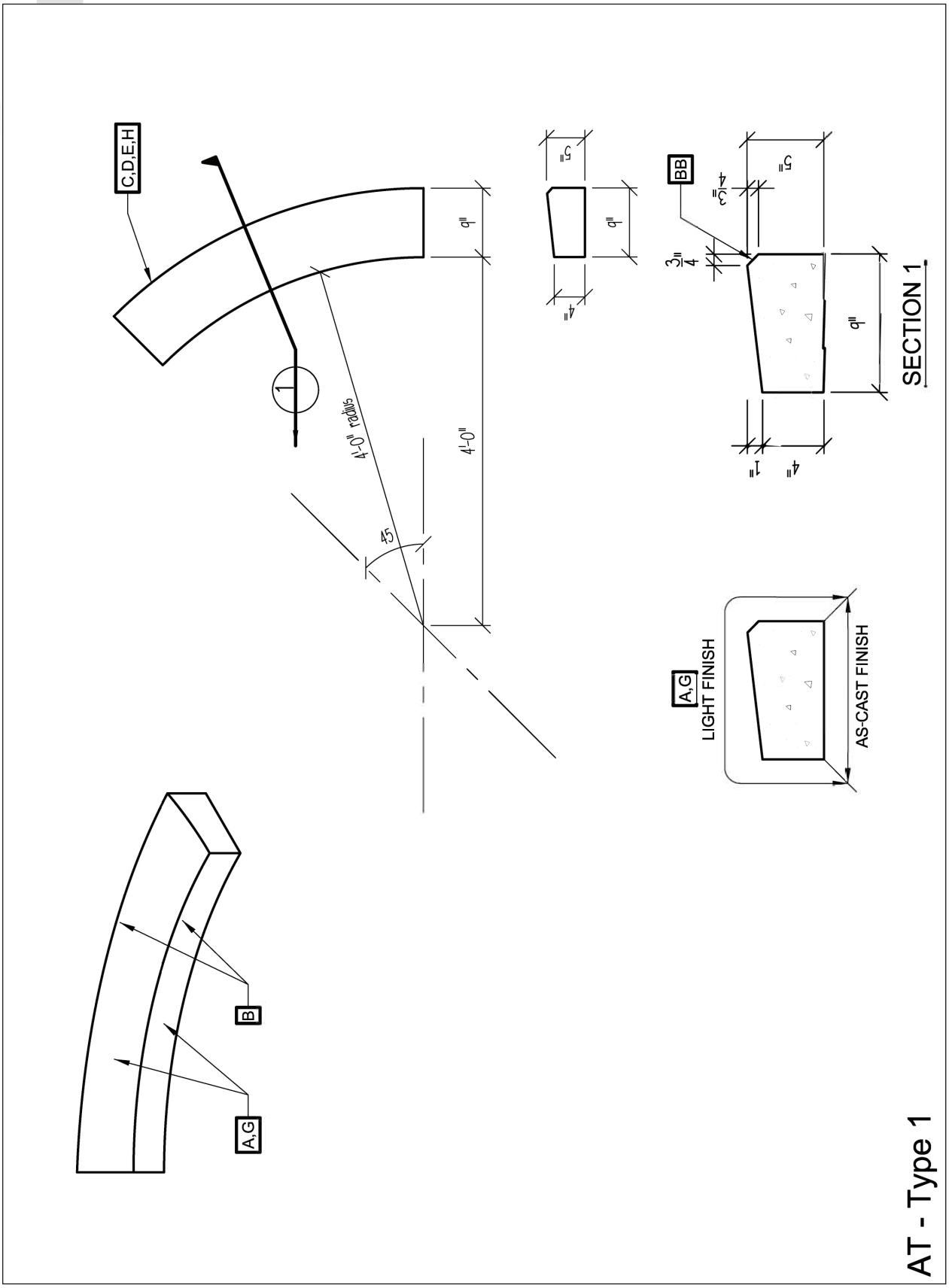

Figure 22. Category AT Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AT – Type 1

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface		Smooth form casting surface, evaluated surface minimum 10 ft^2
B	Radiused casting surface	3-D form surfaces	Radiused casting surface
BB	Top wash	3-D form surfaces	Top wash or other offset in mold surface
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – white cement base; specific mixture proportions are precaster's choice.	Producer must be capable of batching and mixing white cement.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch
G	Finished faces shall match.	Color and texture of the finished surface shall be uniform across the edges and top when viewed from various angles.	4 in. minimum edge finished to match top
H	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished unit, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged unit edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

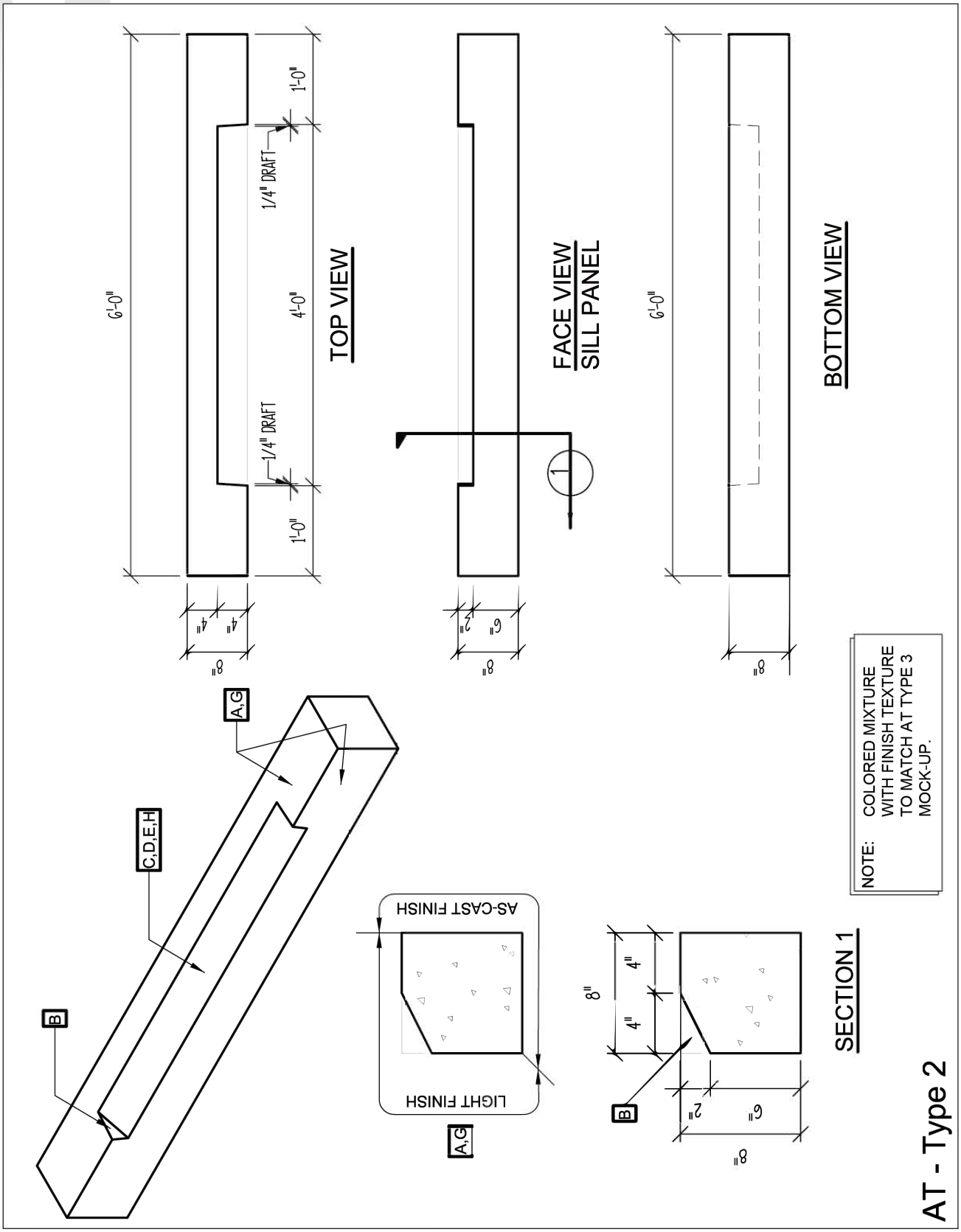

Figure 23. Category AT Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AT – Type 2

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface		Smooth form casting surface, evaluated surface minimum 10 ft^2
B	Sloped sill	3-D form surfaces	Top wash or other offset in mold surface
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – specific mixture proportions are precaster's choice. Mixture of AT – mock-up Type 2 must match mixture of AT – mock-up Type 3.	Producer must be capable of batching and mixing white and gray cement. Producer must be capable of batching color pigments. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture –specific mixture proportions are precaster's choice. Producer must be capable of producing consistent colors in multiple pieces.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch
G	Finished faces shall match. Color and texture of mixture of AT – mock-up Type 2 must match color and texture of AT – mock-up Type 3.	Color and texture of the finished surface shall be uniform across the edges and top when viewed from various angles. Producer must be capable of producing consistent colors. and textures in multiple pieces.	4 in. minimum edge finished to match top or bottom. Multiple pieces must be consistent in color and texture.
H	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished unit, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e. ragged unit edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

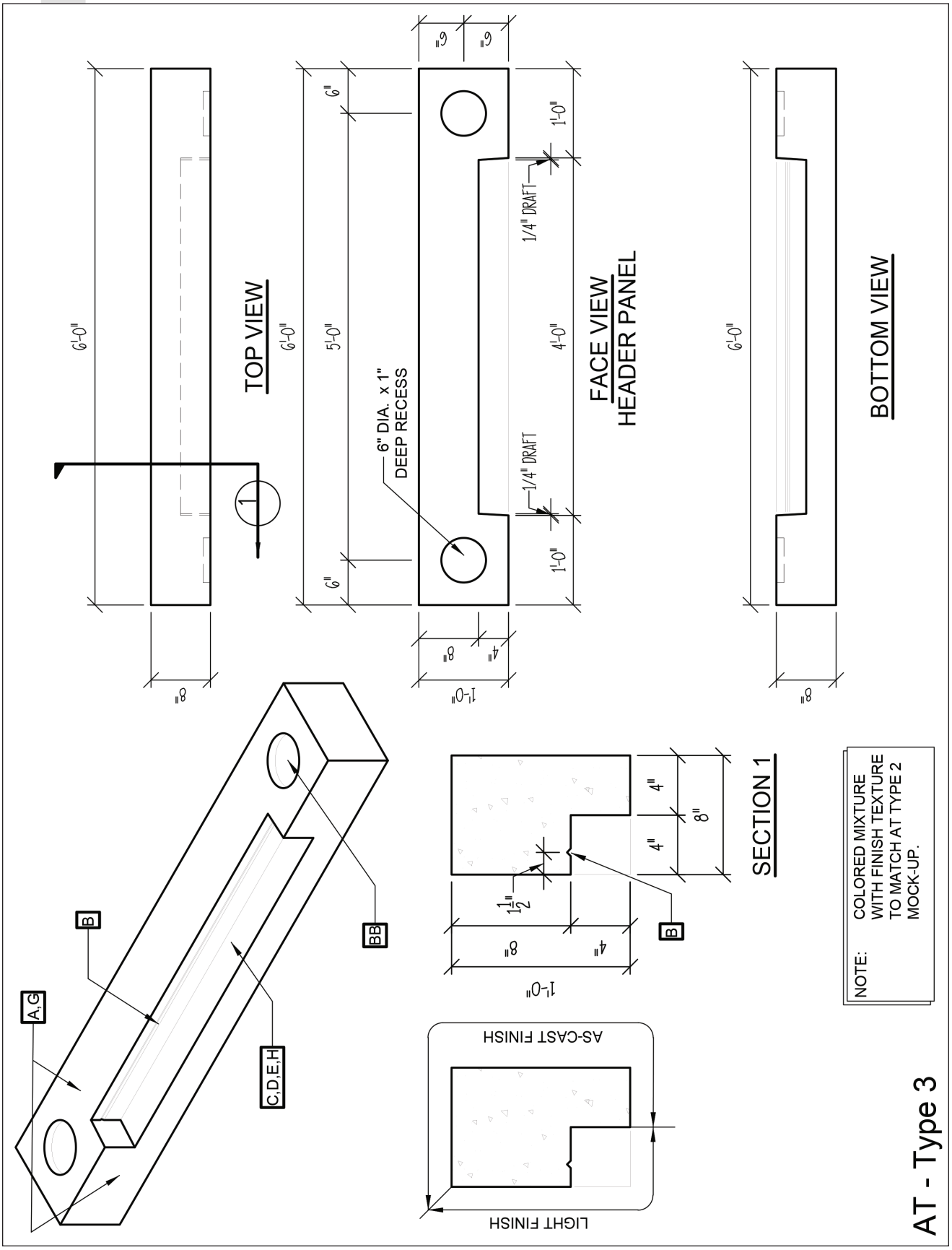

Figure 24. Category AT Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

Key Features – Mock-up AT – Type 3

Callout	Initial Review Features*	Evaluation Comments	Recertification Review Features
A	Smooth form casting surface		Smooth form casting surface; evaluated surface minimum 10 ft^2
B	Recess and drip in head, drip size and shape are precaster's option.	3-D form surfaces	Minimum 1 in. offset in mold surface, drip in a finished surface
BB	Round recess in casting surface	3-D form surfaces	Round or square recess in casting surface
C	Caulk	All edges and joints shall be sealed to prevent paste leakage. Form sealant shall not be apparent after finishing.	Caulk
D	Concrete mixture – specific mixture proportions are precaster's choice. Mixture of AT – mock-up Type 3 must match mixture of AT – mock-up Type 2	Producer must be capable of batching and mixing white and gray cement. Producer must be capable of batching color pigments. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – specific mixture proportions are precaster's choice. Multiple pieces must be consistent in color.
E	Concrete placement and consolidation	Concrete shall be uniformly placed and consolidated. The use of self-consolidating concrete is allowed. No segregation, casting lines, or significant air voids shall be visible after finishing.	Concrete placement and consolidation
F	Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch	Color and texture of the finished surface shall be uniform across the face and top edge when viewed from various angles.	Smooth form panel finish – texture shall be one of the following: a. abrasive blast b. acid etch
G	Finished faces shall match. Color and texture of mixture of AT – mock-up Type 3 must match color and texture of AT – mock-up Type 2.	Color and texture of the finished surface shall be uniform across the edges and top when viewed from various angles. Producer must be capable of producing consistent colors and textures in multiple pieces.	4 in. minimum edge finished to match top or bottom. Multiple pieces must be consistent in color and texture.
H	Additional evaluation criteria	The following defects are not acceptable: a. discoloration in the face of the finished unit, including paste leakage at return joints b. foreign materials in face c. reinforcing bar shadowing d. blocking stains e ragged unit edges, details, or brick joints f. distinguishable repairs after final finishing g. discernable cracks that are not repaired to meet item f Mock-up shall be within appropriate PCI tolerances.	Additional evaluation criteria

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft^2 = 0.0929 m^2.

* Standard mock-up review distance is 20 ft.

Category AT Recertification Review Features

Review Item Number	Recertification Review Features	Recertification Key Feature	Mock-up Drawing Reference (mock-up type/callout)	Comments	Key Item Point Value
1.	Smooth form casting surface	Smooth form casting surface, evaluated surface minimum 10 ft²	AT-1/A, AT-2/A, AT-3/A		1
2.	3-D form surfaces	Radiused casting surface	AT-1/B		1
3.	3-D form surfaces	Top wash or other offset in mold surface	AT-1/BB, AT-2/B		1
4.	3-D form surfaces	Minimum 1 in. offset in mold surface	AT-3/B		1
5.	3-D form surfaces	Drip in a finished surface	AT-3/B		1
6.	3-D form surfaces	Round or square recess in casting surface	AT-3/BB		1
7.	Edge finish	Minimum 4 in. edge finished edge to match piece face	AT-3/G		1
	General notes for above items	Specific mixture proportions are precaster's choice.			
		Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch			
8.	Producer must be capable of batching and mixing white cement. Producer must be capable of batching color pigments. Producer must be capable of producing consistent colors in multiple pieces.	Concrete mixture – white cement base; specific mixture proportions are precaster's choice. Minimum 10 ft² smooth form casting surface	AT-1/A, AT-2/EE, AT-3/A	Ability to batch white cement may also be demonstrated in any of the above units with more than 10 ft² of finished unit.	1
		Smooth form panel finish – texture shall be one of the following: a. light abrasive blast b. light acid etch			
				Total possible points	8

Note: 3-D = three-dimensional. 1 in. = 25.4 mm; 1 ft = 0.305 m; 1 ft² = 0.0929 m².

Need 6/8 points to maintain AT certification.

6.9 Category AT Tolerance Requirements

The standard production tolerances of MNL 135 (same as current MNL 117) apply.

Chapter 7 – Forms

This section contains a series of forms that are applicable to the Architectural Certification Program. Copies of these forms are also available on the PCI website (www.pci.org). Program forms include the following:

- **PCI Architectural Certification Program Producer Initial Application (page 7–2)**

  This application form must be submitted by all producers currently certified in the A1, CA, BA, or AT categories, **before April 1, 2020.** This form is applicable to all producers who wish to have certification in Group A – architectural products, after June 30, 2021.

- **PCI Architectural Certification Program Site Evaluation (page 7–3)**

  This checklist will be used during site evaluations, to confirm conformance to the acceptability of appearance criteria in MNL 117. The site evaluations are applicable to all Category AA-certified producers and may also be applicable to Category AB-certified producers in the event the project surveys are failed.

- **PCI Architectural Certification Program Architect Project Survey (page 7–12)**

  The survey is distributed by PCI to the architects for all completed Category AA and AB projects. Category AA and AB-certified producers are responsible for notifying PCI upon completion of projects in these categories. Completed surveys are returned to the producer as part of their quality improvement activities. The surveys have a scoring system associated with them and are used in the certification process by the Architectural Certification Review Board (ACRB) and PCI.

- **PCI Architectural Certification Program General Contractor/Construction Manager Project Survey (page 7–14)**

  The survey is distributed by PCI to the GC/CM for all completed Category AA and AB projects. Category AA and AB-certified producers are responsible for notifying PCI upon completion of projects in these categories. Completed surveys are returned to the producer as part of their quality improvement activities. The surveys have a scoring system associated with them and are used in the certification process by the ACRB and PCI.

- **PCI Architectural Certification Program Precaster Notification of Project Survey Request (page 7–16)**

  The notification request form is used to provide the information necessary for the distribution of the project surveys to the architects and GC/CMs. The form is to be completed by Category AA and AB-certified producers for all completed Category AA and AB projects.

PCI Architectural Certification Program

Producer Initial Application

EMAIL TO: QualityPrograms@pci.org **OR** MAIL TO: PCI | 200 W. Adams St., Ste. 2100, Chicago, IL 60606-5230 | ATTN: Quality Programs Department
For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

The producer shall submit this application when applying for initial category certification in the PCI Architectural Certification Program. This application must be submitted by April 1, 2020, to ensure a timely plant audit. The producer understands that certifications issued effective July 1, 2021, will only include the new categories, and that to receive an architectural group certificate, the entire audit process must be completed successfully.

PRODUCER NAME _____ PLANT LOCATION _____

CONTACT FOR THIS PROGRAM _____

PHONE NUMBER _____ EMAIL _____

Per the program description, the facility noted above requests an initial audit based on the category selected below. (Category AA certification includes all other listed categories. Category AB includes categories AC, AD, and AT. Category AC includes categories AD and AT.)

- ❑ ARCHITECTURAL CERTIFICATION CATEGORY **AA** (producer acknowledges additional annual fees to maintain certification.)
- ❑ ARCHITECTURAL CERTIFICATION CATEGORY **AB** (producer acknowledges additional annual fees to maintain certification.)
- ❑ ARCHITECTURAL CERTIFICATION CATEGORY **AC** (standard PCI fees)
- ❑ ARCHITECTURAL CERTIFICATION CATEGORY **AD** (standard PCI fees)
- ❑ ARCHITECTURAL CERTIFICATION CATEGORY **AT** (standard PCI fees)

We, the producer, shall be ready for an audit based on the above category with the required mock-ups, and ready to produce one mock-up panel during the audit between the dates indicated below. (Timing will be in accordance with Policy 20 requirements and the audit organization schedule; see program information packet for more information.)

EARLY AUDIT DATE _____ LATE AUDIT DATE _____

Submission of mock-up drawings and concrete mixture proportions required per the desired certification category must be submitted and approved in advance of the certification audit. (Please allow 45 days for the submittal review period.)

If the facility will require an additional audit day because it cannot place, strip, and finish the production mock-up panel during the usual two-day audit period, this must be indicated below.

- ❑ YES, A THIRD AUDIT DAY WILL BE REQUIRED. (The facility understands an additional audit day will be required, and that an additional fee will apply.)
- ❑ NO, A THIRD AUDIT DAY SHOULD NOT BE REQUIRED.

If the audit results are not successful, the producer agrees additional audits and fees may be required.

AUTHORIZED PRODUCER AGENT _____ DATE _____

ISSUE#1 DECEMBER 2019

MSC-A1126
ARCH-CERT19x3716 PRODUCER INITIAL APPLICATION

PCI Architectural Certification Program

Site Evaluation

EMAIL TO: QualityPrograms@pci.org **OR** MAIL TO: PCI | 200 W. Adams St., Ste. 2100, Chicago, IL 60606-5230 | ATTN: Quality Programs Department
For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

Purpose

Provide an organized format to conduct on-site evaluations of completed Category AA and AB projects. The evaluations shall be completed based on PCI MNL 117, section 2.10, Acceptability of Appearance criteria.

Observation Conditions

The evaluation of architectural precast concrete (APC) panels for conformance with industry standards is based on PCI MNL 117, section 2.10, Acceptability of Appearance. The introductory portion of section 2.10 states:

> "*The finished face surface shall have no obvious imperfections other than minimal color and texture variations from the approved samples or evidence of repairs when viewed in good typical daylight illumination with the unaided naked eye consistent with the viewing distance on the structure, but not less than 20 ft (6 m). Appearance of the surface shall not be evaluated when light is illuminating the surface from an extreme angle, as this tends to accentuate minor surface irregularities.*"

The average appearance of building color and texture should be the standard of comparison.

The evaluation should only take place when the building is dry and the panels are free of moisture and frost.

The report should include a description of ambient weather conditions, including temperature, natural lighting, and recent precipitation events.

Critical lighting typically occurs on each sun-illuminated elevation during a time of the day when the sun's rays are very oblique to the elevation. During this lighting event, typically lasting about 20 minutes, blemishes that would typically be unobservable can become significantly magnified. Best practices would dictate that observations not be conducted during critical lighting events.

The reviewer should be aware of the effects of the surrounding environment on the subject building. Possible examples of these effects include sunlight reflection, color reflection, and shadows from adjacent buildings. These occurrences should be observed in the report but not negatively affect the evaluation.

The reviewer should also be aware of the effects of building features on the APC panels. Possible examples of these effects include staining or discoloration from directed water flow across panel surfaces or other building materials, sprinkler patterns at ground floor panels, and dirt or staining from pedestrian level activities. These occurrences should be observed in the report but not negatively affect the evaluation.

Finally, the reviewer should be aware of events during the building construction process that might have negatively impacted the appearance of the APC panels. Examples of these include hydraulic oil, roofing materials, post drilled penetrations, finish scratches, and dirt or rust stains that occur across multiple adjacent panels. These occurrences should be observed in the report but not negatively affect the evaluation.

Negative observations need to be recorded on elevation drawings, documented photographically, and attached to this evaluation.

GENERAL INFORMATION	
Plant name:	Plant location:
Project name:	Project location:
Evaluation date(s)/time(s):	Evaluator name:
Weather conditions/temperature	Other identifying information/jobsite contact names

PCI Architectural Certification Program

Site Evaluation

Precast/Prestressed Concrete Institute

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.1 – Ragged or irregular edges			
Panel-to-panel alignment, joint alignment, irregular real or false joints (see PCI MNL 135 for requirements for AA and AB manufacturing and erection tolerances)			
• Chips and spalls at panel edges, including architectural details			
• Shipping or erection damage			
• Returns out of square			
• Alignment of veneer materials			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.2 – Excessive air voids			
Excessive air voids (commonly called bugholes) evident on the exposed surfaces			
• Air voids in excess of ¼ in. (6 mm)			
• Clusters of air voids smaller than ¼ in. (6 mm) that cause objectionable patterns on a finished face noticeable at 20 ft (6 m)			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.3 – Adjacent flat and return surfaces with greater texture and/or color differences			
Color or texture variations from other adjacent panel surfaces:			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.4 – Casting and/or segregation lines evident from different concrete placement lifts and consolidation			
Visible irregular lines, colors, or textures within a panel (generally associated with concrete batching, placement, flow, or aggregate paste separation)			
Patterns or irregularities in the face caused by vibration efforts (or lack thereof)			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.5 – Visible form/mold joints, seams, or irregular surfaces			
Observable lines or other irregularities caused by joints in the forming materials			
Observable dimples or protrusions caused by irregularities in the forming surface (nail pops, gouges, forming delamination or swelling)			
Observable patterns in the finished face caused by surface unevenness (caulk or dirt behind liners, pillowing of mold surfaces, mirroring of forming materials)			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.6 – Rust stains on the exposed surfaces			
Rust or other obvious stains/streaks caused by impurities in the aggregates (deleterious or otherwise)			
Rust stains caused by nails or reinforcing tie wires			
Rust stains caused by reinforcing			
Rust stains caused by handling inserts			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.7 – Excessive variation of texture and/or color, within the unit or compared with adjacent units, not clustered into objectionable patterns noticeable at 20 ft (6 m)			
Color or texture variations within a panel			
Color or texture variations from panel to panel			
Color or texture variation of mortar joints in veneered applications			
Excessive slurry on the face of veneered materials			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.8 – Blocking stains evident on exposed surfaces			
Discoloration of areas on the finished panel caused by storage or shipping materials (dunnage, blocking, chains, etc.)			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.9 – Areas where the backup concrete penetrated through the facing concrete			
Backup concrete in the face of the panel			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.10 – Foreign material embedded in the face of the unit			
Examples of foreign materials may include, but are not limited to, wire ties or nails, wood shavings or other molding debris, rags, nuts and bolts, agricultural products, and/or pop outs from deleterious materials in the concrete.			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.11 – Visible repairs at 20 ft (6 m) or greater viewing distance			
Examples of visible repairs may include, but are not limited to, visibly repaired spalls, chips or cracks; visibly applied stains or rubs; and/or repairs to the mortar joint of veneered materials.			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
Section 2.10.12 – Reinforcement shadow lines			
Lines/shadows in the panel face caused by the reflection of reinforcing, prestressing, and handling/connection devices behind the surface of the panel			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			
Section 2.10.13 – Cracks visible at a 20 ft (6 m) or greater viewing distance			
Observable cracks in an exposed panel face			
Section conclusion:			
If any of these problems are pervasive, please elaborate:			
Does this project meet this section's acceptability criteria? ❑ Yes ❑ No			
Site evaluator comments:			

PCI Architectural Certification Program

Site Evaluation

ACCEPTABILITY OF APPEARANCE CRITERIA	COMPLY YES/NO	PERVASIVE	FINDING(S)
On-site evaluation conclusion:			
Does this project meet PCI MNL 117, section 2.10, Acceptability of Appearance criteria? ❑ Yes ❑ No			
If this project does not meet the acceptability of appearance criteria, please explain:			

PCI Architectural Certification Program

Architect Project Survey

EMAIL TO: QualityPrograms@pci.org OR MAIL TO: PCI | 200 W. Adams St., Ste. 2100, Chicago, IL 60606-5230 | ATTN: Quality Programs Department
For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

Project name: _____ Architectural firm: _____

Specified category: ❑ A1 ❑ CA ❑ Other: _____ Architect completing survey: _____

PCI-certified precaster: _____ Contact phone number: _____

Contact email: _____

	Schematic Design	Design Development	Construction Drawings	After Project Award
At which phase of the design did the precaster become involved in the project?	❑	❑	❑	❑

Precaster assistance during the pre-bid/preliminary design phase *Please choose "N/A" (not applicable) if the precaster was not asked for assistance.*	Yes	No	N/A
Did the precaster offer:			
• Panelization and joinery review (including potential building drift considerations)?	❑	❑	❑
• Panel complexity guidance (panel shape/geometry)?	❑	❑	❑
• Panel erection logistics review (including potential delivery or erection issues)?	❑	❑	❑
• Precast concrete engineering assistance (panel thickness, size, connections, etc.)?	❑	❑	❑
• Building loading strategy (transfer of precast concrete loads to the structural system)?	❑	❑	❑
• Precast concrete system performance (thermal, water intrusion, etc.)?	❑	❑	❑
• Specification assistance?	❑	❑	❑
• Budgeting assistance?	❑	❑	❑
• Sample assistance?	❑	❑	❑
• Mock-up assistance?	❑	❑	❑
Did the precaster encourage plant review of the first production pieces?	❑	❑	❑

Precaster's performance after contract award *Please indicate your level of satisfaction with the precaster.*	Very Satisfied	Satisfied	Somewhat Satisfied	Somewhat Unsatisfied	Very Unsatisfied	N/A
Did the precaster provide submittals on a timely basis?	❑	❑	❑	❑	❑	❑
Did the precaster provide samples that met design intent?	❑	❑	❑	❑	❑	❑
Did the precaster provide range samples that met design intent?	❑	❑	❑	❑	❑	❑
Did the precaster provide mock-ups that met the design intent?	❑	❑	❑	❑	❑	❑
Are panel colors within the accepted color range?	❑	❑	❑	❑	❑	❑
Are panel textures within the accepted texture range?	❑	❑	❑	❑	❑	❑
Do panels meet specified dimensional tolerances and shop drawing details?	❑	❑	❑	❑	❑	❑
Were repairs to the panels acceptable?	❑	❑	❑	❑	❑	❑
Was BIM modeling provided, if required by specifications? (Check one)	❑ Yes	❑ No	❑ N/A			

ISSUE#1 DECEMBER 2019

MSC-F1122
ARCH-CERT19X3716 ARCHITECT PROJECT SURVEY

PCI Architectural Certification Program

Architect Project Survey

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Precaster's installation performance (complete if applicable to precaster services)	**Very Satisfied**	**Satisfied**	**Somewhat Satisfied**	**Somewhat Unsatisfied**	**Very Unsatisfied**
Were panels installed without damage?	❑	❑	❑	❑	❑
Are panel joint widths and alignments within project specifications?	❑	❑	❑	❑	❑

Final precast evaluation	**Yes**	**No**
Would you use/recommend this precaster for future architectural projects?	❑	❑

If you answered "No" to the above question, please provide additional information to explain your answer.

Comments

Please use the space below to expand any of the above answers or provide additional comments.

PCI Architectural Certification Program

General Contractor/Construction Manager Project Survey

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For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

Project name: _____ GC/CM: _____

Category: ❑ A1 ❑ CA ❑ Other: _____ Individual completing survey: _____

PCI-certified precaster: _____ Contact phone number: _____

Contact email: _____

	Schematic Design	Design Development	Construction Drawings	After Project Award
At which phase of the design did the precaster become involved in the project?	❑	❑	❑	❑

Precaster assistance during the pre-bid/preliminary design phase *Please choose "N/A" (not applicable) if the precaster was not asked for assistance.*	Yes	No	N/A
Did the precaster offer:			
• Panelization and joinery review (including potential building drift considerations)?	❑	❑	❑
• Panel complexity guidance (panel shape/geometry)?	❑	❑	❑
• Panel erection logistics review (including potential delivery or erection issues)?	❑	❑	❑
• Precast concrete engineering assistance (panel thickness, size, connections, etc.)?	❑	❑	❑
• Building loading strategy (transfer of precast concrete loads to the structural system)?	❑	❑	❑
• Specification assistance?	❑	❑	❑
• Budgeting assistance?	❑	❑	❑
• Sample assistance?	❑	❑	❑
• Mock-up assistance?	❑	❑	❑
Did the precaster encourage plant review of the first production pieces?	❑	❑	❑

Precaster's performance after contract award *Please indicate your level of satisfaction with the precaster.*	Very Satisfied	Satisfied	Somewhat Satisfied	Somewhat Unsatisfied	Very Unsatisfied	N/A
Did the precaster provide submittals on a timely basis?	❑	❑	❑	❑	❑	❑
Did the precaster provide samples that met design intent?	❑	❑	❑	❑	❑	❑
Did the precaster provide range samples that met design intent?	❑	❑	❑	❑	❑	❑
Did the precaster provide mock-ups that met the design intent?	❑	❑	❑	❑	❑	❑
Are panel colors within the accepted color range?	❑	❑	❑	❑	❑	❑
Are panel textures within the accepted texture range?	❑	❑	❑	❑	❑	❑
Do panels meet specified dimensional tolerances and shop drawing details?	❑	❑	❑	❑	❑	❑
Were repairs to the panels acceptable?	❑	❑	❑	❑	❑	❑
Was BIM modeling provided, if required by specifications? (Check one)	❑ Yes	❑ No	❑ N/A			

MSC-F1124
ISSUE#1 DECEMBER 2019
ARCH-CERT19X3716 GENERAL CONTRACTOR/CONSTRUCTION MANAGER PROJECT SURVEY

PCI Architectural Certification Program

General Contractor/Construction Manager Project Survey

Precast/Prestressed Concrete Institute

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For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

Precaster's installation performance (complete if applicable to precaster services)	Very Satisfied	Satisfied	Somewhat Satisfied	Somewhat Unsatisfied	Very Unsatisfied
Were panels installed without damage?	❑	❑	❑	❑	❑
Are panel joint widths and alignments within project specifications?	❑	❑	❑	❑	❑

Final precast evaluation	**Yes**	**No**
Would you use/recommend this precaster for future architectural projects?	❑	❑

If you answered "No" to the above question, please provide additional information to explain your answer.

Comments

Please use the space below to expand any of the above answers or provide additional comments.

PCI Architectural Certification Program

Precaster Notification of Project Survey Request

EMAIL TO: QualityPrograms@pci.org **OR** MAIL TO: PCI | 200 W. Adams St., Ste. 2100, Chicago, IL 60606-5230 | ATTN: Quality Programs Department
For questions, contact PCI Quality Programs Department | QualityPrograms@pci.org | 312-583-6770

Please submit this form for all projects that are designated as category AA or AB in the contract documents within 30 days of completion of substantial punch-out of the project. Email completed forms to PCI at qualityprograms@pci.org.

PRECASTER NAME _____ PRECASTER LOCATION _____

PROJECT'S SPECIFIED CERTIFICATION LEVEL: ❑ A1 ❑ CA ❑ AA ❑ AB ❑ OTHER _____ PROJECT NAME _____

PROJECT ADDRESS _____

NUMBER OF ARCHITECTURAL PIECES _____ SQFT OF ARCHITECTURAL PRECAST _____

PROJECT ARCHITECT _____ CONTACT NAME _____

ARCHITECT ADDRESS _____

CONTACT PHONE NUMBER _____ CONTACT EMAIL _____

PROJECT GENERAL CONTRACTOR/CONSTRUCTION MANAGER _____ CONTACT NAME _____

PROJECT GENERAL CONTRACTOR/CONSTRUCTION MANAGER ADDRESS _____

CONTACT PHONE NUMBER _____ CONTACT EMAIL _____

WAS ERECTION IN THE SCOPE OF THE PRECASTER'S WORK? ❑ YES ❑ NO

ERECTOR NAME _____

WAS THE ERECTOR PCI-CERTIFIED? ❑ YES ❑ NO

WAS A PCI-CERTIFIED ERECTOR REQUIRED BY PROJECT SPECIFICATION? ❑ YES ❑ NO

IF A NON-PCI-CERTIFIED ERECTOR WAS USED ON THIS PROJECT:

WHY WAS IT USED? _____

WHICH ENTITY MADE THIS DECISION? _____

ISSUE#1 DECEMBER 2019

MSC-F1126
ARCH-CERT19X3716 PRECASTER NOTIFICATION OF PROJECT SURVEY REQUEST

Chapter 8 – Large-Format Mock-up Drawings for All Categories

This chapter provides 11 × 17 in.-format drawings for the three mock-up panels or units that are required to be constructed for each of the five architectural certification categories. While smaller versions of these drawings are provided for reference in the preceding chapters, the large format used in this chapter should facilitate use of the appropriate category drawings by plant personnel in the development of production drawings.

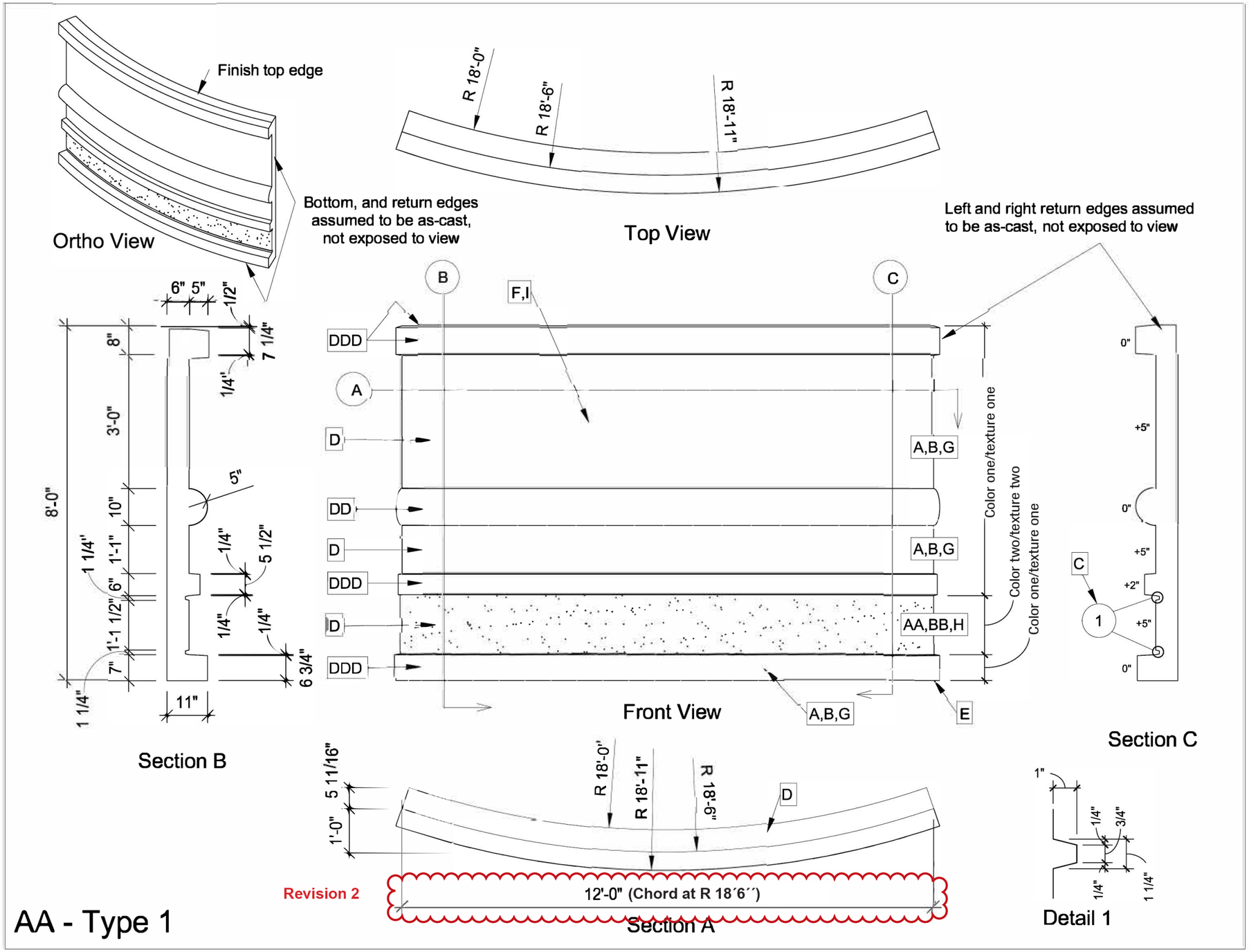

Figure 3. Category AA Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

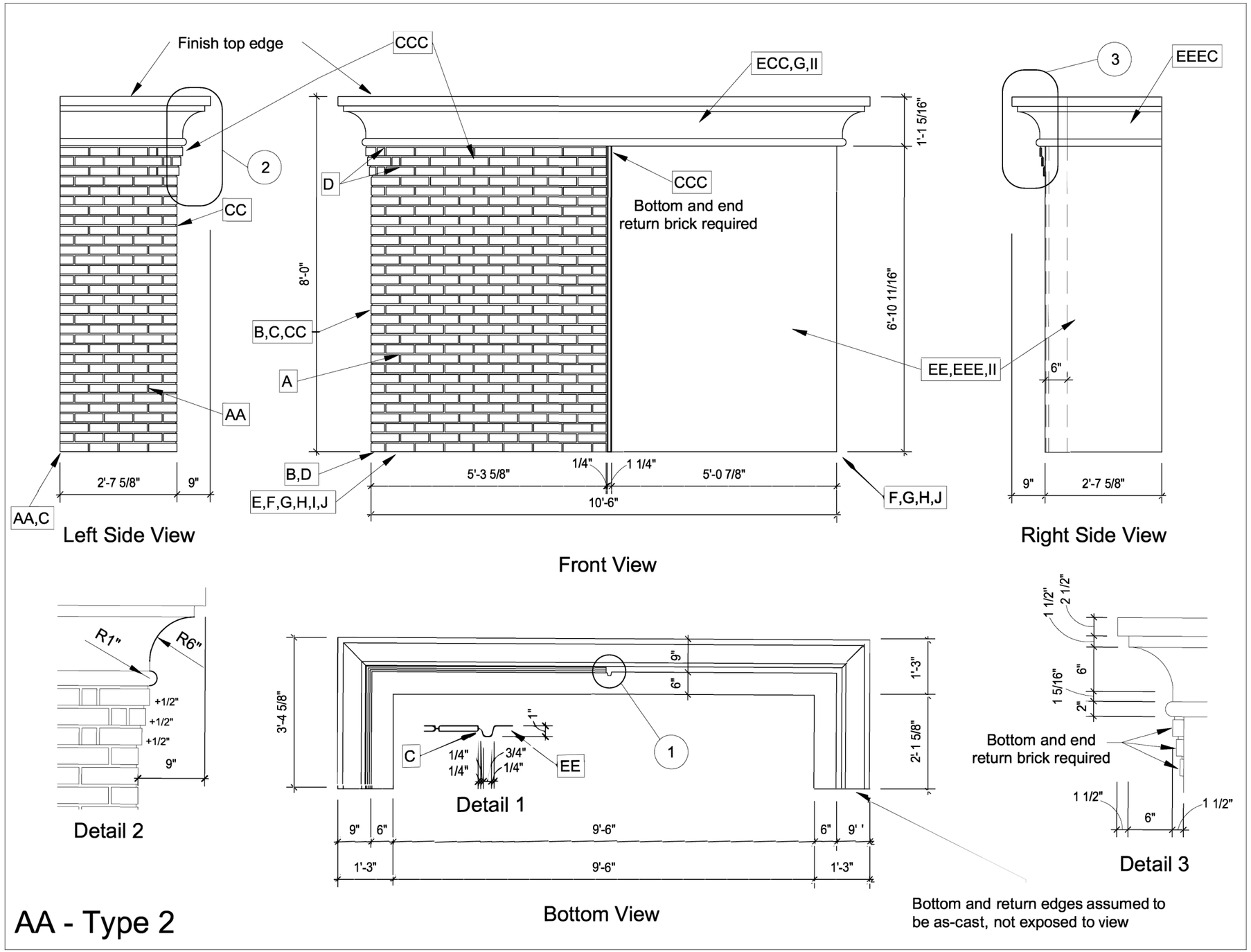

Figure 4. Category AA Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

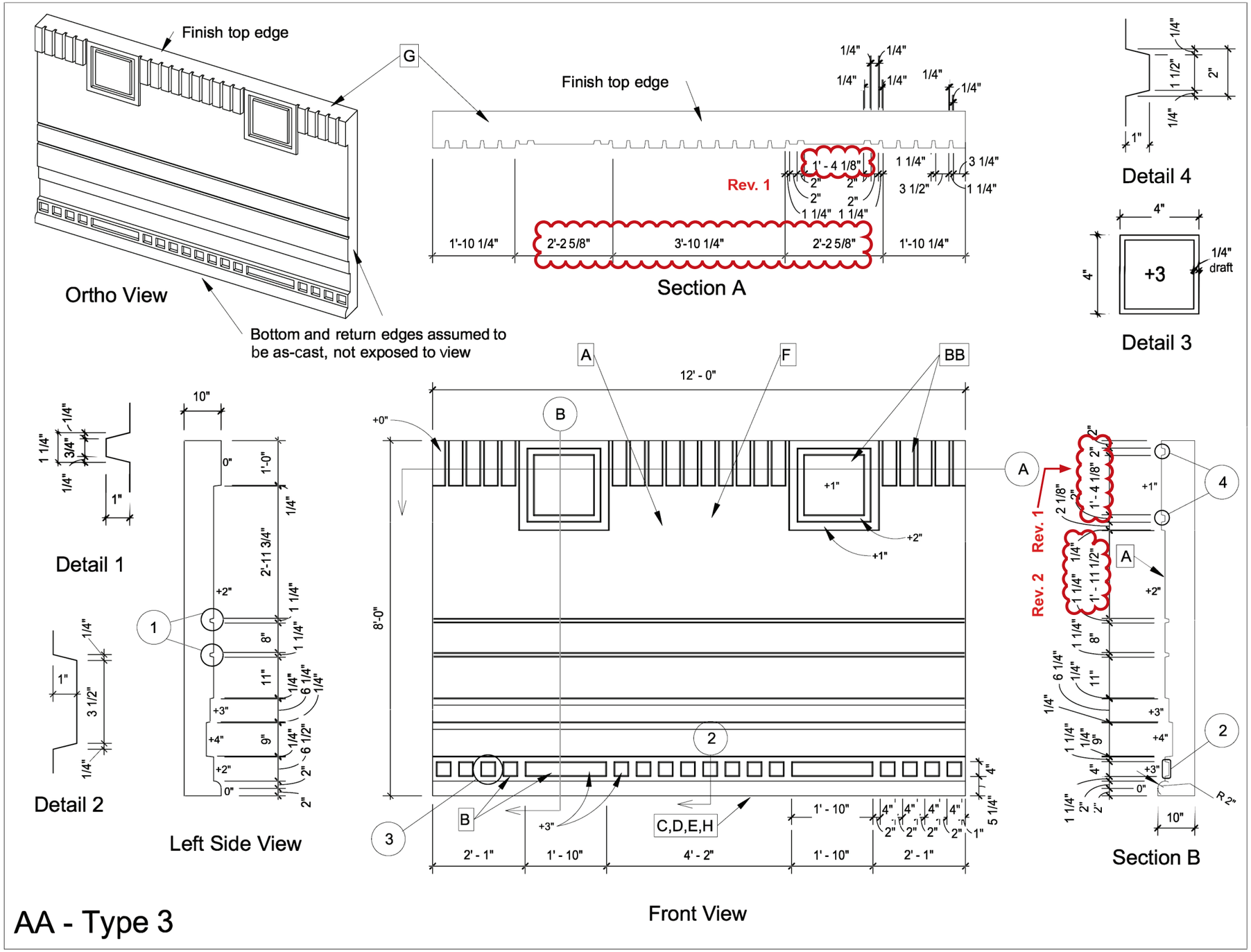

Figure 5. Category AA Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

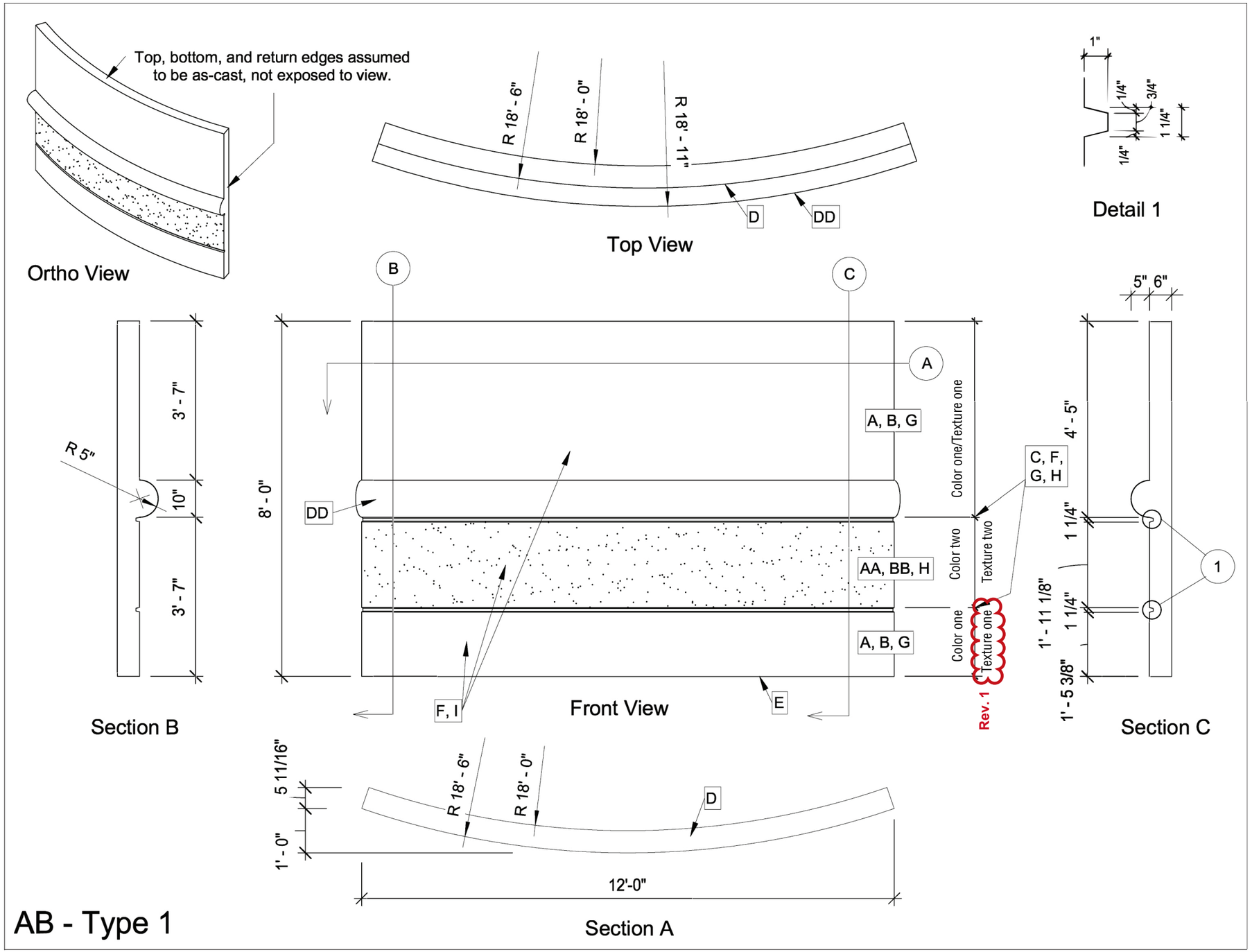

Figure 9. Category AB Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

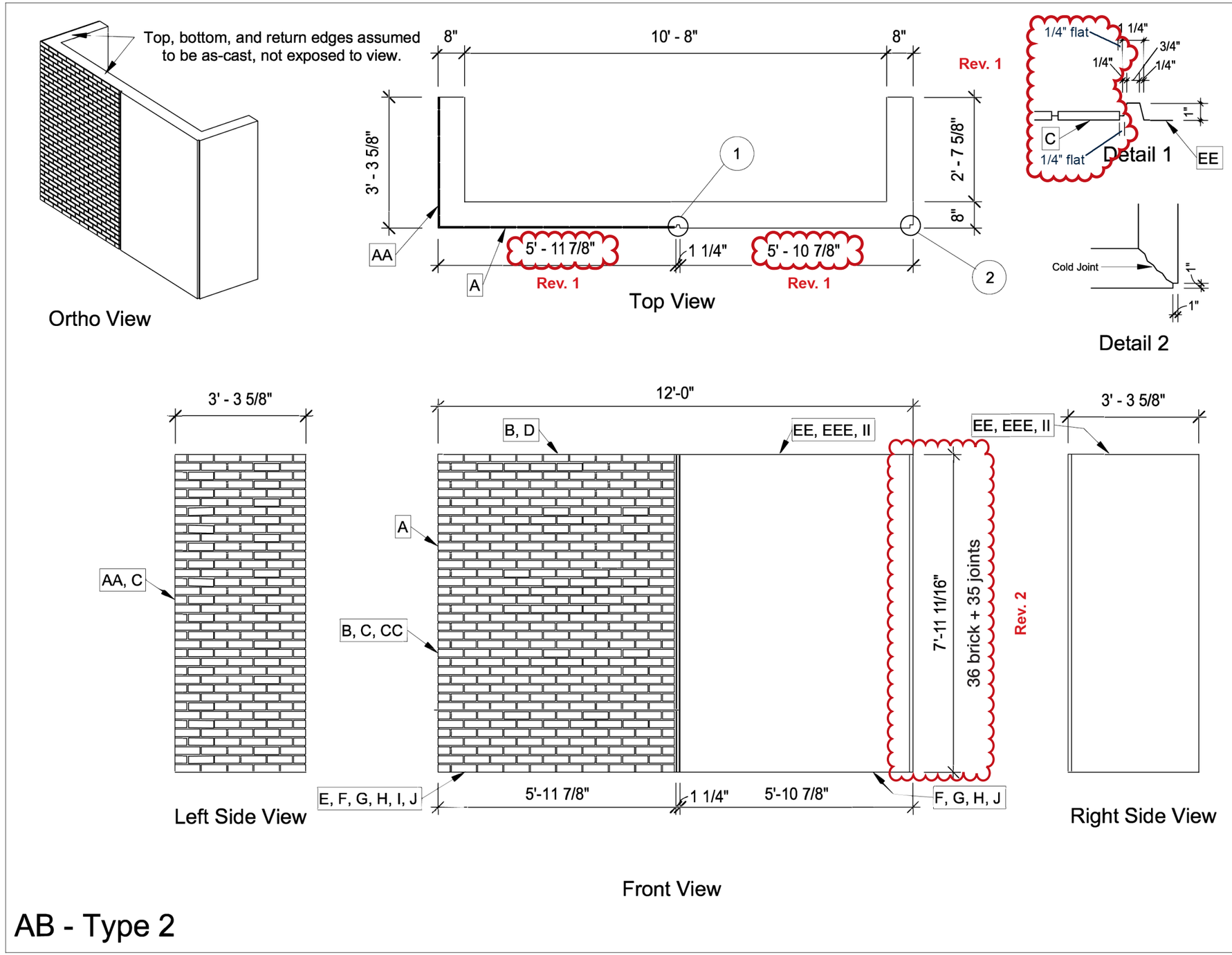

Figure 10. Category AB Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

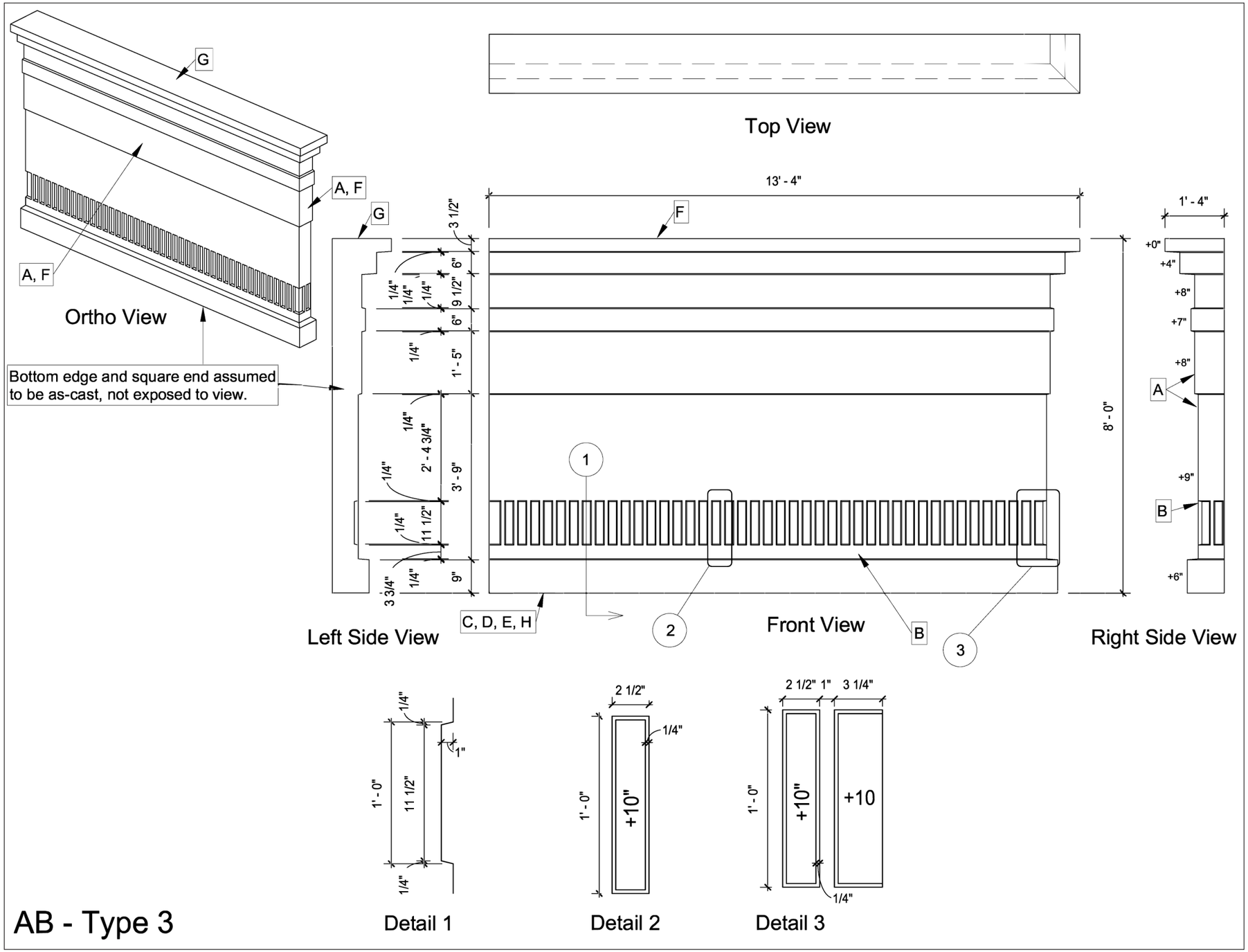

Figure 11. Category AB Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

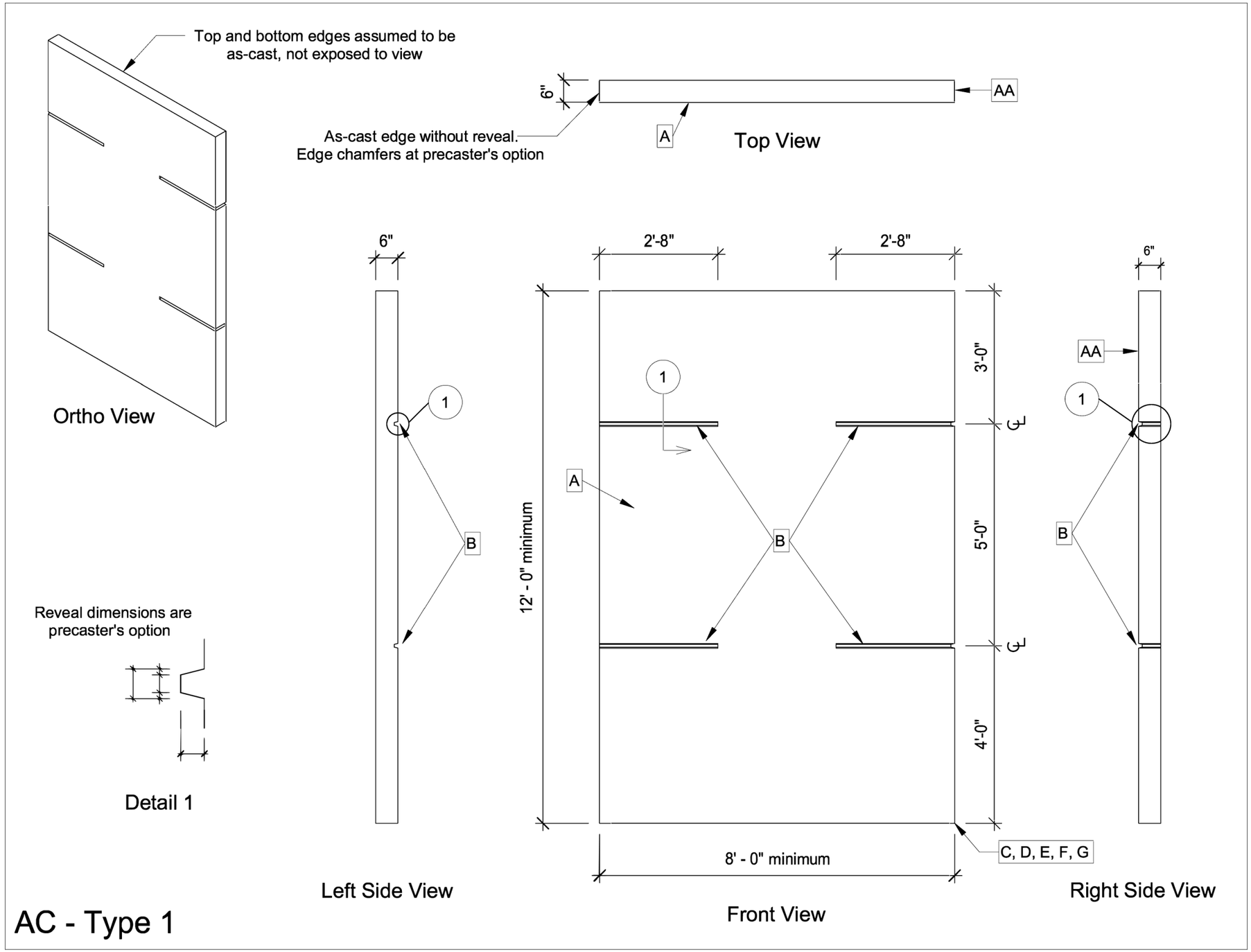

Figure 13. Category AC Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

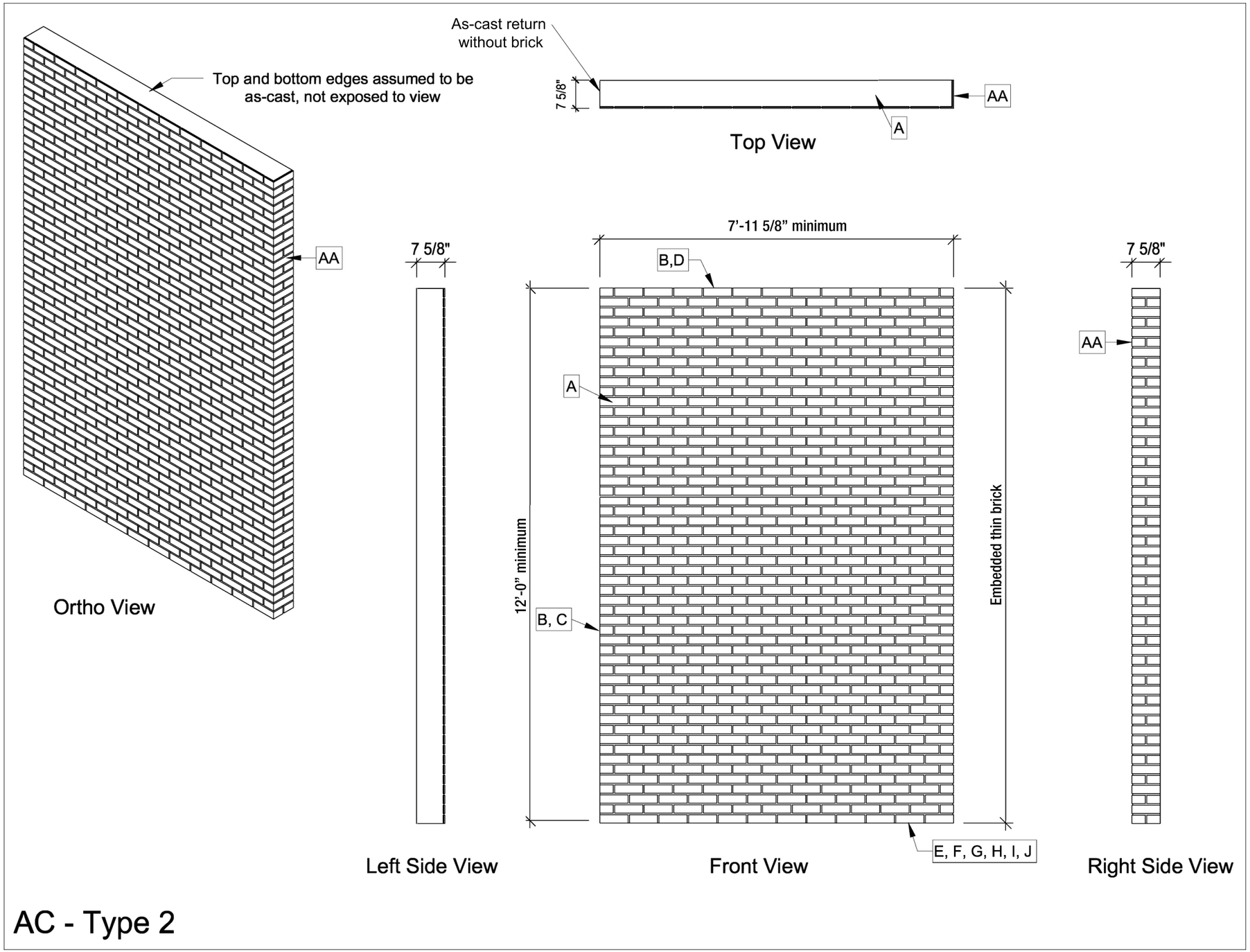

Figure 14. Category AC Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

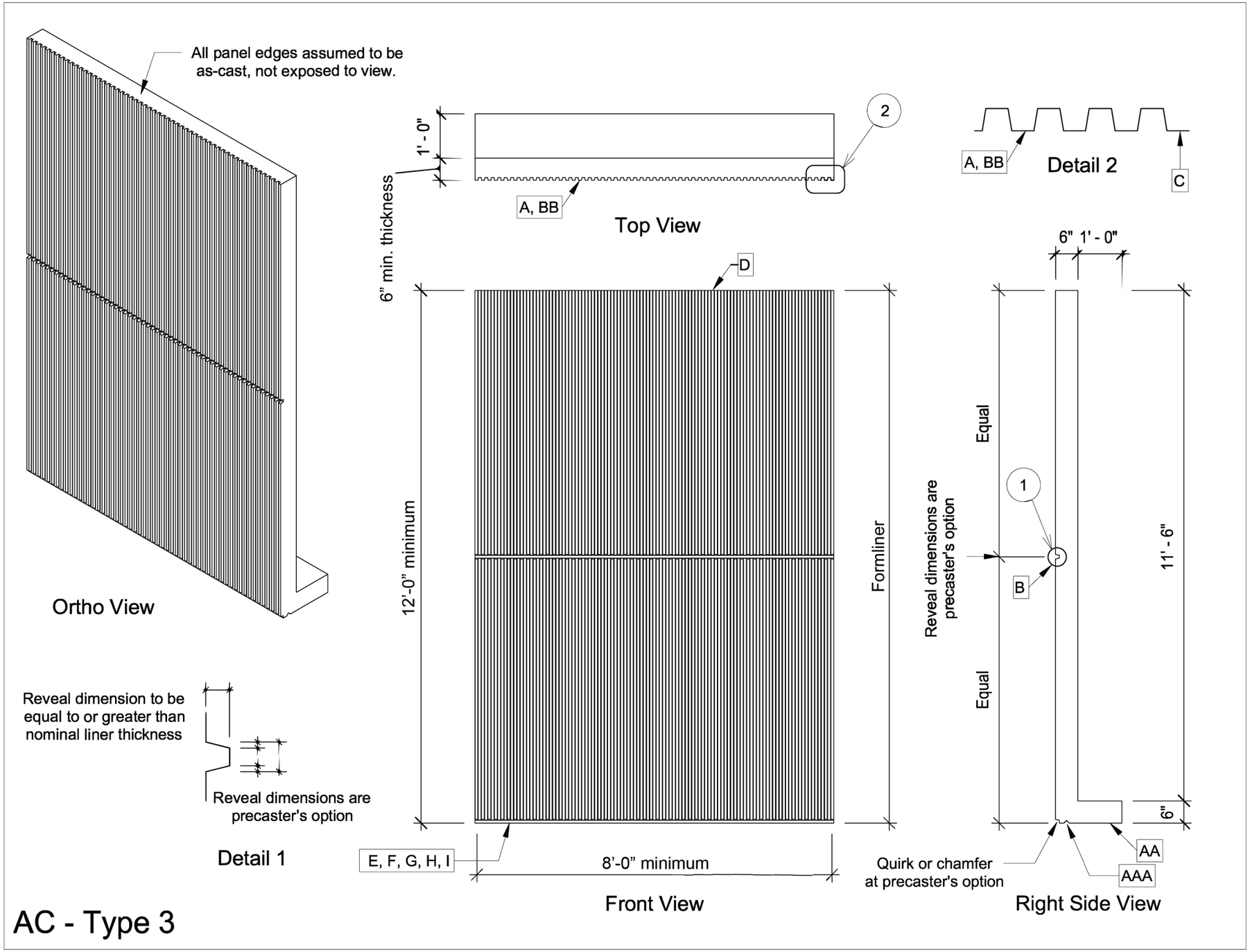

Figure 15. Category AC Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

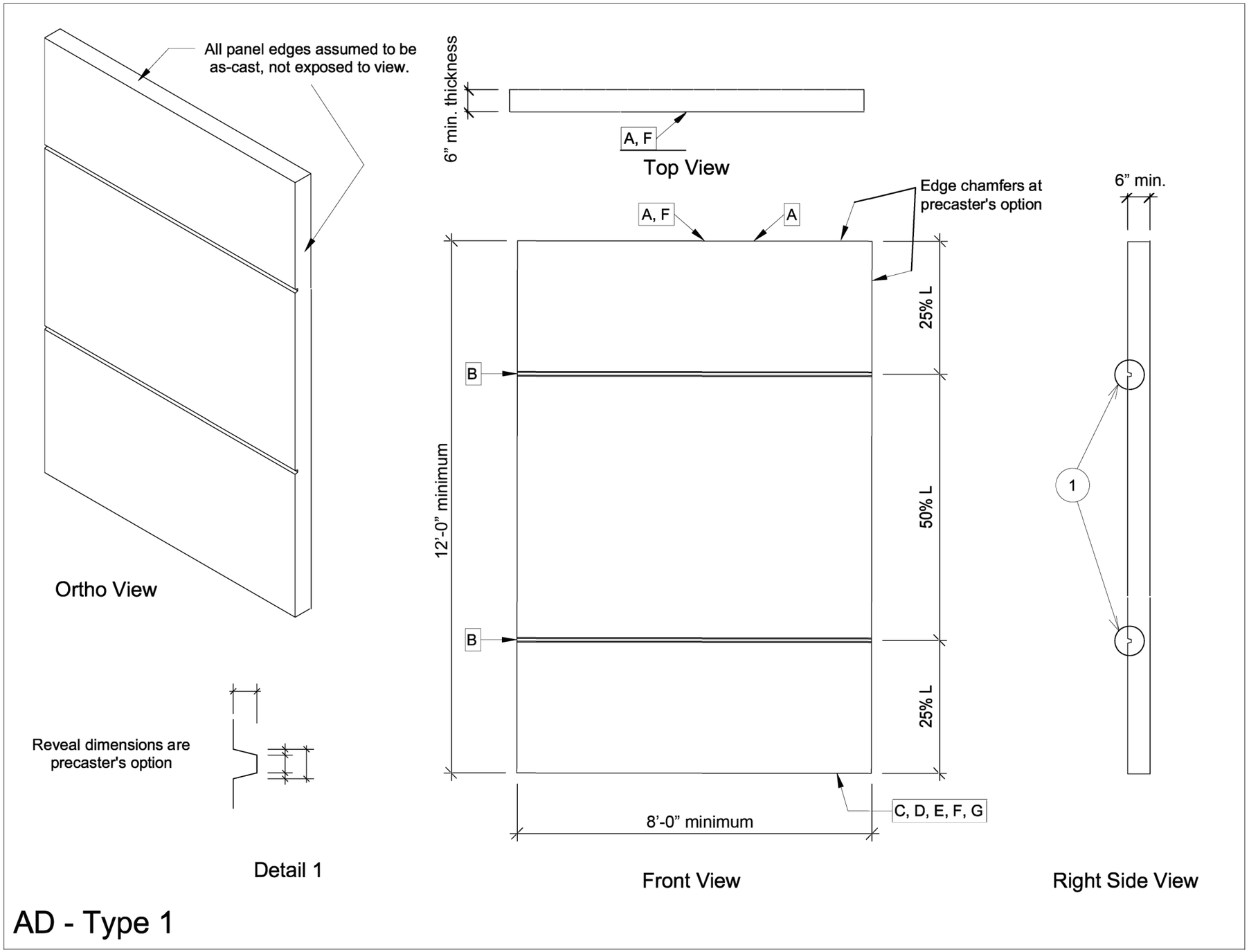

Figure 18. Category AD Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

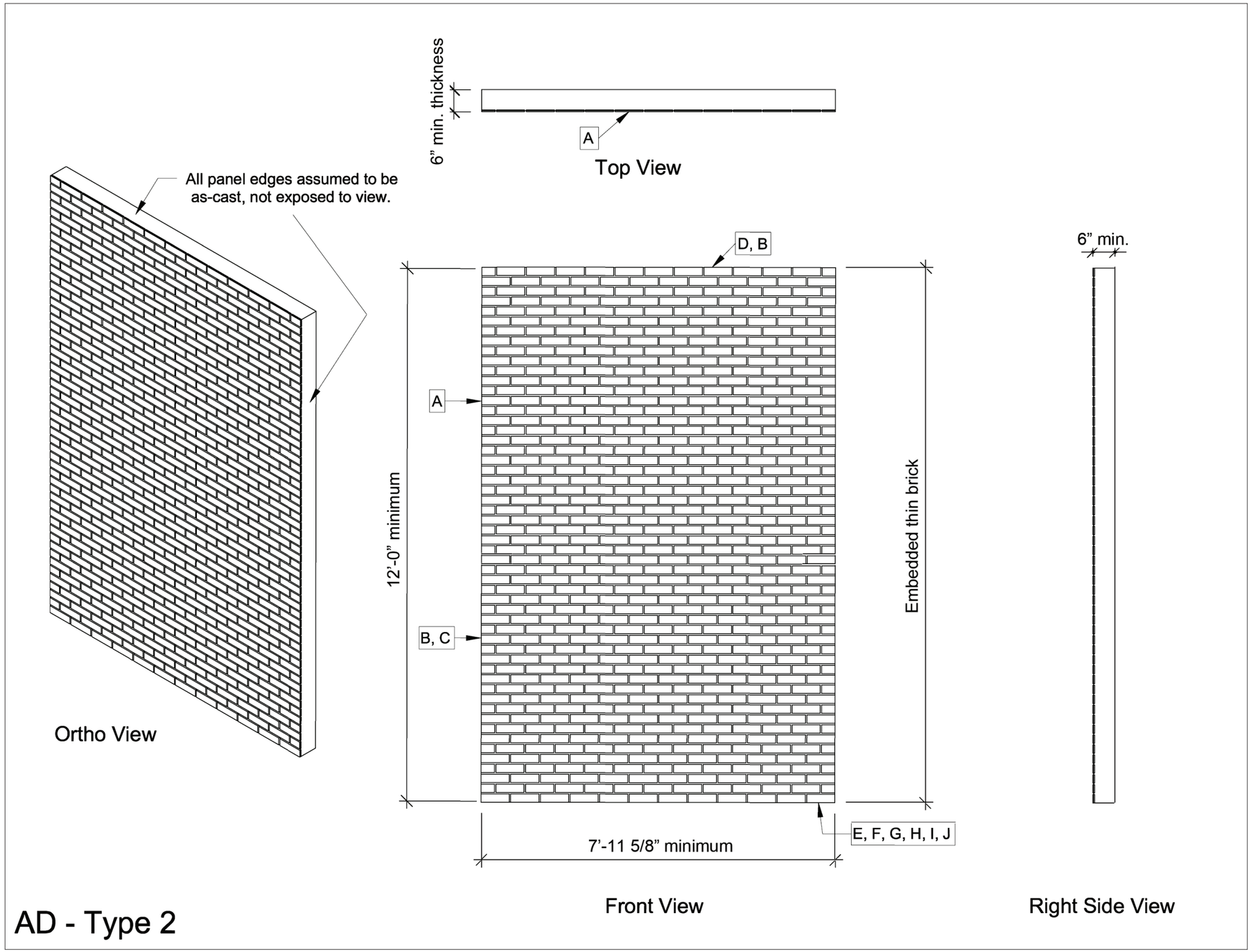

Figure 19. Category AD Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

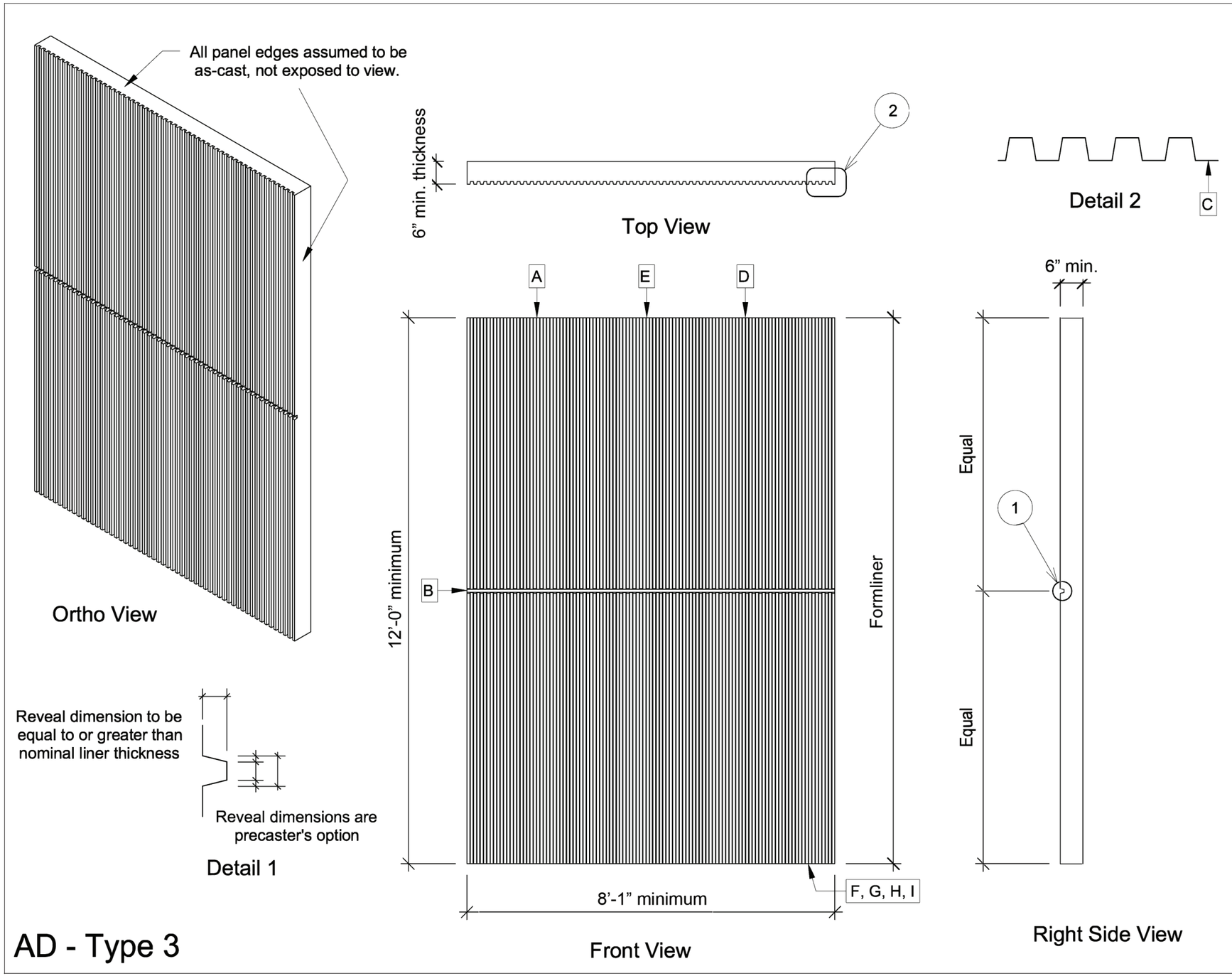

Figure 20. Category AD Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

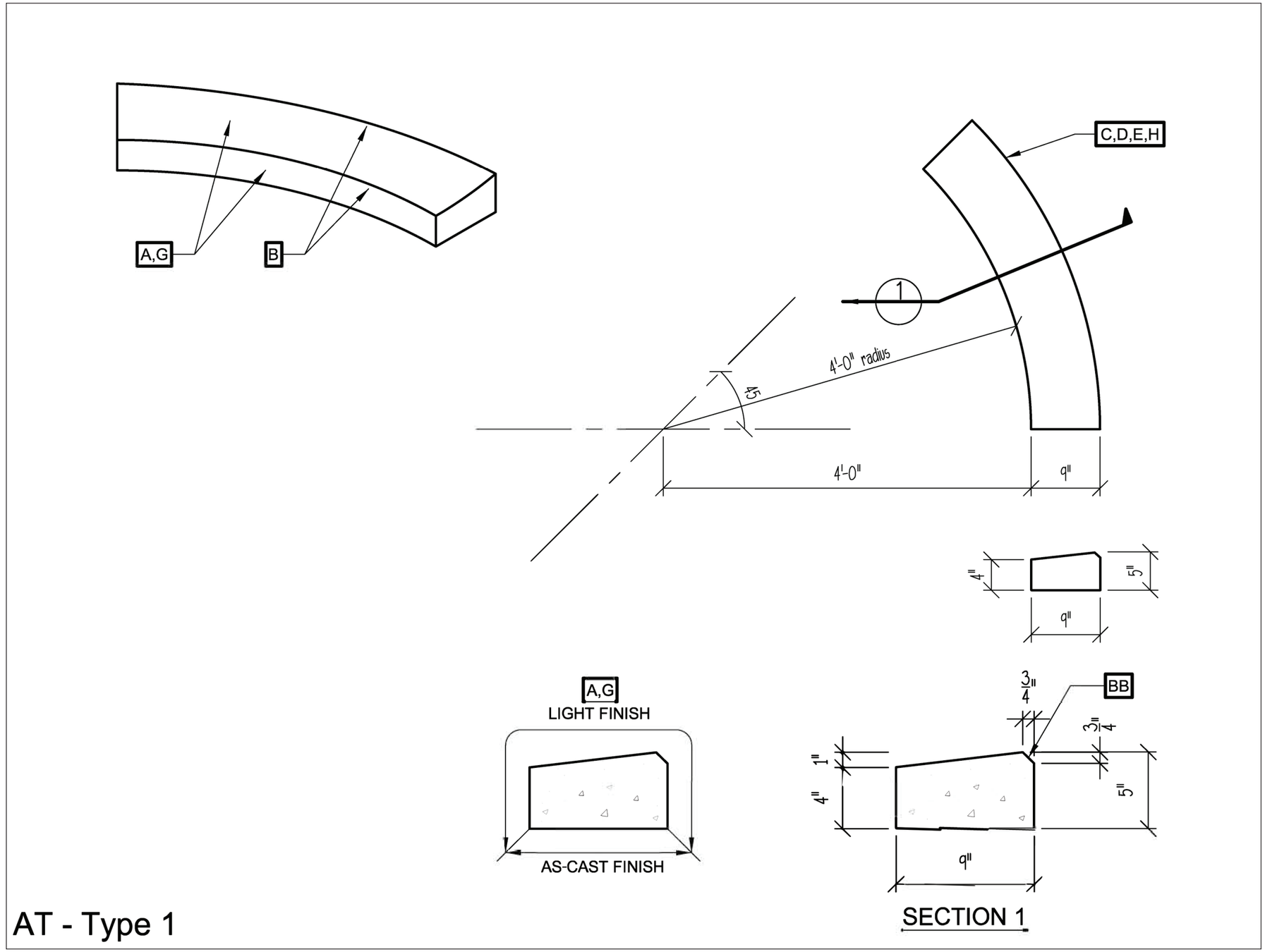

Figure 22. Category AT Type 1 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

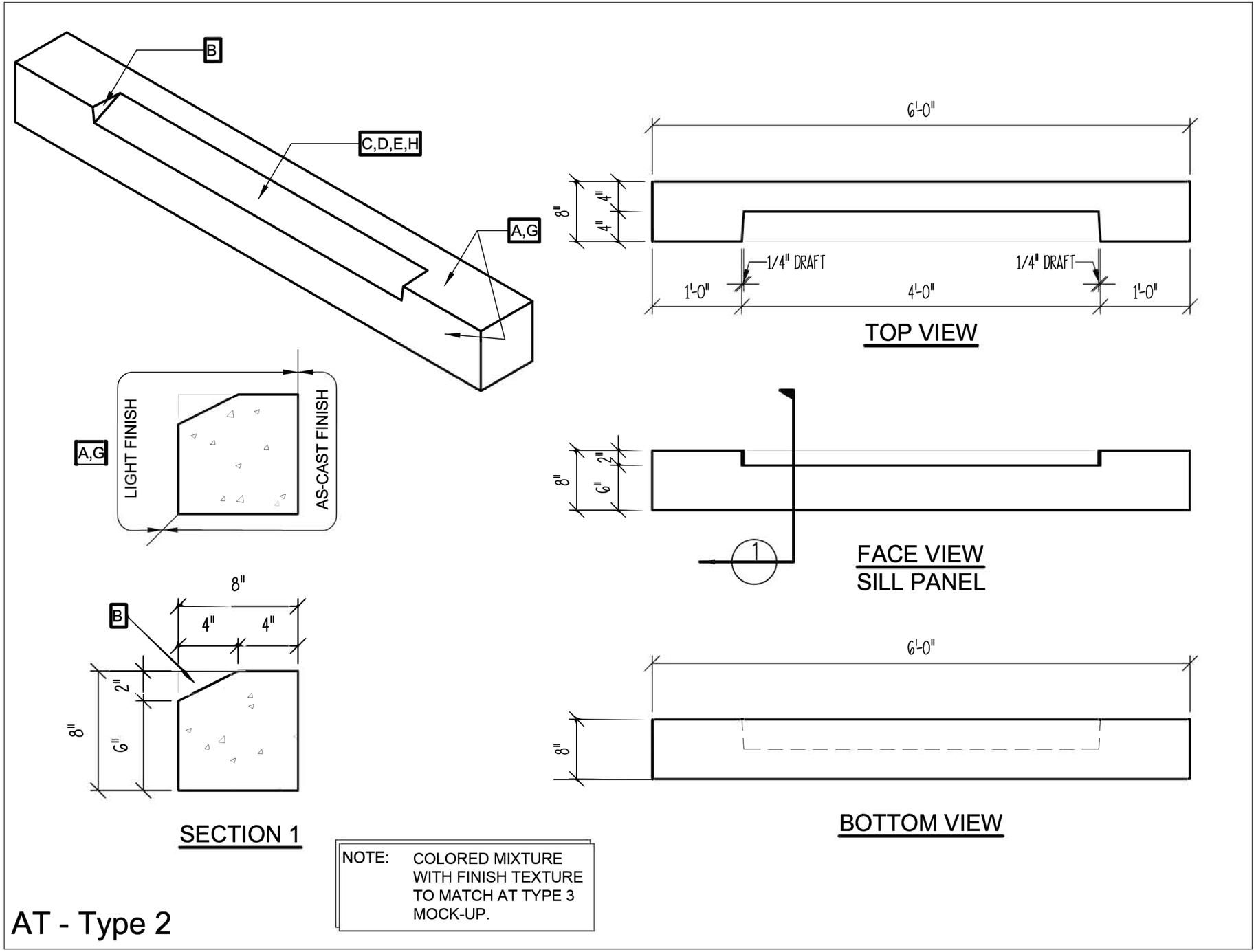

Figure 23. Category AT Type 2 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.

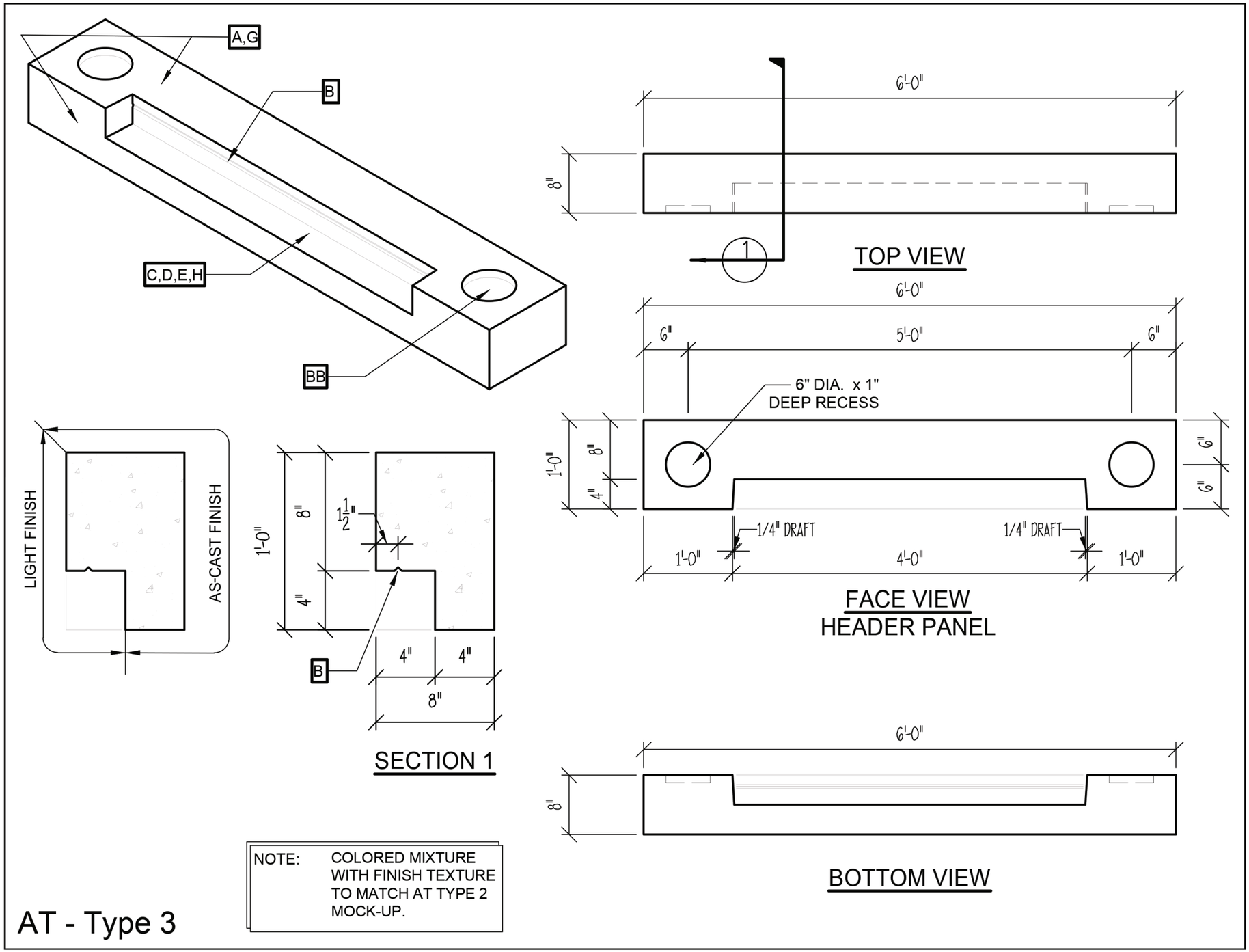

Figure 24. Category AT Type 3 mock-up drawing. Note: 1' = 1 ft = 0.305 m; 1" = 1 in. = 25.4 mm.