

TSIB: PLASTER ASSEMBLIES MANUAL INTRODUCTION

The Plaster Assemblies Manual "ONLINE" is designed to be a comprehensive guide to lathing, plastering assemblies and systems. It is an up-to-date, in depth, generic reference manual for architects, specifiers, contractors, building officials, inspectors, materials suppliers and other building professionals. While this is a first edition, it is born out a compilation of information from previous editions of the "Plaster and Drywall Systems Manual authored by Walter Pruter and J.R. "Dick" Gorman and other published manuals. Because this is an "online" version of the "manual", it should be regarded as a living document and can be updated regularly.

This manual was updated by the TSIB (Technical Services Information Bureau) and promulgated by the WWCCA (Western Wall and Ceiling Contractors Association), formerly known as the California Lathing and Plastering Contractors Association comprehensive guide on generic systems for cold formed framing, lath, plaster, drywall and fireproofing installations and limited information on proprietary systems.

The Technical Committee of the California Lathing and Plastering Association, now known as the WWCCA, have history producing recognized technical documents and standards predating World War II and can trace their roots back over 100 years in southwest construction. The WWCCA is one of the largest and most influential wall and ceiling contractors associations in the United States. TSIB has staffed offices on the west coast with a wide range of expertise in the wall and ceiling industry. The TSIB staff is funded by an industry promotion fund set-up by the WWCCA contractors to promote and educate on wall and ceiling construction. TSIB has been directed to serve the wall and ceiling industry and operate for the good of the industry as a whole. The TSIB staff is expressly charged not to show favoritism to any members of the WWCCA with regard to site visit and systems review.



This manual, while primarily written by the TSIB staff, was reviewed by various committees and several industry experts and has received industry wide acceptance. Architects, code authorities and experts in specialized fields of practice have contributed to the text of this manual. The manual is recognized as authoritative and provides an industry-accepted standard with explanations as to the intent of the code and/or standards as they relate to the wall and ceiling industry. While the manual is primarily intended for the western United States, it is acceptable for the entire country. Some practices may vary from region to region and your local TSIB regional office or trade association can provide further information or clarification.

Each chapter is written in a format so that each can act as a "stand alone" document with tables of contents for its own specific chapter.

**SOUTHERN CALIFORNIA
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1952**

Technical Services Information Bureau

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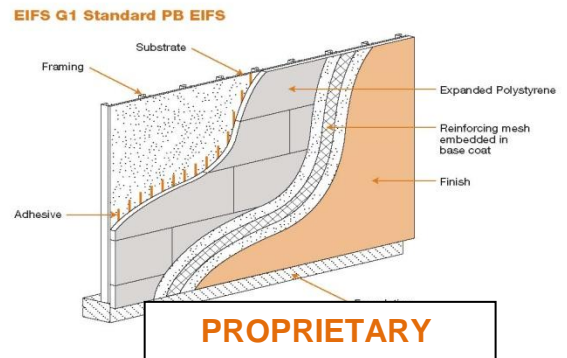
GENERIC VS. PROPRIETARY

PROPRIETARY SYSTEM

The terms generic and proprietary are used quite often in this manual. Proprietary materials and systems are developed by a manufacturer and require a specific installation for that system as prescribed by the manufacturer of that system. Any alteration or substitution to a proprietary system must have the manufacturer's approval. Examples of proprietary products or systems are:

- Type C Gypsum Panels
- Exterior Insulation and Finish Systems (EIFS)
- One-coat Stucco
- Many head of wall deflection tracks

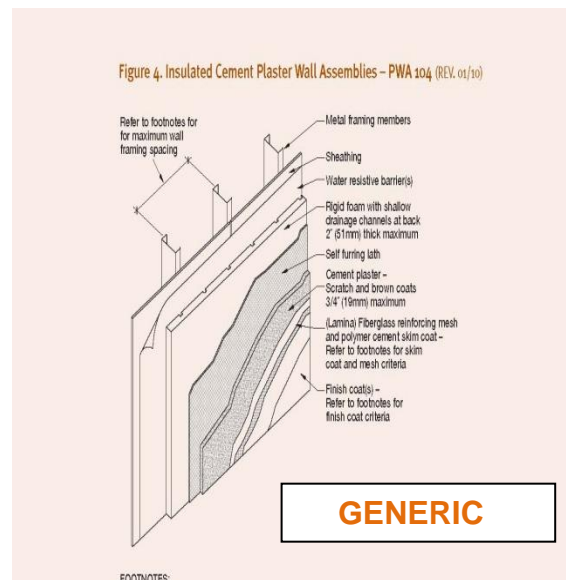
Some proprietary products may be used as part of a generic assembly. A good example is an acrylic finish coat, designed as part of EIFS; these finishes are commonly used and approved over conventional cement plaster basecoats.



GENERIC ASSEMBLY

Generic refers to a building material that is typically listed in the building code and may be interchanged, combined or separated from a system, sometimes referred to as a commodity product. A manufacturer produces the generic product to meet a specific ASTM or a building standard. Examples of generic materials or assemblies are:

- Type X Gypsum Panels
- Cement Plaster and Stucco
- Building Paper and Lath
- Cold Formed Metal Studs



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CODE APPROVALS

The term code approved is often confusing in the construction industry. Many assume the “Code” is the only acceptable method of construction. There is a hierarchy of code documents and a proper procedure for design and construction.

1. **The Building Official:** the local building official has the last word on any code issue, interpretation or alteration of the code.
2. **The Code Book:** Whether the International Building Code (IBC) or the California Building Code (CBC), this is the book that building inspectors use as a baseline for compliance for minimal life safety protection.
3. **ASTM Standards:** these standards are referenced in the codes and are part of the code. ASTM standards go into greater detail on the manufacture, testing, installation and inspection of building materials and systems.
4. **Industry Associations:** Many associations are recognized by the code, such as the Gypsum Association (GA) or the American Architectural Manufacturers Association (AAMA).

IMPORTANT NOTE: Any product, material, system or alternate method of construction is allowed if approved by the architect of record and the local building official. Once approved by the local building official it is “code approved,” for that one time installation. Refer to the section of the code that is entitled “*Alternate Materials and Methods for Construction*”. This is often cited as the most important section of the code.

The building official will typically look for an authoritative review of the product and/or system to verify the product, system or alternate method is appropriate for the intended use. Rarely is manufacturers’ literature sufficient unless accompanied with some substantiating test data from an independent lab, reference from a recognized technical authority or has a proven track record of success. The most common approval is an ICC Evaluation Report or Legacy Report (these reports can be found at www.iccsafe.org). It cannot be over stressed that the decision from the local building official is ultimately what determines if a material, system or alternate method is “code approved.”

BASIC RESPONSIBILITIES

Constructing a building is a complicated series of events and requires teamwork. Many conflicts arise on site when parties neglect or become confused about their basic responsibilities in the construction process. The following are the basic duties and responsibilities of each team player in the complex construction process.

ARCHITECTS

Architects design buildings to meet owners’ needs; designs shall comply with the applicable codes and standards to ensure the building is code compliant, meets owners’ needs and provides public safety. Architects create drawings, details and specifications to direct the contractors on which materials or systems to use and how they are to be integrated to meet his/her design requirements. While architects may create their own set of standards, procedures and acceptance criteria, they are strongly urged to use recognized industry standards to protect themselves from unnecessary disputes and possible litigation. Architects should use these standards to direct and set qualifications for the contractors who will be performing the wall and ceiling work.



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Architects must have vast knowledge of several parts of the building, but cannot be expected to know all facets of a particular trade or field of work, such as wall and ceiling work, and may rely on qualified subcontractors for proper means and methods of constructability. Architects should also know that all wall and ceiling contractors are not created equal, and an uneducated subcontractor with poorly trained crews will likely lead to delays, poor quality and even construction defects. Any product or system specified must be installed by qualified subcontractors. Unqualified subcontractors have many hidden and latent costs not seen in the initial and tempting “low bid”. Fixing leaks, forensic costs, time delays, re-installation of systems and unhappy building owners are but a few of the additional costs that need to be considered.

Seasoned architects know that it is not the inadequacy of generic code approved building materials or systems that fail. The false sense of security gained from specifying an expensive or upgraded product and/or system and then saving on installation costs is a recipe for disaster.

An architect should use recognized standards and set specific qualifications for the selection of a quality wall and ceiling contractor.

BUILDING DEPARTMENTS

The local building department is charged with protecting public life and safety for the citizens. While they frequently receive criticism for their efforts, one should look around the world at catastrophic events and take note that buildings in the United States tend to be safer than most other countries.

Architects tend to deal with plans examiners who are charged to review the plans for code compliance prior to issuing a permit for construction. Plans examiners must look carefully at the type of building, allowable construction for height, square footage and occupancy usage. Then review fire ratings, seismic requirements and a very complex set of issues all intended to protect the public.

Building inspectors visit the site and verify the project is being constructed per the plans and meets minimum code standards. If a detail on the plans is above the minimum requirement of the code, the inspector is required to follow the architect’s more stringent requirements. However, if the plans do not meet the minimum code requirements, the inspector shall require the minimum requirement of the code be met. If a detail is considered an alternate to the code, the inspector will check with the architect of record for verification and the building official for approval of the alternate.

GENERAL CONTRACTOR

General contractors are charged with the overall construction, supervision and coordinating all of the various subcontractors to insure the building meets production schedules, code requirements, overall quality and project management. Taking the low bid of a wall and ceiling contractor who may be unqualified, will lead to delays in production, failure in expert oversight of wall and ceiling work and will likely lead to hidden defects that forensic experts will eventually find. General contractors who believe that selecting expensive, complicated systems and saving on labor costs, will protect them in litigation will ultimately be disappointed. Many general contractors have mistakenly believed that the money saved on a low bid can pay for extra site supervision;



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The flaw with this theory is the general contractor must also rely on the expertise of the specialty subcontractor. The general contractor has “general” knowledge of wall and ceiling systems and cannot be expected to expertly supervise what they can’t know as well as the subcontractor.

The general contractor should take bids only from qualified, recommended and trusted subcontractors and rely on proven products and systems. Non-code compliant and overly complicated systems and assemblies should be avoided.

WALL AND CEILING CONTRACTOR

The wall and ceiling contractor is considered to have expertise in the installation of his specialty trade. They are charged to properly install the materials and systems, fully understand the codes and standards related to the systems they install. Wall and ceiling contractors need skilled labor and require apprenticeship programs to insure a continual pool of trained craftsmen. Subcontractors must be well capitalized and skilled businessmen to succeed. They must also stay current with code changes and standards that relate to their industry to protect themselves, the general contractor and the architect. Qualified wall and ceiling contractors do not design projects or dictate to the architect the imperfections of a design or detail. They do notify the appropriate parties of a particular concern or potential problem and then proceed as directed.

In summary, the wall and ceiling contractor must be current on the codes and standards for his/her industry. Wall and ceiling contractors must use trained and skilled labor.

CONSTRUCTION LABOR

The construction industry is one of America’s largest industries and skilled labor is critical to proper construction, particularly in commercial work. Approximately 70% of a wall and ceiling subcontractors bid will be labor, clearly demonstrating how important apprenticeship training, journeyman upgrades and productivity is to the wall and ceiling industry. Productivity is critical for the wall and ceiling contractor to cover costs, stay in business and keep quality construction affordable.

Wall and ceiling contractors provide bids for projects with presumptions on productivity and the project. Several factors, many beyond the subcontractor’s control, can hurt the estimated productivity levels. A severe drop in productivity can cause a wall and ceiling contractor substantial loss. The Northwest Wall and Ceiling Bureau, Northern California Drywall Contractors Association and the Western Wall and Ceiling Contractors Association commissioned an independent academic group of experienced statisticians connected with Portland State University to determine the effect on productivity when encountering some common production related issues. The report clearly demonstrates the importance of teamwork by all the players mentioned above.

QUALITY AND CRAFTSMANSHIP

Workmanship and craftsmanship is, and always has been, of great concern in producing quality lathing, plastering, drywall and fireproofing installations. A tight specification, with adequate inspection, a qualified wall and ceiling contractor and a well-trained workforce insure quality code compliant workmanship.



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The industry recognizes this fact and supports approved apprenticeship programs. Support to these programs is financed with hourly contributions from contractor's signatory to a collective bargaining agreement. Many of these contractors further donate their personal time in establishing training curriculums, apprenticeship committees, classes and apprenticeship contests. These state approved apprentice-training programs and journeyman upgrade classes are used to continue the journeymen's education throughout his/her career. These classes are critical to successful installation of metal framing, acoustical ceilings, drywall and plaster systems. Architects, general contractors and subcontractors are encouraged to support state approved apprenticeship programs to keep the integrity of the industry alive and secure the future of quality construction.

Apprenticeship instructors are often paid basic journeyman wages and work longer hours. These instructors typically have a passion to teach, mentor and have a respect for the craft they're in. Like most teachers, these instructors have often mentored many individuals to lead them down a path toward a career with a skill, good wages and benefits to raise a family.

INSPECTIONS AND ENSURING QUALITY

SPECIFICATIONS

Owners and architects want quality and value in wall and ceiling work. Wall and ceiling contractors set out to deliver that quality and hopefully make a fair profit. The steps to insure quality and value start with clear specifications with obtainable and realistic goals. This translates to specifications based on code compliance, standards and construction practices. Once direction for the contractors is established, all subcontractors will bid on the project equally. Poor or unreasonable specifications may result in qualified contractors walking away or increasing the bid to accommodate the specification or the time it will take to correct the specification.

Architects and building owners are advised to use recognized specifications and limit alterations to a minimum. When an alteration is desired, call your regional drywall or plaster bureau to verify the change will be possible, realistic and what impact it is likely to have on the bids.

CONTRACTOR SELECTION

Architects and general contractors are advised to be cautious in subcontractor selection; while the low bid may be enticing, it may not be the best value. An experienced wall and ceiling contractor can often provide better value through his experience and skilled crews. This is particularly true with jobs where "value engineering" is used.

- A wall and ceiling contractor should have at least a five-year proven track record for major projects.
- A state-approved apprenticeship program for the contractor's workers.
- A journeyman upgrade program.
- The CEO, owner or responsible managing officer of the wall and ceiling company has successfully completed an "owner's certification seminar."
- Financially capable to provide labor and material to complete the project
- Employees have completed a minimum OSHA 10 hour program.



Apprentice Training

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THIRD PARTY CONSULTANTS

To insure quality, code compliance and adherence to the specifications, third party inspections are often employed and even welcomed by many wall and ceiling contractors. While many people may be surprised that a wall and ceiling contractor would welcome a third party inspection, having an extra set of eyes to insure a proper installation is something all parties want. An over-zealous inspection process that needlessly wastes time and thus wastes money does not benefit the construction process.

Inspectors, similar to architects, are often required to inspect a variety of systems and cannot be expected to be experts in all these systems. Inspectors cannot rely on the expertise from the subcontractor they are providing the inspections services, as this would be construed as a conflict of interest. Therefore many inspectors rely on assistance and the expertise from specialized trade associations to verify the subcontractor has complied with codes and industry standards.

DETAILS

Architects, designers, consultants and contractors are encouraged to use the details contained on the TSIB website.

ARCHITECTS: Details contained herein require approval from the local building official prior to usage on projects.

CONTRACTORS: Submit all details to architect of record for approval prior to implementing any additions, alterations or variations from approved plans. Do not assume all details are appropriate for use on all projects.

IMPORTANT NOTE:

“The Plaster Assemblies Manual Online” is neither the building code nor the only method of installation recognized by the industry. The manual is only intended to assist and inform industry professionals about various generic plaster and drywall systems, assemblies and options for installations. The manual is in no way meant to limit, punish or serve as a “minimum” standard to stifle creative or alternate materials and/or methods of construction.

The WWCCA and the TSIB cannot make a warranty, expressed or implied, to professionals who use the manual or any information garnered from the manual. All information, graphics and details contained herein are not intended for specific projects and implementation. Any detail or practice must be approved by the architect of record and local building officials.

While the WWCCA and TSIB encourage architects to use the specifications, information and details contained herein or on the TSIB web site, the WWCCA maintains the copyright and forbids selling the specifications and/or details for profit or personal gain. Alterations, deviations or additions to the specifications and/or details are done so at the sole risk of the party making such changes.

Access to the most current specifications and details are available through the TSIB Web site at www.tsib.org.



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ACKNOWLEDGMENTS

The staff at WWCCA and TSIB gratefully acknowledges the co-operation of a number of the nation's leading specifications, codes and standards organizations in granting reproduction rights on their documents which appear in whole or in part within these pages.

The authors of this manual have vast and varied experiences with lath and plaster, EIFS, acoustical ceilings, drywall and metal framing systems. The approval committees for the manual represent the broad spectrum of industry organizations, trade unions and publications with interest in preserving the integrity of lath, cold formed steel framing, plaster, EIFS, suspended ceilings and drywall systems.

EDITORIAL ADVISORY COMMITTEE

Grateful recognition is given to the most recognized and respected experts in the wall and ceiling industry, Walter "Walt" F. Pruter and J.R. "Dick" Gorman for their expertise. Both of these gentlemen were original authors of the "Plaster and Drywall Systems Manual" and without their dedication and hard work, this updated manual would not have been possible. Pruter passed away during the formation of this project—without his expertise, this manual would not have been possible.



**WALT PRUTER & DICK GORMAN
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CRAFT LABOR UNIONS

International Union of Painters and Allied Trades (IUPAT) www.iupat.org
Laborers International Union of North America (LIUNA) www.liuna.org
Operative Plasterers and Cement Mason International Association (OPCMIA) www.opcmia.org
United Brotherhood of Carpenters (UBC) www.carpenters.org