

Fire performance, beauty and
durability for interior residential
and commercial spaces

USG

Plaster Systems

Plaster systems offer a number of practical and aesthetic advantages over gypsum panels and other interior finishes.

Plaster permits a great deal of design flexibility, combined with fire performance, strength and durability. These factors improve lifecycle economy when compared to drywall.

Because plaster systems are truly monolithic, they provide surfaces that minimize or eliminate irregularities associated with standard drywall construction (ridging, boarding, nail pops, etc.).



Beauty and Strength

User's Guide

This brochure explains:

- The components of a plaster system
- The difference between conventional plaster systems and one- or two-coat veneer plaster systems
- The attributes of conventional and veneer plaster systems

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Overview

Plaster systems provide improved fire and abuse resistance over conventional drywall systems. In addition, they allow for a variety of aesthetic applications and better acoustic performance.

Depending on the application, either conventional or veneer plaster systems can be used. Conventional plaster systems use a thicker plaster coat over a metal lath and provide increased fire and wear resistance, while one- or two-coat veneer systems are faster and less expensive to apply.

Plaster systems typically consist of a substrate, a basecoat plaster and a finish plaster.

Substrates

Substrates can be either metal lath, unit masonry, monolithic concrete, or a recommended gypsum base, cement board or fiber-reinforced gypsum panel.

Basecoat Plasters

Basecoat plasters provide strength and rigidity, compensating for substrate imperfections and resulting in even, straight walls and ceilings. In conventional plaster systems, basecoat plasters are generally applied 1/2" to 1" thick, in one or two separate applications, depending on the substrate. In veneer plaster systems, basecoat plasters are applied approximately 1/16" thick.

Basecoat plasters are supplied in two forms: mill aggregated (which requires only mixing with water), and neat (which requires the addition of aggregate at the job site).

Finish Plasters

In conventional plaster systems, finish plasters are applied to properly prepared gypsum basecoat plasters to form the wearing surface of walls and ceilings. In veneer finish applications, finish plasters can be applied to any properly prepared basecoat or directly to a gypsum base. Finishes are approximately 1/16" to 3/32" thick, and can be smooth troweled, floated or textured.

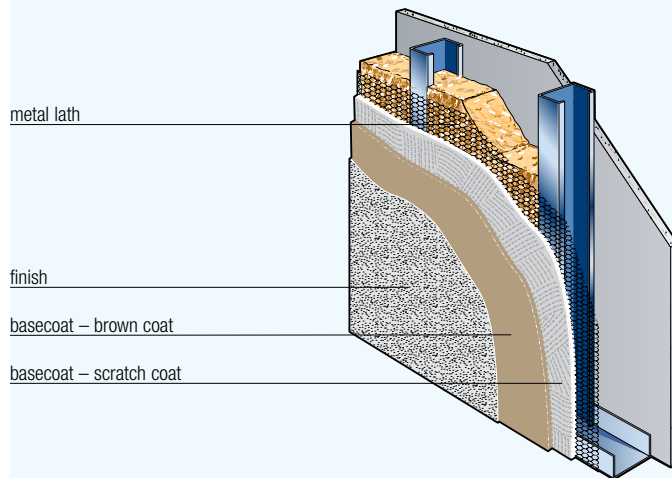
Finish plasters are supplied in two forms: factory-prepared finishes require only the addition of water, while gauging plasters require the addition of lime putty.

**Conventional
Plaster Systems**

Three-Coat

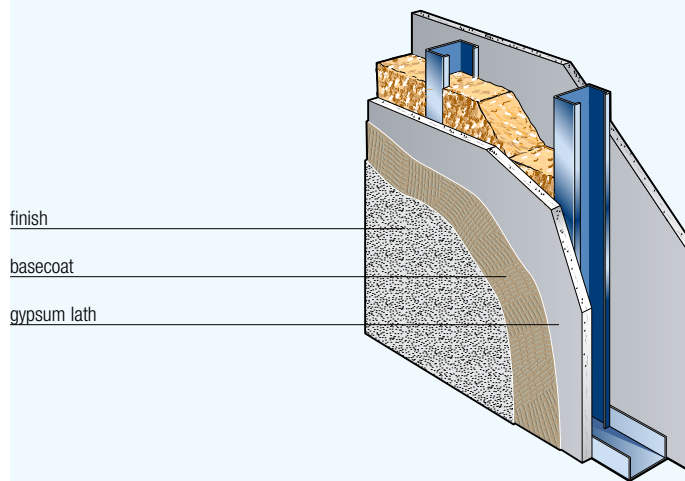
Conventional plaster systems are the best choice to attain a uniform, monolithic, blemish-free, smooth surface with good to excellent wear resistance based on the type of finish plaster. These systems make intricate architectural details and ornamental shapes possible. Conventional plaster systems offer excellent acoustical performance, proven fire resistance, increased abuse resistance, design flexibility for curves and compound surfaces, and lifecycle cost reduction due to lower maintenance costs.

A three-coat conventional plaster system consists of a thicker plaster coat (from 5/8" to 1") over a substrate, two base coats (a scratch coat and a brown coat) and a finish plaster.



Two-Coat

A two-coat conventional plaster system uses ROCKLATH Plaster Base instead of metal lath, one thickness of basecoat plaster, and a finish that replaces the scratch coat and brown coat.



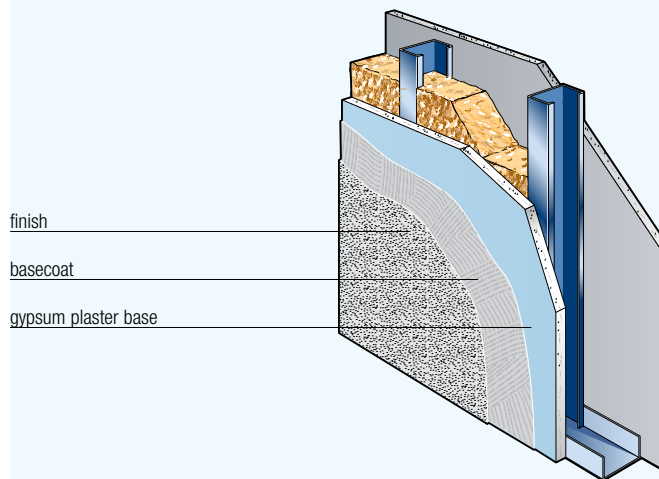
Overview

Veneer Plaster Systems

Two-Coat

While less expensive than conventional plaster systems, two-coat veneer plaster systems provide distinct advantages over single-coat veneer plaster and drywall systems, including a more monolithic surface with improved appearance under oblique lighting conditions. Two-coat veneer plaster systems allow truer wall surfaces and greater resistance to nail pops, joint ridging and joint shadowing/banding, with a wider choice of finishing materials and texture options.

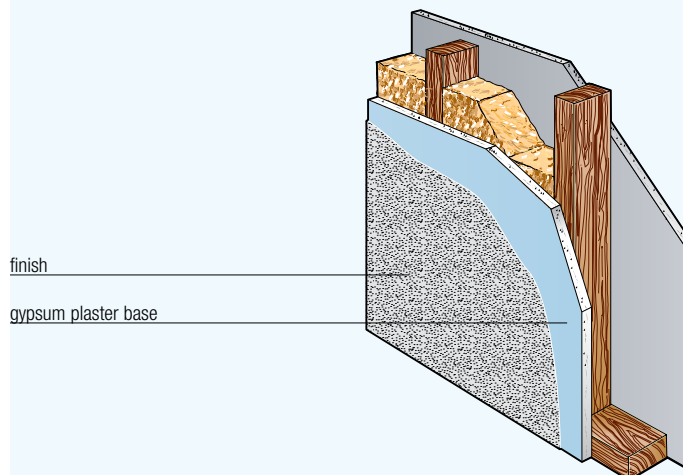
Two-coat veneer plaster systems use a finish plaster on top of a basecoat plaster.



One-Coat

One-coat veneer plaster systems provide a monolithic, smooth or textured appearance with moderate to superior surface hardness, depending on the product used. One-coat veneer plaster systems can be applied directly to the plaster base and can be ready for further decoration in as little as 24 hours if completely dry. Fast completion can often shorten construction time, making the single-coat veneer plaster system a very economical upgrade from standard gypsum drywall.

One-coat veneer plaster systems use one coat of 1/16" to 3/32" finish plaster directly on top of a base, without the use of a basecoat.



Decorative Interior Finish System

Colors and Textures

The USG™ Decorative Interior Finish System permits a limitless variety of colors and textures to be easily applied to interior drywall and other wall surfaces, using techniques similar to those used in plaster work. It offers an alternative to other upscale decorative finishes at a lower installed cost.

The USG Decorative Interior Finish System consists of specially developed USG Plaster Bonder, DIAMOND Brand Interior Finish Plaster, COLORTREND® Colorants and USG Decorative Interior Finish Sealer. Designed for use by professional applicators with basic trowel skills, the system can be applied to new drywall, gypsum plaster and properly prepared painted wall surfaces.

For more information, see P759, *USG Decorative Interior Finish System*, and PM12, *Recommendations for Mixing and Applying DIFS*.

Residential Application



Commercial Application



Applications

Conventional Plaster Systems

Conventional plaster systems provide the highest quality finish and the capability to create complex high-end surfaces such as barrel vaults and domes. In addition, secured storage areas for homes, bank vaults, furriers, jewelers, correctional facilities, and embassies can be built with STRUCTOCORE™ Brand Security Wall Systems.

Wood Framed

For wood-framed construction, a conventional plaster system provides:

- Fire resistance
- Improved acoustical separation between rooms

Steel Framed

For steel-framed construction, a conventional plaster system provides:

- Fire protection for beams and columns
- Durability and reduced lifecycle costs in high-usage applications
- Improved performance for acoustical applications such as concert halls and theaters

Veneer Plaster Systems

Wood Framed

For wood-framed construction, a veneer plaster system provides:

- Durability, including abrasion and crack resistance, for high-traffic areas
- 1-hour and 2-hour fire resistance ratings, depending on components used
- Sound control up to 52 STC with the use of resilient channels and sound insulation
- Easy application and fast drying for surfaces that are ready for next-day decorating or painting

Steel Framed

For steel-framed construction, a veneer plaster system provides:

- Fire-resistance ratings up to 4 hours
- Up to 3000 psi for the ultimate in finish plaster resistance to abrasion, scratching and indentation in high-traffic areas
- Sound isolation up to 62 STC
- Versatility for most dimensions or modules in virtually all buildings, with excellent workability
- Lighter weight than masonry assemblies of the same thickness
- Simple, inexpensive components that can be installed quickly at a lower cost than conventional plaster systems

Special Applications

The USG Drywall Suspension System is a low-cost alternative to cold-rolled channel for framing custom details such as barrel vaults and domes. It features:

- Pre-fabricated hub and pre-formed curved tees
- Suitable framing system for both conventional and veneer plaster systems

For more information, see AC3152, *Drywall Suspension System*.

Components

Substitutions of any of the components are not recommended or supported by USG. Refer to the appropriate product material safety data sheet for complete health and safety information.

Substrates

Selector



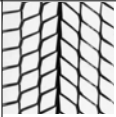
	Conventional	Veneer
ROCKLATH® Brand FIRECODE Core Plaster Base	•	
Metal Lath	•	
DUROCK® Brand Cement Board		•
FIBEROCK® Brand AR Panels		•
IMPERIAL® Brand Gypsum Base		•
Monolithic Concrete	•	•
Unit Masonry	•	•

Gypsum Plaster Lath

ROCKLATH® Brand FIRECODE Core Plaster Base

- A solid gypsum board lath for conventional plaster, with special paper facing for maximum plaster bond
- Requires about 45% less basecoat plaster than metal lath
- 3/8" thick, available in 2' width x 8' length
- Can be quickly attached to framing, including wood studs (with nails, screws, or staples), steel studs, furring channels, and suspended metal grillage (with screws and/or tie wire)

Metal Lath

	Diamond Metal Lath	Flat Riblath	3/8" Riblath
Uses	All-purpose; best type for ornamental and contour plastering; exterior stucco, column fireproofing, direct-to-steel framing (with STRUCTO-BASE Gypsum Plaster) and replastering; attached to wood or steel framing or wire-tied to cold-rolled channel	Excellent for nail-on or tie-on work on flat ceilings because of its rigidity	Very rigid lath for framing spaced up to 24" o.c., for studless, 2" solid plaster partitions, or as a centering for concrete floor or roof slabs
Pattern	Small diamond mesh 	Flat rib with smaller mesh openings 	Herringbone 
Benefits	Small-diamond mesh size (11,000 meshes per sq. yd.) reduces plaster droppings; basecoat plaster forced through mesh openings forms strong mechanical bond with lath	Smaller mesh openings and excellent rigidity	Superior rigidity from 3/8" main V-ribs at 4-1/2" intervals, plus inverted 3/16" intermediate ribs, reinforcing a strong, herringbone pattern mesh
Limitations		Not for contour plastering	Not for contour plastering; minimum ground thickness is 1"
Coatings	Painted or galvanized	Painted or galvanized	Painted or galvanized
Sizes, Weights and Types	27" x 96"; 2.5 lbs./sq. yd. and 3.4 lbs./sq. yd.; regular, self-furring or paper-backed (self-furring type is "dimpled" with 1/4" indentations)	27" x 96"; 2.75 lb./sq. yd. and 3.4 lb./sq. yd.	27" x 96" (other sizes also available) 3.4 lb./sq. yd.

Components

Panels

DUROCK® Brand Cement Board

- Glass-fiber-mesh reinforced aggregated portland cement panel
- Improved abuse resistance
- USG™ Plaster Bonder required
- Refer to PM6 “Veneer Plaster Application Techniques” for installation requirements

FIBEROCK® Brand Abuse-Resistant Interior Panels

- Outperforms regular gypsum base, providing improved indentation and penetration resistance
- Economical alternative to concrete block construction
- Available in mesh-backed 5/8” VHI (Very High Impact) version
- 5/8” panel can be substituted for 5/8” IMPERIAL Brand FIRECODE Core Gypsum Base and certain 1/2” IMPERIAL Brand FIRECODE C Core Gypsum Base in wall assemblies without compromising the fire rating (see Application Guide Specifications, Part 3.3.5)
- USG Plaster Bonder required
- Refer to product submittal sheet F218 for more information

IMPERIAL® Brand Gypsum Base

- Solid gypsum lath in large, drywall-sized sheets, with blue face paper, designed for veneer plaster systems
- In one-coat veneer applications, only IMPERIAL and DIAMOND Finish Plasters can be used over IMPERIAL Brand Gypsum Base
- IMPERIAL Brand FIRECODE Gypsum Base, IMPERIAL Brand FIRECODE C Core Gypsum Base, or IMPERIAL Brand Abuse-Resistant Gypsum Base can also be used
- Refer to product submittal sheet P782 for more information

Monolithic

Monolithic Concrete

- Plaster cannot be applied directly to interior surface of an exterior wall; the wall should be furred first and then suitable substrate applied to furring
- On interior surface, excluding exterior walls, USG Plaster Bonder is required with a Two-Coat Veneer Plaster application
- USG Plaster Bonder required
- Two-coat veneer required

Unit Masonry

- May serve as substrate for a two-coat veneer system on interior walls
- Plaster cannot be applied directly to interior surface of exterior wall; the wall should be furred first and then suitable substrate applied to furring
- Concrete block should be new and unpainted, joints struck flush

Basecoat Plasters

Selector	Conventional	Veneer
DIAMOND Brand Veneer Basecoat Plaster		•
IMPERIAL Brand Basecoat Plaster		•
RED TOP Brand Gypsum Plaster	•	
RED TOP Brand Wood Fiber Plaster	•	
STRUCTO-BASE Gypsum Plaster	•	
STRUCTO-LITE Basecoat Plaster	•	

Basecoat plasters provide strength and rigidity, building the wall to thickness to provide substrate and bond for finish plaster. They are used to achieve even, straight walls and ceilings, compensating for substrate irregularities. Basecoat plasters are generally applied in one or two applications of 1/2" to 1", depending on the substrate.

DIAMOND® Brand Veneer Basecoat Plaster

- Quality walls and ceilings for residential or commercial construction where the superior strength of IMPERIAL® Brand Basecoat Plaster is not essential
- Superior workability provides ease and speed of application to achieve a high production rate with increased coverage
- Exceptional integral bond with all finish plasters
- Refer to product submittal sheet P774 for more information

IMPERIAL Brand Veneer Basecoat Plaster

- High-strength veneer basecoat plaster (3,000 psi compressive strength) for use in two-coat applications
- Can be used with a veneer plaster finish, such as DIAMOND Brand Veneer Finish or IMPERIAL Brand Veneer Finish Plaster
- Where ease of workability and application are a major concern, use RED TOP® Brand Finish, high-strength STRUCTO-GAUGE® Gauging Plaster/lime putty, RED TOP Brand Keenes Cement/lime/sand-float finish or RED TOP Brand Gauging/lime putty finish
- Refer to product submittal sheet P776 for more information

RED TOP Brand Gypsum Plaster

- General purpose basecoat plaster available in different forms to suit regional preferences
- Requires adding aggregate and water on the job
- Refer to product submittal sheet P752 for more information

RED TOP Brand Gypsum - Wood Fiber Plaster

- A gypsum plaster containing fine particles of selected wood fiber
- Recommended as a scratch coat for metal lath, but can be used on all standard laths and masonry
- 50 lbs. of sand per 50lbs. of plaster must be added when machine applied or used directly on masonry
- Aggregate addition is optional when applied over metal lath
- Refer to product submittal sheet P751 for more information

Components

STRUCTO-BASE® Gypsum Plaster

- Develops higher strengths (2,800 psi) than conventional plasters
- For security walls, handball courts, hospital corridors, high-performance suspended ceiling systems, schools and wherever the ultimate compressive strength plaster is necessary
- Requires addition of aggregate
- Refer to product submittal sheet P753 for more information

STRUCTO-LITE® Basecoat Plaster

- Mill-mixed, perlite-aggregated plaster requires only the addition of water on the job
- Less than half the weight of a sanded basecoat, but provides three times the insulation value ($k = 1.74$)
- Masonry for unit masonry only (high suction)
- Refer to product submittal sheet P754 for more information

Finish Plasters

Selector

	Conventional	Veneer
DIAMOND Veneer Finish	•	•
IMPERIAL Veneer Finish	•	•
RED TOP Finish Plaster	•	• ^a
RED TOP Brand Gauging Plaster	•	• ^a
RED TOP Brand Keenes Cement	•	• ^a
STRUCTO-GAUGE Gauging Plaster	•	• ^a

Finish plasters are applied to properly prepared gypsum basecoat plasters to form the wearing surface of walls and ceilings. Finishes are approximately 1/16" to 3/32" thick, and can be smooth-troweled, floated or textured. Finish plaster is available in two types: factory-prepared finishes require only the addition of water; the gauging plaster and lime-type finishes require blending on the jobsite.

- Can be applied to conventional regular or high-strength sanded basecoats for improved surface hardness
- Improved surface appearance, abrasion resistance, and durability compared to drywall
- Ideal upgrade for both residential and commercial construction with smooth or textured finishes

Note

(a) May be applied over any veneer basecoat, but cannot be used as a one-coat veneer.

Prepared Finish Plasters

Mill-mixed finish plasters that require only the addition of water on the jobsite.

DIAMOND Brand Veneer Finish Plaster

- Offers a strong, hard, white surface for commercial or residential construction where the extra hardness of IMPERIAL Brand Finish is not required
- Ideal for applications requiring fast completion and durability, and often competitive in cost with taped and finished drywall
- Suitable as a single-coat finish directly on IMPERIAL Brand Gypsum Base or over USG Plaster Bonder on monolithic concrete when properly job sanded; also as a second coat over IMPERIAL Brand or DIAMOND Brand Veneer Basecoats or a sanded gypsum basecoat
- Unaggregated for smooth or skip trowel finishes; may be job-aggregated with up to an equal part by weight of clean silica sand for various textures
- Can be applied in electrical cable heating systems if properly job-sanded (see PM16)
- Refer to product submittal sheet P777 for more information

IMPERIAL Brand Veneer Finish Plaster

- Provides the highest strength (3,000 psi) and the most abrasion-resistant surface of any plaster finish
- Can be used over IMPERIAL Brand Gypsum Base in one-coat veneer plaster systems, over IMPERIAL Brand Veneer Basecoat Plaster in two-coat veneer plaster systems, as the finish over DIAMOND Brand Veneer Basecoat or as the finish in a two-coat veneer plaster system over DUROCK Brand Cement Board or FIBEROCK Abuse Resistant Interior Panels
- Requires only the addition of clean water
- Not recommended for use over lightweight gypsum basecoats
- Refer to product submittal sheet P775 for more information

RED TOP Brand Finish Plaster

- An easy-working mill-mixed gauged plaster-lime finish for high productivity
- Excellent smoothness and troweling characteristics
- Refer to product submittal sheet P773 for more information

Plaster Finishes over Veneer Basecoats

Any properly prepared conventional plaster finish may be applied over IMPERIAL Brand or DIAMOND Brand Veneer Basecoat. This solution offers higher productivity, ease of application, a smooth surface, and a wide range of texturing options. Recommended for large continuous textured surfaces or integral colored finishes.

Gauging Plasters

Specially prepared gypsum plasters designed to be mixed with lime putty to produce a finish plaster. Gauging plasters provide positive set and strength to the finish plaster. They can also be aggregated for texturing.

RED TOP Brand Gauging Plaster

- Produces hard, crack and abrasion resistant surfaces
- Quick-Set and Slow Set are unaggregated for use over sanded basecoats
- Perlite Aggregated formulation features perlite fines for lightweight aggregated basecoats
- Refer to product submittal sheet P786 for more information

Components

RED TOP Brand Keenes Cement

- A highly calcined (“dead-burned”) gypsum gauging plaster that can be retempered once during application
- Ideal for float-finishes and job coloring
- Extensive troweling necessary to attain strength, surface hardness and improved resistance to abrasion
- Refer to product submittal sheet P770 for more information

STRUCTO-GAUGE Gauging Plaster

- A premium gauging that provides greater strength, hardness, and resistance to surface abrasion than standard gauging plasters
- Use only over high-strength basecoats
- Available in Quick-Set and Slow-Set formulations
- Refer to product submittal sheet P771 for more information

Finishing Limes

When finish limes are mixed with water on the job, the result is lime putty (a component of finish plasters). Lime putty adds plasticity to the finish plaster, improving workability and surface smoothness.

GRAND PRIZE Single Hydrate Finish Lime

- Type N - Single-hydrate lime requires overnight soaking before blending with gauging plaster

IVORY and SNOWDRIFT Finish Limes

- Type S - Autoclaved double hydrate lime virtually eliminates possible future expansion in the finish coat from unhydrated magnesium oxides
- No slaking required

Special Interior Plasters

USG Acoustical Plaster Finish

- Attractive spray plaster texture for application to gypsum basecoats, interior monolithic concrete, metal decks and gypsum panel ceilings
- For use on new construction or renovation, noncontact surfaces
- Surface burning characteristics: flame spread 10, smoke developed 25
- Sound rated NRC 0.55 for concrete and conventional plaster at 1/2" finish thickness; NRC 0.75 for concrete and conventional plaster at 1" finish thickness; NRC 0.50 for gypsum panels
- Refer to product submittal sheet P720 for more information

USG Moulding Plaster

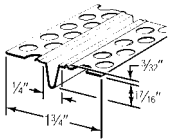
- Finely ground for excellent detail reproduction in specialized work such as cast ornamental enrichments and running cornices
- Controlled set for accurate reproduction
- Available in white or gray

White HYDROCAL® Gypsum Cement

- Provides exceptional strength for producing ornamentation with durable fine detail
- Recommended for thin castings and those made from intricate latex molds
- Refer to product submittal sheet IC338 for more information

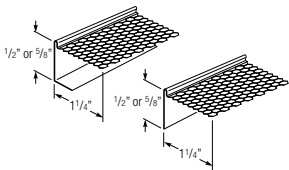
USG Accessories

Zinc Control Joint, No. 093



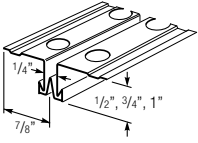
- Relieves veneer plaster system expansion/contraction stresses in large ceiling areas
- Used from floor to ceiling or from header to ceiling in long partition runs
- Plastic tape is removed after plastering to keep joint clear
- Roll-formed from corrosion-resistant zinc
- Grounds: 3/32"; length: 10'

Metal Trims



- Protect edges of veneer plaster finish at cased openings and intersections of walls and ceilings
- Fine-mesh expanded flanges reinforce applied veneer plaster
- Available in sizes for use with 1/2" and 5/8" IMPERIAL Brand Gypsum Base
- Refer to product submittal sheet P760 for more information
- No. 801 provides 1/16" grounds for one-coat veneer plaster systems
- No. 701 provides 3/32" grounds for two-coat veneer plaster systems

Components



Zinc Control Joints Nos. 50, 75, 100

- Relieve plaster expansion/contraction stress in large areas
- Used from floor to ceiling in long partition runs, and from header to ceiling above door frames
- Plastic tape, removed after plastering, protects a 1/4" x 1/2" deep slot
- Roll-formed from zinc; corrosion-resistant for both interior and exterior use with gypsum or portland cement plaster
- Sizes, ground: No. 100, 1" (for exterior stucco curtain walls)

SHEETROCK® Brand Joint Tape

- Strong, cross-fibered paper tape, for use only with SHEETROCK EASY SAND™ Lightweight and DURABOND® Setting-Type Joint Compounds
- For usage, see Veneer Plaster Systems Limitations in the Application Guide Specifications section

SHEETROCK Brand DURABOND Setting-Type and EASY SAND Lightweight Setting-Type Joint Compounds

- Setting-type compounds for use with SHEETROCK Brand Joint Tape in certain veneer plaster systems (see Veneer Plaster Systems Limitations in the Application Guide Specifications section)
- Refer to product submittal sheets J17A and J621 for more information

USG Decorative Interior Finish Sealer

- Water-based 100% acrylic emulsion used to seal out moisture while allowing the finish to breathe in the USG Decorative Interior Finish System
- Ready-to-use product also provides UV and abrasion resistance

USG Plaster Bonder

- Bonds new plaster to any structurally sound interior surface
- Required for applications of plaster over DUROCK Brand Cement Board, FIBEROCK AR panels and Monolithic concrete.
- Refer to product submittal sheet P778 for more information

IMPERIAL Brand Tape

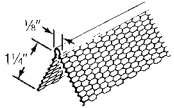
- Highly crack-resistant glass fiber tape
- Designed to reinforce joints of IMPERIAL Brand Gypsum Base over wood framing only
- Open weave allows for complete encasement during embedding
- Available in pressure sensitive (P) and staple-attached (S)
- Refer to product submittal sheet P618 for more information

Framing and Furring Accessories and Screws

- Refer to Construction Handbook for more information

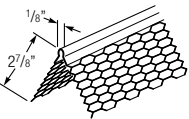
Other Accessories and Trims

Lath accessories are attached to substrates to establish finished dimensions. Beads and trims establish proper plaster thickness (grounds) to reinforce corners and intersections, to act as terminus for plaster application and to serve as control joints in large expanses of walls and ceilings. These lath accessories are not supplied by USG.



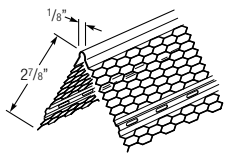
Corner Beads

- Easily nailed or stapled
- 1-1/4 expanded mesh flanges provide superior plaster key for crack resistance
- No. 800 provides 1/16" grounds for one-coat veneer plaster systems
- No. 900 provides 3/32" grounds for two-coat veneer plaster systems



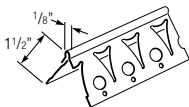
1-A Expanded Corner Bead

- Protects corners from damage, and establishes a straight line at the corner
- Easily flexed for irregular corners
- Made with 2-7/8" wide expanded flanges
- Available in galvanized steel and zinc alloy (for exterior use)



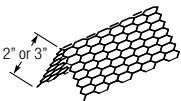
Double-X Corner Bead

- Ideal for structural tile and tough masonry
- Adjusts easily for plaster depth on columns
- Perforated stiffening ribs along expanded flange



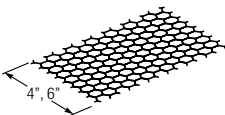
4-A Flexible Corner Bead

- Ideal for curved edges (archways, telephone niches, etc.)
- Versatile and economical as an "all-purpose" corner bead
- Snipping flanges allows bead to be bent to any curvature radius



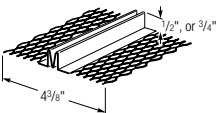
Cornerite

- Strips of painted or galvanized steel diamond mesh lath for reinforcement
- Bent in the center to a 100° angle, reinforces interior angles between unlapping metal lath and between masonry constructions (to reduce plaster cracking) and nonferrous lath



Striplath

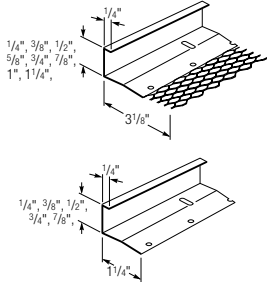
- Flat strip for reinforcing joints of nonmetallic and/or dissimilar plaster lathing/bases
- Also spans pipe chases



Double V Expansion Joint

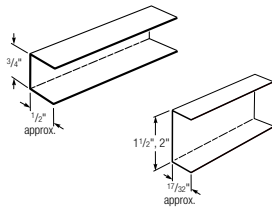
- Provides stress relief to control cracking in large plastered areas
- Made with expanded flanges of corrosion-resistant galvanized steel, or zinc for exterior use
- Grounds: 1/2", 3/4"; length: 10'

Components



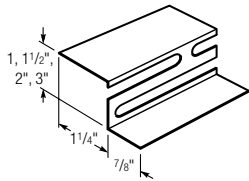
Casing Beads

- Use 3/4" casing beads with metal lath, 5/8" beads with all masonry units
- When flange is applied under ROCKLATH Brand Plaster Base, use 7/8" beads; over ROCKLATH Brand Plaster Base, 1/2" beads
- Made from corrosion-resistant galvanized steel or zinc alloy for exterior applications



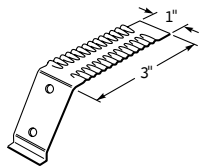
Cold-Rolled Channels

- 16 gauge steel
- Used for furring, suspended ceilings, partitions, and ornamental lathing
- Available galvanized or black asphaltum painted



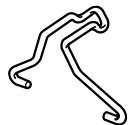
Z-Furring Channels

- Used to mechanically attach mineral wool and rigid foam insulations and gypsum base to interior surfaces of monolithic concrete and masonry walls
- Also for attaching insulation and gypsum base to interiors of existing walls and ceilings
- Corrosion-resistant steel



Adjustable Wall Furring Brackets

- Used in braced furring systems for interior or exterior masonry walls
- Made of 20 gauge galvanized steel, and attached to steel studs
- Furring depth: up to 2-1/4" plus stud width



Metal Furring Channel Clip

- Used to attach metal furring channels to 1-1/2" cold-rolled channel ceiling grillwork
- Galvanized

Product Data

Compatibility Selectors

Suitable Substrates for Conventional Basecoats

Substrate	Basecoats			
	STRUCTO-LITE Gyp. Plaster	STRUCTO-BASE Gyp. Plaster	RED TOP Gypsum Plaster	RED TOP Wood Fiber
ROCKLATH	•	•	•	•
CMU Block	•	•	•	•
Monolith Concrete ^a	•	•	•	•
ML CH-FMG	•	•	•	•
ML C-Studs		•		

Suitable Finishes for Conventional Basecoats

Basecoat	Finish Plasters					
	RED TOP Finish Plaster	STRUCTO-GAUGE/Lime	Keenes/Lime/Sand	Gauging Lime/Sand	IMPERIAL Finish Plaster	DIAMOND Interior Finish
RED TOP Gypsum Plaster	•	•	•	•		•
RED TOP Wood Fiber ^b	•	•	•	•	•	•
STRUCTO-LITE Basecoat Plaster			•	•		
STRUCTO-BASE Gypsum Plaster ^c	•	•	• ^c	•	•	•

Suitable Substrates for Veneer Plaster Systems

Substrate	Basecoats		Finish Plasters					
	DIAMOND Veneer Basecoat	IMPERIAL Veneer Basecoat	IMPERIAL Veneer Finish	DIAMOND Veneer Finish	RED TOP Finish	STRUCTO-GAUGE Lime	Gauging/Lime	Keenes Lime/Sand
IMPERIAL Gypsum Base	•	•	•	•				
DUROCK Cement Board ^{a,d}	•	•						
FIBEROCK AR Panels ^{a,d}	•	•						
Monolithic Concrete ^{a,d}	•	•						
CMU Block	•	•						
Bonded Surface	•	•						
Specified USG Basecoated Surface			•	•	•	•	•	•

Metal Lath Selector

Type of Lath	Recommended Applications					
	Ornamental contour	Over interior substrate	Over exterior substrate ^e	Nail-on/tie-on flat ceiling	Solid partitions	Concrete centering
Diamond Mesh	•			• ^g	• ⁱ	
Self-Furring		•	• ^f	• ^h		
Flat Riblath				•		
3/8" Riblath					•	•

Notes

(a) USG Plaster Bonder must first be applied. (b) Job sanded. (c) Quality gauging, not over metal lath. Monolithic concrete to be treated with USG Plaster Bonder. (d) When job adding sand, refer to product submittal sheet. (e) For example: gypsum sheathing, replastering existing work, column fireproofing. (f) 3.4 lb/sq. yd. galvanized lath. (g) For tie-on only: supports 16" o.c. max. (h) For nail-on only: supports 16" o.c. max. (i) Supports 16" o.c. max.

Product Data

Compatibility Selectors

Basecoat Plaster (over metal lath)

Scratch coat

1. STRUCTO-BASE Plaster, sanded 100 lbs. : 2 cu. ft.
2. Wood Fiber, neat, or sanded up to 100 lbs. : 1 cu. ft.
3. Wood Fiber, neat, or sanded up to 100 lbs. : 1 cu. ft.
4. RED TOP Gypsum Plaster, sanded 100 lbs. : 2 cu. ft.
5. Wood Fiber, neat, or sanded up to 100 lbs. : 1 cu. ft.
6. Wood Fiber, neat, or sanded 100 lbs. : 1 cu. ft.

Brown coat

- STRUCTO-BASE Plaster, sanded 100 lbs. : 3 cu. ft.
- Wood Fiber Plaster, sanded up to 100 lbs. : 1 cu. ft.
- RED TOP Gypsum Plaster, sanded 100 lbs. : 2 cu. ft.
- RED TOP Gypsum Plaster, sanded 100 lbs. : 3 cu. ft.
- STRUCTO-LITE Basecoat Plaster (Sand float finish only)
- RED TOP Gypsum Plaster, perlited 100 lbs. : 2 cu. ft. (sand float finish only)

Coverage Rates

Basecoat Plasters^a

Plaster product	Mix	Ratio: Aggregate (vol.) Basecoat (wt.)		Approx. Coverage per Ton of Gypsum Basecoat ^b					
		cu. ft./100 lbs	cu. m./ton	Gypsum Lath		Metal Lath		Unit Masonry	
				sq. yd./ton	sq. m./ton ^c	sq. yd./ton	sq. m./ton ^c	sq. yd./ton	sq. m./ton ^c
STRUCTO-LITE Basecoat Plaster	regular	—	—	140	129	89 ^d	82 ^d	109	100
RED TOP Brand Wood Fiber Plaster	neat	—	—	85	78	54	49	66	60
	sand	1.0	0.62	135	124	86	79	105	97
STRUCTO-BASE Gypsum Plaster	sand	2.0	1.24	154	142	99	91	120	110
	sand	2.5	1.55	185	170	118	109	144	132
	sand	3.0	1.86	214	197	136	125	167	154
RED TOP Brand Gypsum Plaster	sand	2.0	1.24	180	165	114	104	140	129
	sand	2.5	1.55	206	190	131	121	160	147
	sand	3.0	1.86	232	213	148	136	181	167
	perlite	2.0	1.24	176	162	112	103	137	126
	perlite	3.0	1.86	224	206	143	132	174	160
	vermiculite	2.0	1.24	171	157	109	100	133	123
	vermiculite	3.0	1.86	215	198	137	126	168	154

IMPERIAL Brand Basecoat and Finish

Product	sq. ft./ton Gypsum Base	Masonry	sq. m./ton (metric) ^e	Masonry
IMPERIAL Brand Basecoat	3250-4250	2700-3600	335-435	275-370
DIAMOND Brand Basecoat	4000-5000	3500-4500	410-510	360-460
IMPERIAL Brand (1-coat) Finish	3500-4000	Not recommended	360-410	Not recommended
IMPERIAL Brand (2-coat) Finish	3200-3600	3200-3600	330-370	330-370

DIAMOND Brand Veneer Finish Plaster

Substrate Surface	Smooth Finish		Sand Float Finish Sanded 1:2 (sand:DVF)		Heavy Texture Finish Sanded 1:1 ^f	
	sq. ft./ton	sq. m./ton ^g	sq. ft./ton	sq. m./ton ^g	sq. ft./ton	sq. m./ton ^g
IMPERIAL Gypsum Base	6000	610	4660	475	3500	355
IMPERIAL OR DIAMOND Basecoat	5500	560	4330	440	3250	330
Sanded RED TOP Basecoat	5000	510	4000	410	3000	305
Monolithic concrete ^{h,i}	5500	560	4660	475	3500	355
Veneer basecoat over monolithic concrete ^h	5500	560	4330	440	3250	330

Notes

(a) Coverage values based on laboratory determined dry densities. Actual coverage may vary due to job conditions. (b) Grounds (including finish coat): gypsum lath—1/2" (face of lath), metal lath—3/4" (back of lath), unit masonry—5/8". (c) Metric ton. (d) Lightweight aggregate plasters are not recommended over metal lath when the finish coat is to be smooth troweled. (e) Coverage rounded to nearest 5 sq. m. per metric ton. (f) Coverage based on one ton of aggregated mixture (combined weight of sand and DIAMOND Brand (finish)). (g) Coverage rounded to nearest 5 sq. m. per metric ton. (h) USG Plaster Bonder required. (i) Must be job sanded, minimum 1/2 : 1, sand to plaster.

Coverage Rates

Gauging Plasters

Product	Finish Texture	Gauging to Lime, to Sand (dry wt.)	Approx. Coverage per Ton (sq. yds.) ^a
STRUCTO-GAUGE and Lime Finish	smooth trowel-extremely hard surface	100 lbs. gauging 100 lbs. lime	380
	smooth trowel-hard surface	100 lbs. gauging 200 lbs. lime	430
Keenes Cement and Lime Finish	smooth trowel	100 lbs. Keenes 100 lbs. lime	370
Keenes Cement and Lime Finish	smooth trowel	100 lbs. Keenes 200 lbs. lime	430
Keenes Cement, Lime and Sand Finish	float finish	100 lbs. Keenes 200 lbs. lime 400-800 lbs. sand ^b	270
RED TOP Gauging Plaster and Lime Finish	smooth trowel	50 lbs. gauging 100 lbs. lime	390
RED TOP Gauging Plaster, Lime and Sand Finish	float finish	50 lbs. gauging 100 lbs. lime 400 lbs. sand ^c	280

Coverage Rates

Use of Aggregates with Gypsum Plasters Maximum Recommended Proportions

			Maximum Aggregate Quantity, cu. ft., to be used with 100 lb. of Neat Gypsum Plaster							
			Under smooth trowel finishes				Under texture finishes			
			Sand ^d		Perlite ^e		Sand ^d		Perlite ^e	
Plaster Base	No. of Coats	Type of Coats	cu. ft./100 lb	cu. m/ton	cu. ft./100 lb	cu. m/ton	cu. ft./100 lb	cu. m/ton	cu. ft./100 lb	cu. m/ton
gypsum lath	3	scratch	2	1.24	2	1.24	2	1.24	2	1.24
		brown	3	1.86	2	1.24	3	1.86	3 ^f	1.86 ^f
metal lath	3	scratch	2	1.24	—	—	2	1.24	2	1.24
		brown	3	1.86	—	—	3	1.86	2	1.24
unit masonry	3	scratch	3	1.86	3	1.86	3	1.86	3	1.86
		brown	3	1.86	3	1.86	3	1.86	3	1.86
	2	basecoat	3	1.86	3	1.86	3	1.86	3	1.86

Notes

(a) 1/16" thick. (b) For improved hardness, Keenes Cement can increase to a 2:2:6, or to a max. 2:1:6 mixture. Note: as Keenes Cement proportion increases, workability and finishing become more difficult. (c) Mixtures with less or more sand (1:2:1 to 1:2:8) are acceptable, but coverage will vary. (d) Approximately six No. 2 shovels of sand equal 1 cu. ft. (0.028m³). (e) In a construction with metal lath as the plaster base, perlite or vermiculite aggregate is not recommended for use in the basecoat plaster, unless a float finish is used. (f) Quantity recommended only if plaster is applied 1" thick; otherwise use 2 cu. ft.

Product Data

Spacing Specifications

Maximum Frame Spacing—Metal Lath^a

Type of Lath ^b	Weight		Vertical Supports (Wall)		Metal Solid Partitions		Others ^c		Horizontal Supports (Ceiling)		Metal	
	lbs./sq. yd	kg./sq. m.	Wood						Wood or Concrete			
			in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
Diamond Mesh	2.5	1.4	16	406	16	406	12	305	— ^e	—	— ^e	—
Diamond Mesh ^d	3.4	1.8	16	406	16	406	16	406	16	406	13.5	343
1/8" Z-Rib	2.75	1.5	16	406	16	406	16	406	16	406	12	305
1/8" Z-Rib	3.4	1.8	19	483	24	610	19	483	19	483	19	483
3/8" Rib	3.4	1.8	24	610	—	—	24	610	24	610	24	610
3/8" Rib	4.0	2.2	24	610	—	—	24	610	24	610	24	610

Frame and Fastener Spacing—ROCKLATH Plaster Base

Type Framing	Base Thickness		Fastener ^f	Max. Frame Spacing		Max. Fastener Spacing	
	in.	mm		in.	mm	in.	mm
Wood	3/8	9.5	Nails—13 ga. 1-1/8" long, 19/64" flat head, blued.	16	406	5 ^g	127
			Staples—16 ga. galv. flattened wire, flat crown 7/16" wide, 1" divergent legs				
Steel Stud	3/8	9.5	1" drywall screws	16	406	12 ^h	305
Metal Furring	3/8	9.5	1" drywall screws	16	406	12 ^h	305

Maximum Spacing—Main Runner—Carrying Channels

Main Runner Channel Size		Maximum c. to c. Spacing of Main Runners		Maximum Spacing of Hangers Along Runners	
in.	mm	ft.	mm	ft.	mm
3/4	19.1	3	914	2	610
3/4	19.1	2-1/4	686	3	914
1-1/2	38.1	4	1219	3	914
1-1/2	38.1	3-1/2	1067	3-1/2	1067
1-1/2	38.1	3	914	4	1219
2	50.8	4	1219	5	1524
2	50.8	2-1/2	762	6	1829
2	50.8	2	610	7	2134

Maximum Spacing—Cross-Furring Members

Cross-furring size	Maximum c. to c. Spacing of Cross-furring		Main Runner or Support Spacing	
	in.	mm	ft.	mm
3/4" (19.1 mm) C.R. Channel	24	610	3	914
3/4" (19.1 mm) C.R. Channel	19	483	3-1/2	1067
3/4" (19.1 mm) C.R. Channel	16	406	4	1219
1" (25.4 mm) H.R. Channel	24	610	4	1219
1" (25.4 mm) H.R. Channel	19	483	4-1/2	1372
1" (25.4 mm) H.R. Channel	12	305	5	1524
3/8" (9.5 mm) Pencil Rod ⁱ	19	483	2	610
3/8" (9.5 mm) Pencil Rod ⁱ	12	305	2-1/2	762

Notes

(a) For spacing on fire-rated constructions, see test reports. (b) All types made from copper alloy steel containing from 0.20% to 0.25% pure copper, and painted with rust-inhibitive black asphaltum paint. Sheet size is 27" x 96". (c) Including vertical furring. (d) Available in both copper alloy and galvanized steel. (e) Not recommended except for fireproofing of steel shapes. (f) Metric; fastener dimensions: 19/64" = 7.5 mm; 3/8" = 11.1 mm; 1" = 25.4 mm; 1-1/8" = 28.6 mm; 1-1/4" = 31. (g) To prevent edge damage, fasten at least 3/8" from edges and ends of wood studs. (h) Space Type S screws 2" from edge of lath. (i) For concrete joist construction only—where 8 ga. wire may be inserted in joist before concrete is poured. (j) Primary usage is on furred ceiling members.

Support Area—Hangers^a

Hanger Size and Type	Typical Ceiling Area per Hanger		Maximum Tensile Load (lbs.) ^b
	sq. ft.	sq. m.	
9 ga. galvanized wire	12.5	1.2	340
8 ga. galvanized wire	16.0	1.5	408
3/16" (4.8 mm) mild steel rod ^c	20.0	1.9	546
1/4" (6.4 mm) mild steel rod ^c	22.5	2.1	972
3/16" x 1" (4.8 mm x 25.4 mm) mild steel flat ^c	25.0	2.3	3712

Maximum Frame Spacing^d

Base and Finish Assembly	Steel Framing Spacing		Wood Framing Spacing	
	in.	mm	in.	mm
1/2" IMPERIAL Brand Gypsum Base				
one layer, 1-coat system	16	406.4	16	406.4
one layer, 2-coat system	24	609.6	24 ^b	609.6 ^e
two layers, 1- & 2-coat system	24	609.6	24	609.6
5/8" IMPERIAL Brand Gypsum Base				
one layer, 1-coat system	24	609.6	24 ^e	609.6 ^e
one layer, 2-coat system	24	609.6	24 ^e	609.6 ^e
two layers, 1- & 2-coat system	24	609.6	24	609.6
3/4" IMPERIAL Brand Gypsum Base				
one layer, 1-coat system	24 ^e	609.6 ^e	24 ^e	609.6 ^e
one layer, 2-coat system	24	609.6	24	609.6
two layer, 1- & 2-coat system		24 609.6	24	609.6
1/2" DUROCK Brand Cement Board				
one layer, 2-coat system ^f	16	406.4	16	406.4
two layer, 2-coat system ^f	16	406.4	16	406.4

Maximum Fastener Spacing^g

Assembly Description	Type of Fastener	Location	Maximum Spacing	
			in.	mm
single layer, wood frame and face layer of double layer assembly	Ann. Ring Nails ^h	ceilings and walls	7	178
			8	203
single layer, resilient channel, steel frame base layer of double layer construction	1-1/4" Type W Screws	ceilings and walls	12	305
			1" Type S Screws ⁱ	12
base layer of double layer construction	Ann. Ring Nails ^h or 1-1/4" Type W Screws	ceilings and walls	24	610

Notes

(a) These are typical properties. Refer to manufacturer's specifications. (b) Based on minimum yield 33,000 psi. (c) Where severe moisture conditions may occur, rods galvanized or painted with rust-inhibitive paint, or galvanized straps are recommended. (d) For perpendicular or parallel application—perpendicular preferred for maximum strength; parallel application not recommended for ceilings. For fire-rated construction, see test report. (e) 24" spacing on wood framing and all steel-framed applications require joint treatment with SHEETROCK Brand Setting-Type Compound and SHEETROCK Brand Joint Tape. (f) All DUROCK Brand Cement Board veneer plaster systems require joint treatment with SHEETROCK Brand Joint Tape and SHEETROCK Brand Setting-Type Joint Compound (DURABOND or EASY SAND) and application of USG Plaster Bonder. (g) For non-fire rated assemblies, select fasteners for fire-rated construction from test report or from table in SA100. (h) For annular ring nails, select length to provide 3/4" penetration into wood framing. (i) Screws for steel framing should be at least 1/2" longer than the nominal base thickness.

Performance Testing

Combining compatible basecoat and finish plasters with the appropriate substrate is an important factor in developing sufficient surface strength and resistance to abuse and cracking.

Both basecoat and finish plasters can be used in conjunction with a variety of base panels. When selecting a plaster system, it is important to take into account abuse resistance, acoustics and aesthetics.

Performance Tests

USG Plaster Systems result from a program of extensive testing and continuous improvements, backed by over 100 years of experience in the building materials industry.

Testing Methods

All USG products and systems undergo exhaustive testing to ensure that they meet exacting standards.

Independent testing of abuse-resistant assemblies is performed by H.P. White Laboratory, Inc., a ballistic research and development facility that also conducts forced entry and drop testing. H.P. White Laboratory developed the first set of comprehensive test procedures and standards for the evaluation of the physical security of structures and structural subassemblies. Although originally designed for government and military organizations, these procedures have evolved to include commercial applications such as banks, currency exchanges and prisons.

Products are manufactured and tested in accordance with ASTM standards. ASTM International is one of the largest voluntary standards development organizations in the world, and is a trusted source for technical standards for materials, products, systems, and services.

Standards Compliance

Plasters

	ASTM C28	ASTM C61	ASTM C206 Type S	ASTM C206 Type N	ASTM C587	ASTM C35
RED TOP Keenes Cement		•				
RED TOP Gauging Plaster	•					
STRUCTO-GAUGE Gauging Plaster	•					
GRAND PRIZE Lime				•		
IVORY Finish Lime			•			
SNOWDRIFT Finish Lime			•			
DIAMOND Veneer Finish					•	
IMPERIAL Veneer Finish					•	
RED TOP Finish	•					
RED TOP Gypsum Plaster	•					
RED TOP Wood Fiber Plaster	•					
STRUCTO-BASE Gypsum Plaster	•					
STRUCTO-LITE Basecoat Plaster	•					•
USG Moulding Plaster	•					

Note

(a) 2,800 psi compressive strength when tested in accordance with ASTM C472 and sanded 200 lbs. of sand to 100 lbs. of STRUCTO-BASE Gypsum Plaster.

Standards Compliance

Substrates

	ASTM C37	ASTM C588	ASTM E84	ASTM E119 ^a	ASTM E136	ASTM C1278
FIBEROCK Brand AR Panels			•	• ^b		•
IMPERIAL Brand Gypsum Base		•	•	•	•	
ROCKLATH BRAND FIRECODE Plaster Base	•		•	•	•	

Fixture Attachment Load Table

Fastener Type	Size		Base Assembly	Allowable Withdrawal Resistance		Allowable Shear Resistance	
	in.	mm		lbs.	N ^c	lbs.	N ^c
toggle bolt or hollow wall fastener	1/8	3.18	1/2" gypsum base	20	89	40	178
	3/16	4.76		30	134	50	223
	1/4	6.35		40	178	60	267
	1/8	3.18	1/2" gypsum base and 25 ga. steel stud	70	312	100	445
	3/16	4.76		80	356	125	556
	1/4	6.35		155	690	175	779
No. 8 sheet metal screw			1/2" gypsum base and 25 ga. steel stud or 25 ga. steel insert	50	223	80	356
TYPE S bugle head screw				60	267	100	445
TYPE S-12 bugle head screw			1/2" gypsum base and 20 ga. steel stud or 20 ga. steel insert	85	378	135	601
3/8" TYPE S pan head screw			25 ga. steel to 25 ga. steel	70	312	120	534
two bolts welded to steel insert	3/16	4.76	grab bar attachment	175	779	200	890
	1/4	6.35		200	890	250	1113
bolt welded to 1-1/2" chan.	1/4	6.35	plumber's bracket	200	890	250	1113

Dimensional Stability

	Hygrometric Coefficient of Expansion (unrestrained) [Inches/inch/%R.H.(5%-90% R.H.)]	Thermal Coefficient of Expansion (unrestrained) [inches/inch/F°(40-100°F)]
STRUCTO-LITE Basecoat Plaster	4.8x10 ⁻⁶	7.3x10 ⁻⁶
Sanded Gypsum Plaster (100:2, 100:3)	1.5x10 ⁻⁶	7.0x10 ⁻⁶
Wood Fiber Plaster (sanded 100:1)	2.8x10 ⁻⁶	8.0x10 ⁻⁶
Gypsum Lath	7.2x10 ⁻⁶	9.0x10 ⁻⁶
Vermiculite Gypsum Plaster (100:2)	3.8x10 ⁻⁶	—

Basecoat Plasters

Plaster Product	Mix	Ratio: Aggregate (vol.) Basecoat (wt.)		Approximate Compressive Strength Dry ^d		Weight	Conductivity
		cu. ft./100 lb	cu. m./ton	psi	kg/sq. cm.	pcf-dry	(k)
STRUCTO-LITE Basecoat Plaster	regular	—	—	700	49	50	1.74
RED TOP Wood Fiber Plaster	neat	—	—	1750	123	82	3.15
	sand	1.0	0.62	1400	98	97	—
STRUCTO-BASE Plaster	sand	2.0	1.24	2800	197	124	—
	sand	2.5	1.55	1900	134	120	—
	sand	3.0	1.86	1400	98	118	—
RED TOP Gypsum Plaster	sand	2.0	1.24	875	62	107	5.51
	sand	2.5	1.55	750	53	108	—
	sand	3.0	1.86	650	46	109	5.60
	perlite	2.0	1.24	700	49	48	1.64
	perlite	3.0	1.86	525	37	41	1.31
	vermiculite	2.0	1.24	465	33	48	1.74
	vermiculite	3.0	1.86	290	20	41	1.42

Note

(a) When tested as part of an assembly. (b) 5/8" thick panel. (c) Newtons. (d) Average laboratory results when tested in accordance with ASTM C472. Figures may vary slightly for products from individual plants.

Performance Selector

Partitions

Steel Framed



1 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
<p>wt. 6 4 7/8"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base or IMPERIAL Brand FIRECODE Core Abuse-Resistant Gypsum Base or FIBEROCK Brand Panels – 3-5/8" 25 gauge steel studs 24" o.c. • optional veneer plaster 	UL Des U419 or U465	40	USG-860808	SA700 SA920	1	
			49	SA-870717 Based on 3" SAFB in cavity			
			51	RAL-TL-90-166 Based on 5/8" FIRECODE C Core panels and 3" SAFB, and veneer finish surface SAFB 25" wide, creased to fit cavity			
<p>wt. 6 3 5/8"</p>	<ul style="list-style-type: none"> • veneer plaster only (not drywall) 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base and veneer finish or 5/8" FIBEROCK Brand Panels – 2-1/2" 25 gauge steel studs, 16" o.c. – joints staggered and taped – 1/16" veneer finish 	GA-WP-1240			SA920	2	
<p>wt. 6 4 5/8"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base one side – 3-1/2" 20 gauge steel studs 16" o.c. • 1/2" DUROCK Brand Cement Board other side – 3" THERMAFIBER SAFB • USG Plaster Bonder over cement board and treated joints • joints treated with USG setting-type joint compound and paper tape • DIAMOND Brand veneer basecoat with IMPERIAL Veneer finish plaster 	UL Des U404			SA920 SA934	3	
<p>wt. 6 4 3/4"</p>	<ul style="list-style-type: none"> • 5/8" DUROCK Brand Cement Board or 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base – 3-1/2" 20 gauge studs, 16" o.c. – 3" THERMAFIBER SAFB • USG Plaster Bonder over untreated joint areas • joints treated with USG setting-type joint compound and paper tape • USG Plaster Bonder over cement board and treated joints • DIAMOND Brand veneer basecoat with veneer or conventional finish 	UL Des U407			SA920 SA934	4	
<p>wt. 7 4"</p>	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Panels – 2-1/2" 25 gauge steel studs 24" o.c. – 1-1/2" THERMAFIBER SAFB – joints finished • optional veneer finish 	UL Des U419 or U448	41	RAL-TL-69-148 Based on same construction without THERMAFIBER SAFB	SA920	5	
			50	SA-800504			
<p>wt. 5 5 1/8"</p>	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 3-5/8" 25 gauge steel studs 24" o.c. – 3" THERMAFIBER SAFB – RC-1 channel or equivalent one side spaced 24" o.c. • optional veneer plaster 	UL Des U419 or U451	50	RAL-TL-87-156	SA920	6	
			54	RAL-TL-83-216 Based on 5/8" thick panels			

Partitions

Steel Framed



1 Hour Fire-rated Construction		Non-loadbearing		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
clg. wt. 5 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 6" 20 gauge steel studs 24" o.c. - 5" THERMAFIBER SAFB - RC-1 chan or equiv one side spaced 24" o.c. • optional veneer plaster 	UL Des U419 or U451	56	RAL-TL-87-139	SA920	7	
			56	RAL-TL-84-141 Based on 5/8" thick SHEETROCK Brand FIRECODE C Core Gypsum Panels			
wt. 18 	<ul style="list-style-type: none"> - 2" solid metal lath and plaster - 3/4" cold rolled channel 16" o.c. - 2.5 lb. metal lath wire-tied to channel • 100:2-100:2 gypsum sand plaster 	OSU-T-129	37	NBS-523 F45	SA920	8	
	<ul style="list-style-type: none"> • 3/8" ROCKLATH Brand FIRECODE Core Plaster Base - 2-1/2" 20 gauge steel studs 16" o.c. - 1" THERMAFIBER SAFB • 7/16" plaster base coat, 1/16" plaster finish coat 	UL Des U488			SA920	9	
1-1/2 Hour Fire-rated Construction							
wt. 7 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 3-5/8" 20 gauge studs 24" o.c. - 3" THERMAFIBER SAFB - RC-1 channel or equivalent one side spaced 24" o.c. - 2 layers gypsum panels - face layer joints finished • optional veneer plaster 	UL Des U452	58	RAL-TL-83-215	SA920	10	
			59	RAL-TL-84-140 6" 20 gauge structural studs and 5" THERMAFIBER SAFB			
2 Hour Fire-rated Construction							
wt. 11 	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base one side • 1/2" or 5/8" DUROCK Brand Cement Board - 3-1/2" 20 gauge steel studs 16" o.c. - 3" THERMAFIBER SAFB • USG Plaster Bonder over Cement Board and treated joints • face layer joints treated with USG setting-type joint compound and paper tape • optional veneer plaster 	UL Des U404			SA920 SA700	11	
wt. 9 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base each side - 1-5/8" 25 gauge steel studs 24" o.c. - face layer joints finished • optional veneer plaster 	UL Des U419 or U412	50	USG-840817 Based on 3-5/8" stud assembly without mineral wool batt	SA920	12	
			52	SA-860932 Based on lamin. face layer, 1-1/2" mineral wool batt and 2-1/2" studs			
			54	CK-654-40 Based on 2-1/2" studs, screw-attached face layer and 1-1/2" mineral wool batt			
			55	SA-800421 Based on 3-5/8" studs and 1-1/2" mineral wool batt			

Performance Selector

Partitions

Steel Framed



2 Hour Fire-rated Construction		Non-loadbearing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
wt. 11 	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base, or FIBEROCK Brand Panels – 1-5/8" 25 gauge steel studs 24" o.c. – face layer joints finished • optional veneer plaster 	UL Des U419 or U411	48	BBN-770408 Based on 3-5/8" studs and 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels	SA920	13
			56	USG-840818 Based on 3-5/8" studs and 3" mineral wool batt		
wt. 7 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 3-5/8" 20 gauge studs 24" o.c. – 3" THERMAFIBER SAFB – RC-1 channel or equivalent one side spaced 24" o.c. – single-layer gypsum panels screw-attached to studs – double layer screw-attached to channel – face layer joints finished • optional veneer plaster 	UL Des U419 or U453	59	RAL-TL-84-136 Based on 5/8" thick panels, 6" 20 gauge structural studs, 5" mineral wool batt	SA920	14
			60	RAL-TL-87-140 Based on 1/2" thick panels, 6" 20 gauge structural studs, 5" mineral wool batt		
wt. 9 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 2-1/2" 25 gauge steel studs 24" o.c. – 1" THERMAFIBER SAFB – RC-1 channel or equivalent one side, spaced 24" o.c. – double layer gypsum panels screw-attached to channel, 2 layers screw-attached to steel studs – face layer joints finished • optional veneer plaster 	UL Des U454	57	USG-871207 Based on 5/8" thick panels	SA920	15
			60	RAL-TL-87-154		
			61	RAL-TL-83-214 Based on 5/8" thick panels		
			63	RAL-TL-87-141 Based on 6" 20 gauge structural studs and 5" mineral wool batt		
wt. 21 	<ul style="list-style-type: none"> • 3/8" ROCKLATH Brand FIRECODE Core Plaster Base – 2-1/2" 20 gauge studs 16" o.c. – 3.4 lb. self-furring diamond mesh metal lath • 3/4" gypsum-sand plaster 	UL Des U484			SA920	16
3 Hour Fire-rated Construction						
wt. 13 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 1-5/8" 25 gauge steel studs 24" o.c. • optional veneer plaster 	UL Des U419 or U435			SA920	18

Partitions

Steel Framed



2 Hour Fire-rated Construction		Non-loadbearing	Acoustical Performance		Reference		
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index	
wt. 11 	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 3-5/8" 20 gauge studs 24" o.c. – 3" THERMAFIBER SAFB – RC-1 channel or equivalent one side, spaced 24" o.c. – face layer joints finished 	UL Des U419 or U455	61	RAL-TL-87-153 Based on 5/8" thick panels	SA920	19	
			62	RAL-TL-83-213 Based on 5/8" thick panels			
			63	RAL-TL-84-138 Based on 5/8" thick panels, 6" 20 gauge structural studs and 5" THERMAFIBER SAFB			
			64	RAL-TL-87-142 Based on 6" 20 gauge structural studs and 5" THERMAFIBER SAFB			
			65	RAL-TL-84-150 Based on 5/8" thick panels, 6" 20 gauge structural studs, 5" THERMAFIBER SAFB, acoustical sealant bead between panels and studs, dabs 8" o.c. between panel layers on stud side			
4 Hour Fire-rated Construction		wt. 17 	UL Des U419 or U435	62	SA-830113 Based on assembly with 1-1/2" mineral wool batt in cavity	SA920	21
1 Hour Fire-rated Construction				wt. 6 	UL Des U420	52	RAL-TL-76-155 Based on 3-1/2" insulation one side
1 Hour Fire-rated Construction		wt. 6 	UL Des U423 or U425			40	USG-810519
				41	USG-810518 Based on 2" mineral wool batt in cavity		

Performance Selector

Partitions

Steel Framed



1 Hour Fire-rated Construction		Loadbearing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>wt. 9</p> <p>6"</p>	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 3-1/2" 20 gauge steel structural studs 24" o.c. – RC-1 channel or equivalent one side, spaced 24" o.c. – face layer joints finished • optional veneer plaster 	<p>UL Des U423 or U440</p>	51	SA-840715 Based on 3-1/2" 16 ga struc studs and lateral bracing	SA920	24
			61	SA-830628 Based on 3-1/2" 16 ga struc studs, 5/8" thick panels, lateral bracing and 3" mineral wool batt		
<p>wt. 7</p> <p>4 5/8"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base one side – 3-1/2" 20 gauge steel structural studs 16" o.c. • 1/2" DUROCK Brand Cement Board – 3" THERMAFIBER SAFB • USG Plaster Bonder over cement board and treated joints • joints treated with USG setting-type joint compound and paper tape • DIAMOND Brand veneer basecoat with IMPERIAL Veneer finish 	UL Des U404			SA920 SA934	25
<p>wt. 7</p> <p>4 3/4"</p>	<ul style="list-style-type: none"> • 5/8" DUROCK Brand Cement Board or IMPERIAL Brand FIRECODE Core Gypsum Base – 3-1/2" 20 gauge steel structural studs 16" o.c. – 3" mineral wool batt • USG Plaster Bonder over untreated joint areas • joints treated with USG setting-type joint compound and paper tape • USG Plaster Bonder over cement board and treated joints • DIAMOND Brand veneer basecoat with veneer or conventional finish 	UL Des U407			SA920 SA934	26
3 Hour Fire-rated Construction						
<p>wt. 17</p> <p>7 1/2"</p>	<ul style="list-style-type: none"> • 1/2" SHEETROCK Brand Gypsum FIRECODE C Core Panels, each side – 3-1/2" 20 gauge steel structural studs 24" o.c. – face layer joints finished • rating also applies with IMPERIAL Brand FIRECODE C Core Gypsum Base and veneer finish surface – load-bearing up to 100% allowable stud axial load 	UL Des U426			SA920	27

Partitions

Wood Framed



1 Hour Fire-rated Construction		Loadbearing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>wt. 7 4 5/8"</p>	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base, veneer finish only (not drywall) – 2x4 stud 16" o.c. – joints finished • 1/16" veneer finish 	U of C 10-27-64			SA920	28
<p>wt. 7 4 3/4"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base or FIBEROCK Brand Panels – 2x4 wood stud 16" or 24" o.c. – joints finished – optional veneer plaster 	UL Des U305, U314	34	USG-30-FT-G&H Based on 16" stud spacing and screws 6" o.c.	SA920	29
			37	USG-860807 Based on 24" stud spacing		
			46	BBN-700725 Based on 24" stud spacing and 3" mineral wool batt		
<p>5 1/4"</p>	<ul style="list-style-type: none"> • 3/8" ROCKLATH Base – 2x4 wood stud 16" o.c. • 1/2" 1:2 gypsum-sand plaster 	GA-WP-3430			SA920	30
2 Hour Fire-rated Construction						
<p>wt. 12 6"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base or SHEETROCK Brand Water-Resistant FIRECODE Core Gypsum Panels or FIBEROCK Brand Panels – 2x4 wood studs 16" o.c. – joints finished • optional veneer plaster 	UL Des U301	52	USG-810218 Based on same assembly (non-fire rated) with RC-1 channel and without mineral wool batt	SA920	31
			58	USG-810219 Based on same assembly with RC-1 channel and 2" mineral wool batt		
1 Hour Fire-rated Construction						
<p>6 3/8"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base – 2x4 staggered wood stud 24" o.c. on 2x6 common plate – joints finished • optional veneer plaster 	UL Des U340			SA920	32

Performance Selector

Partitions

Furred Partitions



3 Hour Fire-rated Construction		Acoustical Performance		Reference		
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – concrete block (UL Classified) – 7/8" deep met fur chan 24" o.c. – joints finished • optional veneer finish 	UL Des U914			SA920	33
4 Hour Fire-rated Construction						
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – concrete block (UL Classified) – 7/8" deep metal fur channel 24" o.c. – joints finished • optional veneer finish 	UL Des U910			SA920	34

Floor/Ceilings

Steel Framed



1 Hour Fire-rated Construction		Steel Bar Joist Framing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 4</p> <p>14 5/8"</p>	<ul style="list-style-type: none"> • 5/8" RED TOP Brand Gypsum Plaster, sanded 1:2-1:3 - 3/8" riblath metal lath - 2" concrete on riblath over joist - steel bar joists 24" o.c. 	GA-FC-1180			SA920	35
2 Hour Fire-rated Construction						
<p>clg. wt. 4</p> <p>14 5/8"</p>	<ul style="list-style-type: none"> • Alternate based on 5/8" RED TOP Brand Gypsum Plaster Vermiculite or 7/8" RED TOP Wood Fiber Plaster - 3/8" riblath metal lath - 2" concrete on riblath over joist - steel bar joists, 24" o.c. 	GA-FC-2160			SA920	36
<p>clg. wt. 3</p> <p>13 7/8"</p>	<ul style="list-style-type: none"> • 1/2" or 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - metal furring channel 24" o.c. - joints finished - 2-1/2" concrete on riblath or corrugated steel deck - steel bar joists • optional veneer plaster 	UL Des G515	54*	ASTM E1414 *CAC value per ASTM E1414 test procedure for horizontally adjacent spaces	SA920	37
<p>14"</p>	<ul style="list-style-type: none"> - 3.4# diamond mesh lath and 5/8" 100:2-100:3 gypsum-sand plaster - 3/4" cold rolled channel furred or suspended - 2-1/2" concrete on riblath or 28 gauge corrugated steel deck - steel bar joist 	BMS-92			SA920	38
2-1/2 Hour Fire-rated Construction						
<p>14 5/8"</p>	<ul style="list-style-type: none"> - 3.4# diamond mesh lath and 3/4" 100:1-100:1 gypsum wood fiber-sand plaster - 3/4" cold rolled channel furred or suspended - 2-1/2" concrete on riblath or 28 gauge corrugated steel deck - steel bar joists 	UL Report R5429-1			SA920	39
3 Hour Fire-rated Construction						
<p>clg. wt. 3, clg. wt. 4</p> <p>16"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - metal fur channel 24" o.c. - joints finished - 2-1/2" concrete on corrugated steel deck or riblath - steel bar joists, 24" o.c. • optional veneer plaster 	UL Des G512			SA920	40

Performance Selector

Floor/Ceilings

Steel Framed



3 Hour Fire-rated Construction		Steel Bar Joist Framing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 4</p> <p>14"</p>	<ul style="list-style-type: none"> - 3/4" cold rolled channel furred or suspended - 3.4# diamond mesh metal lath - 7/8" neat wood fiber gypsum plaster - 2-1/2" concrete on riblath or 28 gauge corrugated steel deck - steel bar joist 	BMS-92			SA920	41
<p>clg. wt. 4</p> <p>14 1/4"</p>	<ul style="list-style-type: none"> • Alternate based on 5/8" 1:2-1:3 Red Top Gypsum Plaster-Vermiculite or 7/8" Red Top Wood Fiber Plaster neat 	GA-FC-3140			SA920	42
4 Hour Fire-rated Construction						
<p>clg. wt. 5</p> <p>15 3/8"</p>	<ul style="list-style-type: none"> - 3/4" cold rolled channel furred or suspended • 7/8" 1:2-1:3 Red Top Gypsum Plaster-Vermiculite - 3/8" riblath metal lath - 2-1/2" concrete on riblath - steel bar joists, 24" o.c. 	BMS-92			SA920	43

Floor/Ceilings

Wood Framed



1 Hour Fire-rated Construction		Dimensional Lumber	Acoustical Performance			Reference	
Construction Detail	Description	Test Number	STC	IIC	Test Number	ARL	Index
clg. wt. 3 	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base, ceiling – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – joints finished • optional LEVELROCK Brand Floor Underlayment • optional SRM-25 or SRB sound mat • optional veneer plaster 	UL Des L501	38	32	CK-6412-7 Based on 1-1/4" nominal wood floor	SA305 SA920	44
			39	56			
clg. wt. 3 	<ul style="list-style-type: none"> • 1/2" or 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base, ceiling – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – joints finished • optional 3/4" LEVELROCK Brand Floor Underlayment • optional SRM-25 or SRB sound mat • optional veneer plaster 	UL Des L512				SA305 SA920	45
clg. wt. 3 	<ul style="list-style-type: none"> • 1/2" or 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – RC-1 channel or equivalent spaced 24" o.c. – joints finished • optional veneer plaster 	UL Des L514				SA920	46
clg. wt. 3 12 ⁵ / ₈ " 	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base – 1-5/8" perlite-sand concrete – plywood subfloor – 2x10 wood joists 16" o.c. – RC-1 channel or equivalent – joints finished • optional veneer plaster 	UL Des L516	59		USG 740704 Based 3" mineral wool batt, 3/4" gypsum concrete and 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels	SA920	47
			47		USG 740703 Based on 3" mineral wool bat, vinyl tile atop flooring		
			65		USG 740705 Based on 3" mineral wool batt, 44 oz. carpet and 40 oz. pad atop flooring		
clg. wt. 4 13 ¹ / ₂ " 	<ul style="list-style-type: none"> • 2 layers 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base – 1" nominal wood sub and finished floor – 2x10 wood joist 16" o.c. – RC-1 channel or equivalent – joints finished • optional veneer plaster 	UL Des L510			Assembly not recommended when sound control is a major consideration.	SA920	48

Performance Selector

Floor/Ceilings

Wood Framed



1 Hour Fire-rated Construction	Dimensional Lumber		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 4 11 1/4"</p>	<ul style="list-style-type: none"> • 5/8" 1:2 RED TOP Gypsum Plaster-perlite over 3/8" type X ROCKLATH Plaster Base - 1" nominal T&G sub and finish floor - 2x10 wood joists 16" o.c. • optional veneer plaster 	GA-FC-5470			SA920	49
<p>clg. wt. 4 11 1/4"</p>	<ul style="list-style-type: none"> • 1/2" 1:2 sanded RED TOP Gypsum Plaster over 3/8" type X ROCKLATH Plaster Base - 1" nominal T&G sub and finish floor - 2x10 joists 16" o.c. 	GA-FC-5490			SA920	50
<p>clg. wt. 4 11 1/4"</p>	<ul style="list-style-type: none"> • 5/8" 1:2-1:3 sanded RED TOP Gypsum Plaster over 3.4# diamond lath - 1" nominal T&G sub and finish floor - 2"x10" wood joists 16" o.c. 	GA-FC-5510			SA920	51
2 Hour Fire-rated Construction	Engineered Joist					
<p>clg. wt. 8 12 1/2"</p>	<ul style="list-style-type: none"> • base layer: 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - RC-1 channel or equivalent • Double face layer: 5/8" SHEETROCK Brand FIRECODE C Core Gypsum Panels - 9-1/2" wood truss joists 24" o.c. - joints finished - Floor: 5/8" T&G plywood • optional 3/4" LEVELROCK Brand Floor Underlayment • optional veneer plaster 	UL Des L538			SA920	52
1 Hour Fire-rated Construction	Truss					
<p>clg. wt. 5 13 3/4"</p>	<ul style="list-style-type: none"> • 2 layers 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - joints finished - 23/32" plywood - 12" parallel chord wood floor truss, 24" o.c. • optional veneer plaster 	UL Des L542			SA920	53



1 Hour Fire-rated Construction	Dimensional Lumber		Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 3</p> <p>14 1/4"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - wood truss, 24" o.c. - 3/4" plywood floor - metal fur channel 24" o.c. - joints finished • optional veneer plaster <p><i>RC-1 Resilient Channel or equivalent may be used in place of metal furring channel</i></p>	UL Des L528			SA920	54
<p>clg. wt. 3</p> <p>20 5/8"</p>	<ul style="list-style-type: none"> • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - wood truss, 24" o.c. - 3/4" plywood floor • USG DGL Drywall Suspension System - joints finished • optional 3/4" LEVELROCK Brand Floor Underlayment • optional veneer plaster 	UL Des L529			SC2000 SA920	55

Performance Selector

Roof/Ceilings

Steel Framed



1-1/2 Hour Fire-rated Construction		Steel Bar Joist Framing	Acoustical Performance		Reference	
Construction Detail	Description	Test Number	STC	Test Number	ARL	Index
<p>clg. wt. 4</p> <p>27 1/4"</p>	<ul style="list-style-type: none"> • USG DGL Drywall Suspension System • 5/8" IMPERIAL Brand FIRECODE C Core Gypsum Base - joints finished - min 1" roof insul and 5/8" gypsum board on steel deck • 1 hr. rating based on assembly with 1/2" SHEETROCK Brand FIRECODE C Core Gypsum Panels - steel bar joists • optional veneer plaster 	<p>UL Des P510</p>			SA920	56

Structural Fireproofing

Column



1 Hour Fire-rated Construction				Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> - 3.4# self-furring diamond mesh metal lath wrapped around column • 3/4" 100:2-100:3 gypsum-sand plaster 	BMS-92	Structural member tested: W10 x 49	SA920	57
2 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 1-5/8" 25 gauge steel studs at column corners - joints finished • optional veneer plaster 	UL Des X521	Structural member tested: W14 x 228	SA920	58
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - double layer over each flange end - 1-5/8" 25 gauge steel stud - joints finished • optional veneer plaster 	UL Des X518	Structural member tested: W10 x 49	SA920	59
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 1-5/8" 25 gauge steel studs - joints finished • optional veneer plaster 	UL Des X524	Varies Rating also applies to tapered or constant-section prefabricated metal building columns	SA920	60
	<ul style="list-style-type: none"> - 3.4# self-furring diamond mesh metal lath wrapped around column • 1" 100:2-100:3 gypsum-perlite plaster - perlite aggregate bearing UL Label 	UL Des X402	Structural member tested: W10 x 49	SA920	61
3 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 1-5/8" 25 gauge steel studs at col corners - joints finished • optional veneer plaster 	UL Des X514	Structural member tested: W14 x 228	SA920	62
	<ul style="list-style-type: none"> • 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base - 1-5/8" 25 gauge steel studs - joints finished • optional veneer plaster 	UL Des X515	Structural member tested: W10 x 49	SA920	63

Performance Selector

Structural
Fireproofing

Column



3 Hour Fire-rated Construction				Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> - 3.4# self-furring diamond mesh metal lath wrapped around column • 1-3/8" includes scratch coat 2 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster; brown coat 3 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster 	UL Des X402	Structural member tested: W10x49	SA920	64
4 Hour Fire-rated Construction					
	<ul style="list-style-type: none"> - 3.4# diamond mesh metal furred 1/2" from face of column • 1-7/8" includes scratch coat 2 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster; brown coat 2 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster - perlite aggregate bearing UL Label 	UL Des X405	Structural member tested: W10x49	SA920	65
	<ul style="list-style-type: none"> - 3.4# self-furring diamond mesh metal lath • 1-3/4" includes scratch coat 2 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster; brown coat 3 cu. ft. perlite per 100 lbs. of Red Top Gypsum Plaster - perlite aggregate bearing UL Label 	UL Des X402	Structural member tested: W10x49	SA920	66

Structural
Fireproofing

Beam

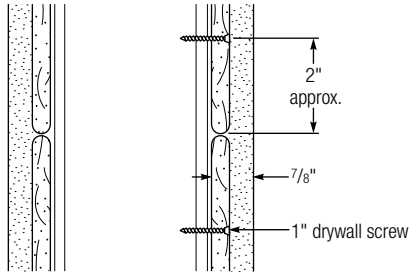
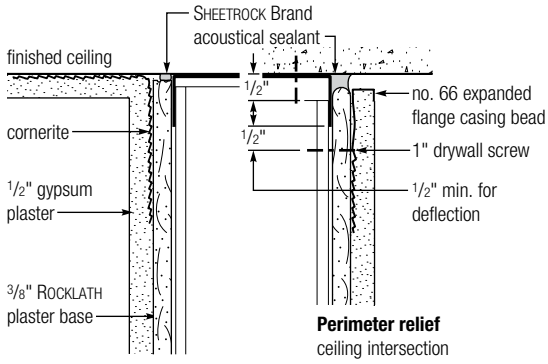


3 Hour Fire-rated Construction				Reference	
Construction Detail	Description	Test Number	Comments	ARL	Index
	<ul style="list-style-type: none"> • 5/8" SHEETROCK Brand FIRECODE Core Gypsum Panels - 1-5/8" steel run channel brackets 24" o.c. - 1-3/8" x 7/8" corner angles attached to channel brackets - joints finished - 2-1/2" concrete deck on fluted steel floor • optional veneer plaster 	UL Des N501, N502	Structural member tested: W8 x 24 (beam only)	SA920	67
	<ul style="list-style-type: none"> - 1-5/8" steel run channel brackets 24" o.c. - 7/8" x 1-3/8" corner angles att to brackets • 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base - 1" 20 gauge hex mesh on bottom over middle layer - joints finished - 2-1/2" concrete deck on fluted steel floor 	UL Des N505	Structural member tested: W8 x 24 (beam only) Fire rating for restrained assembly; 2 hr rating for unrestrained assembly	SA920	68
	<ul style="list-style-type: none"> - 3.4# self-furring diamond mesh metal lath enclosing beam • 1-1/2" of 2 cu. ft. perlite per 100 lbs. RED Top Gypsum Plaster 	UL Des D403	Structural member tested: W12 x 58 Suitable for protection of beams and girders	SA920	69

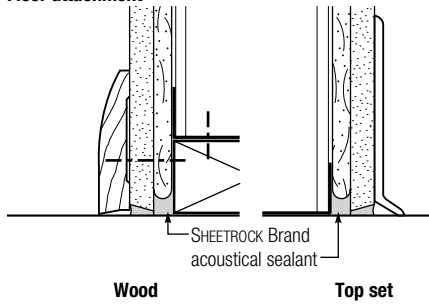
Design Details

Conventional Plaster Systems

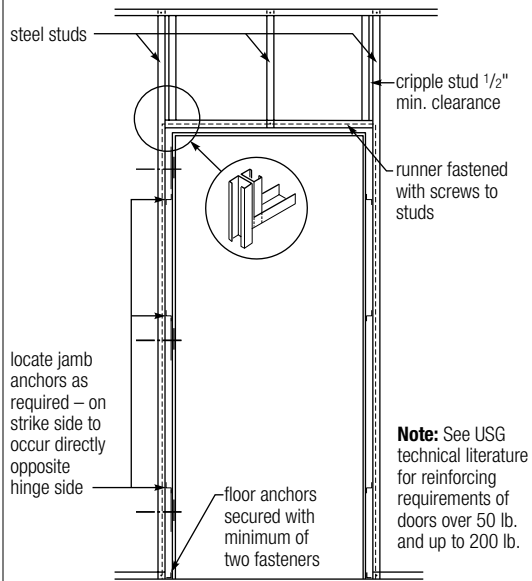
Ceiling Attachment



Floor attachment

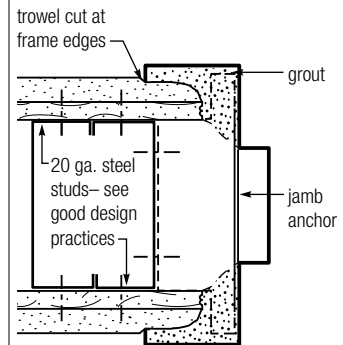
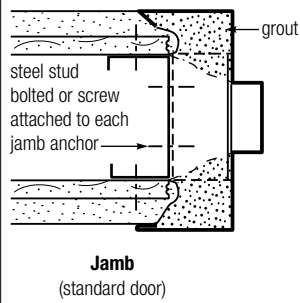
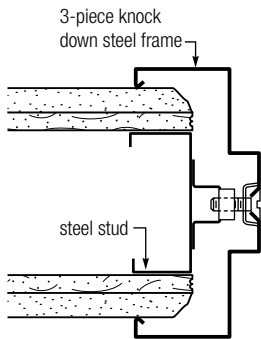


Steel Door Frame



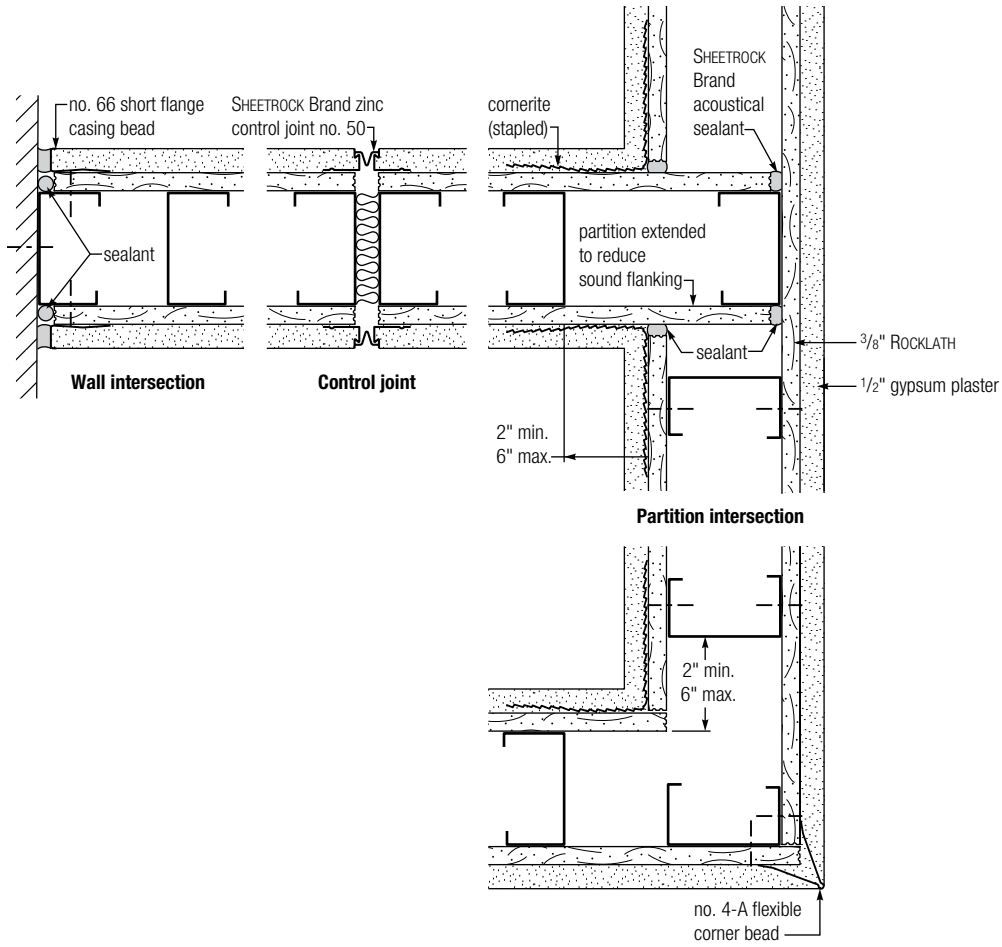
Elevation

Jamb – Standard Doors



Conventional Plaster Systems

Wall Intersection – Control Joint – Partition Intersection



Jamb Anchors

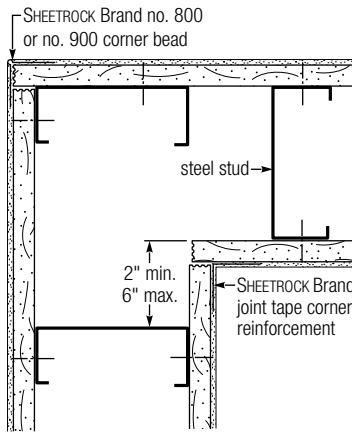


Design Details

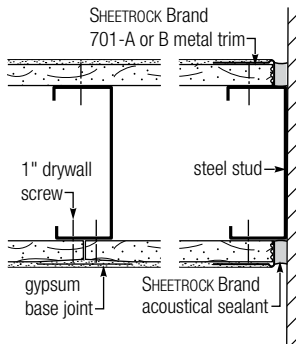
Veneer Plaster Systems

Wall Plan

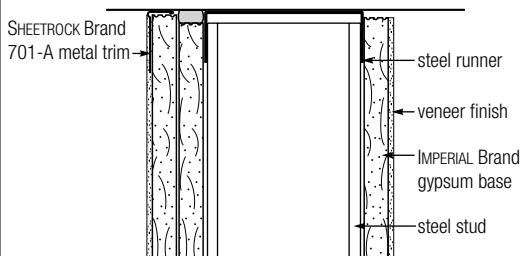
Partition corner



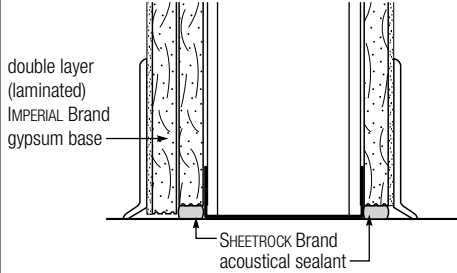
Intersection



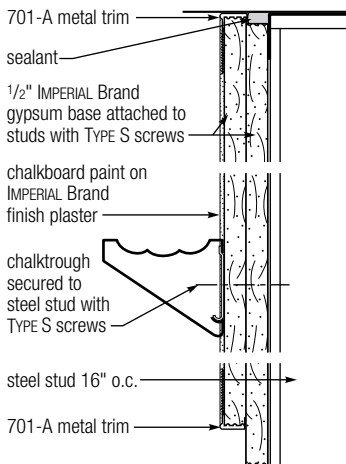
Ceiling Attachment



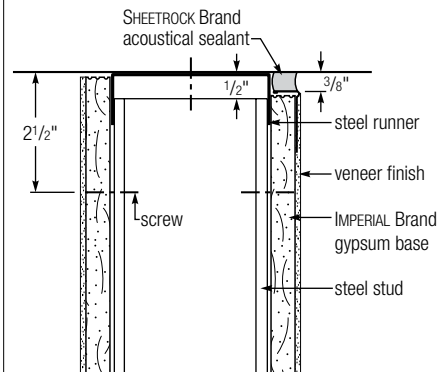
Floor attachment



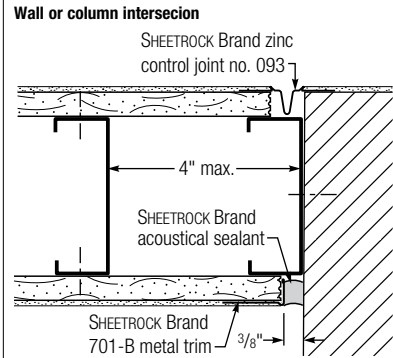
Plaster Chalkboard



Perimeter Relief – Ceiling Intersection

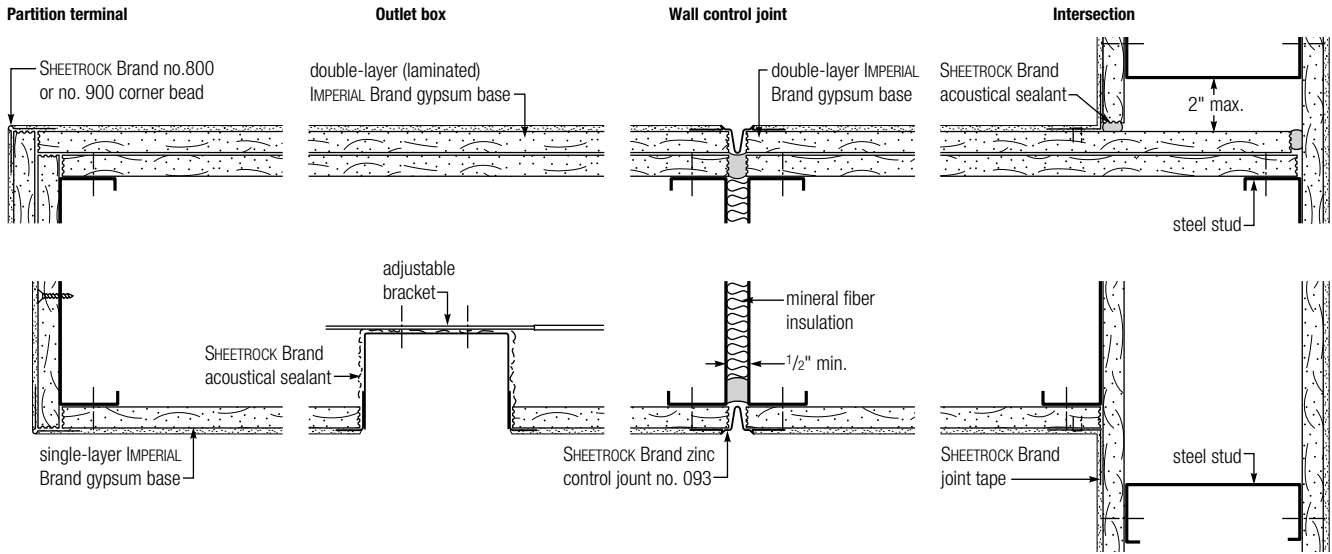


Perimeter Relief and Control Joint

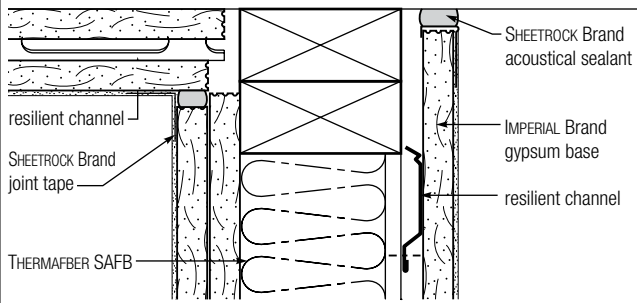
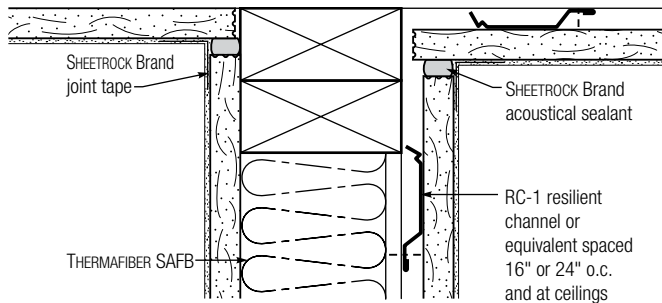


Veneer Plaster Systems

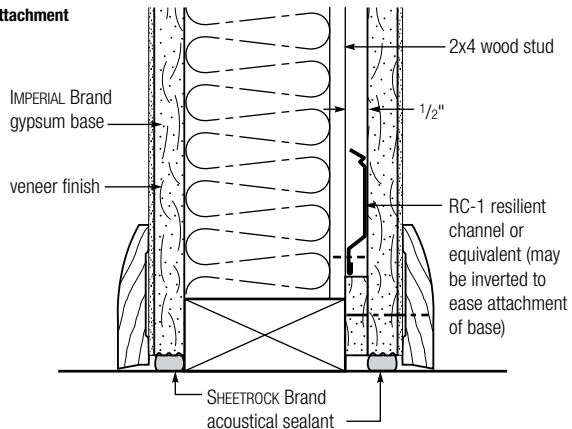
Wall Plan Sections



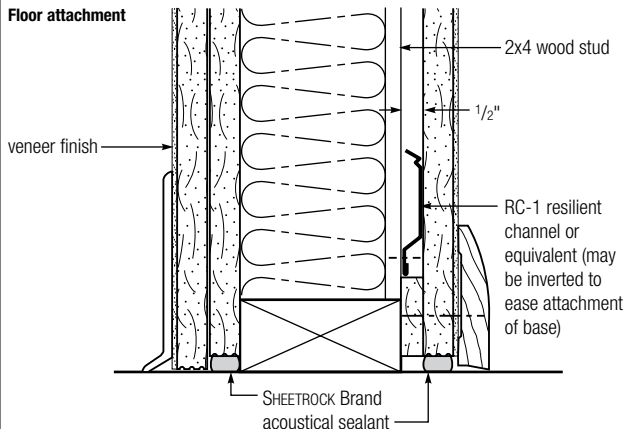
Ceiling Attachment



Floor attachment



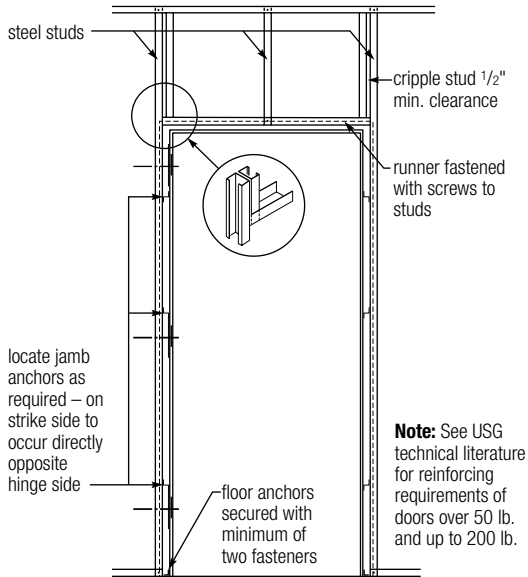
Floor attachment



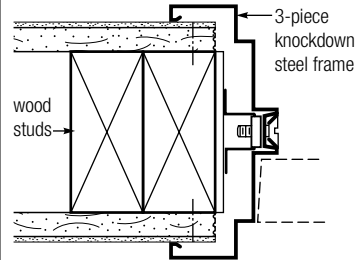
Design Details

Veneer Plaster Systems

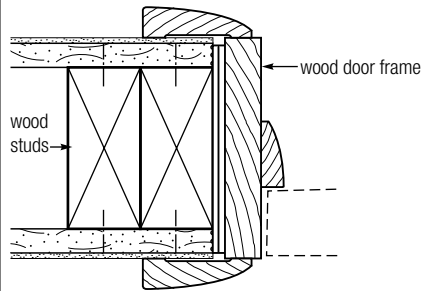
Steel Door Frames – Elevation



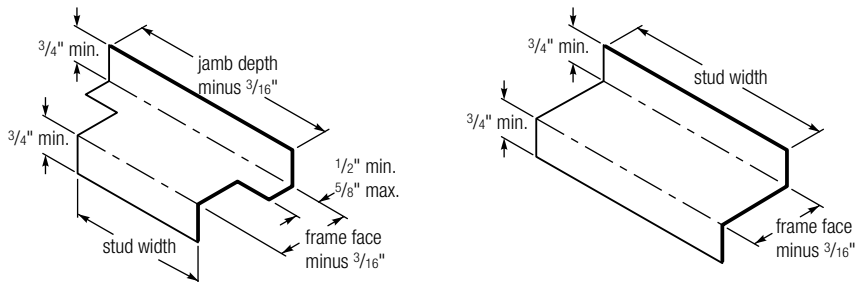
Steel Door Frame



Wood Door Frame

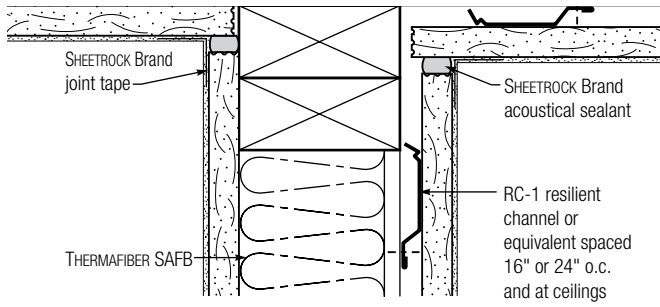


Jamb Anchors – Furnished with Frame

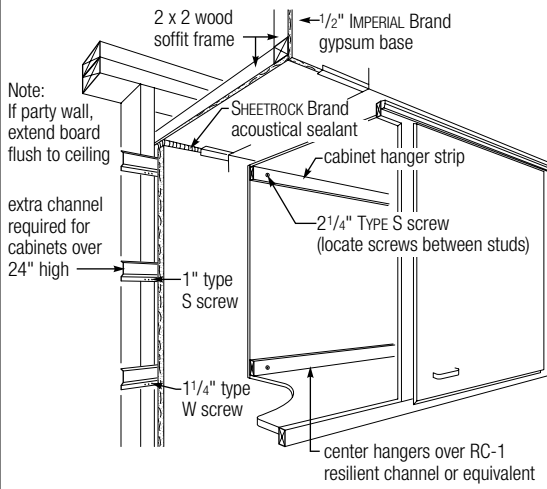
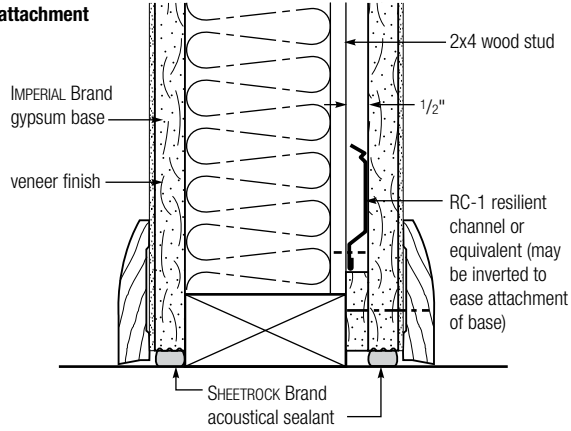


Veneer Plaster Systems

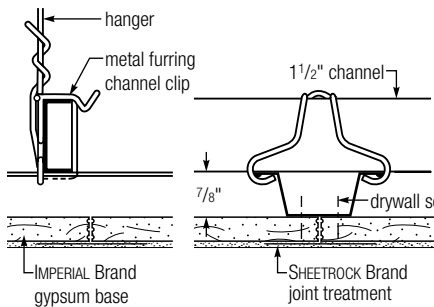
Ceiling Attachment



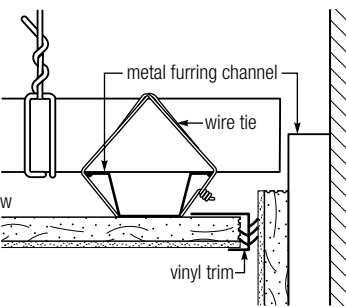
Floor attachment



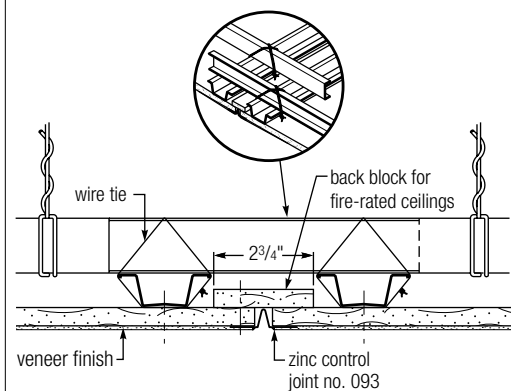
Grillage Suspension



Wall Intersection



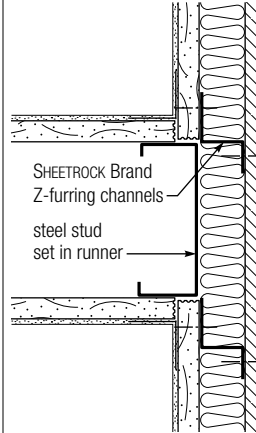
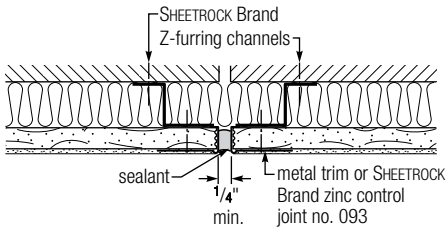
Control Joint



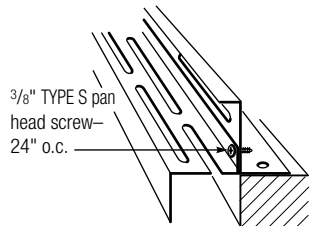
Design Details

Veneer Plaster Systems

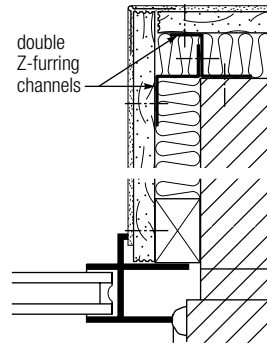
Wall Control Joint



Exterior Corner Framing



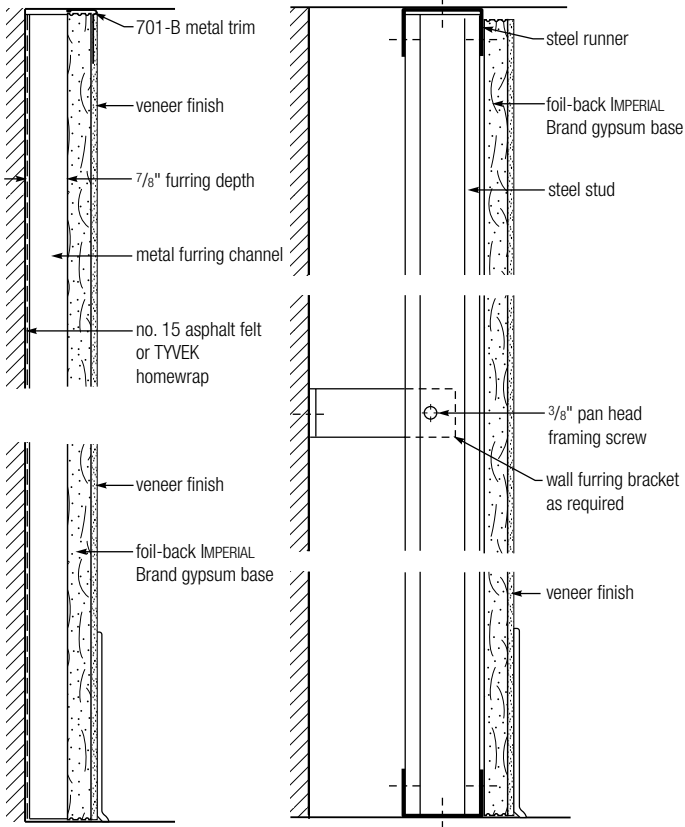
Jamb



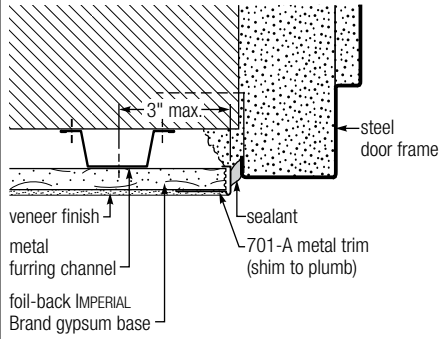
Jamb

Veneer Plaster Systems

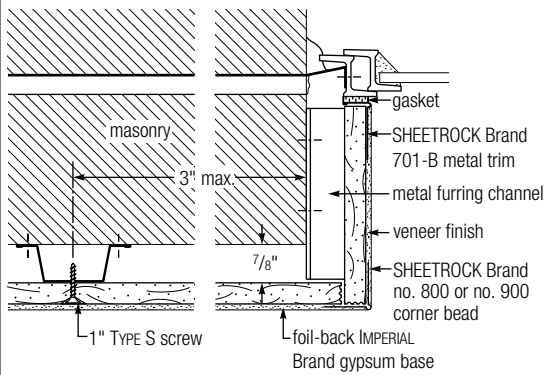
Furring



Jamb – Steel Door Frame

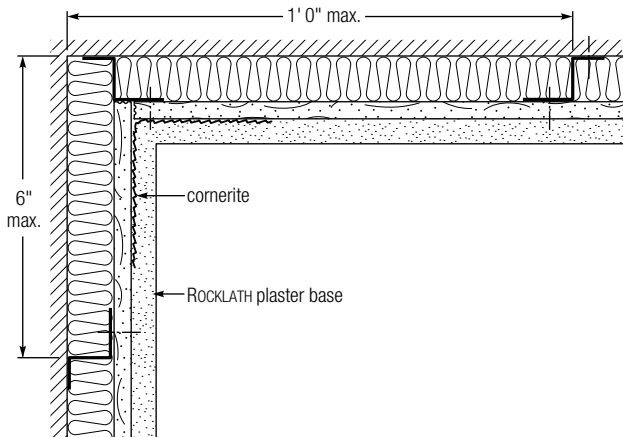


Jamb – Metal Window

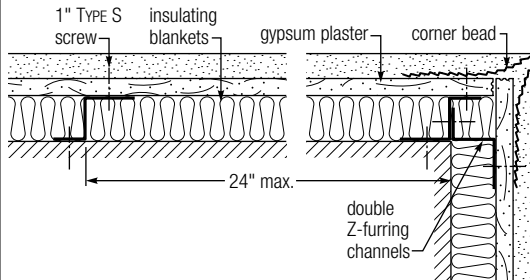


Metal window jamb

Interior Corner



Exterior Corner



Good Design Practices

Use this section as a reference if questions arise about using USG Plaster Systems.

This section is an overview of good design, application, installation and safety considerations that should be addressed when USG's products and systems are used. This section outlines some major issues, but is not intended to be a comprehensive review. No attempt is made at completeness.

We recommend that architects and contractors seek the assistance of safety professionals, especially at the professional construction site, because there are many factors to consider that are not included here.

These products must not be used in a design or construction without a complete evaluation by a qualified structural engineer or architect to verify suitability of a particular product for use in the structure. For more information on safety and material handling, please refer to *The Gypsum Construction Handbook*.

1 System Performance United States Gypsum Company conducts tests on products and systems to meet performance requirements of established test procedures specified by various agencies. Upon written request we will provide test certification for published fire, sound, structural and other pertinent data covering systems designed and constructed according to our published specifications. Substitutions of any of the components are not recommended or supported by the United States Gypsum Company.

2 Door and Borrowed-Light Openings Steel door and borrowed-light frames should be at least 16 ga. steel plates welded in trim flanges, with provision for two power-driven anchors or equal per plate. Jamb anchors should be 18 ga. steel welded in jamb. Stud reinforcing described below is screw-attached to jamb anchors. Three-piece frames may also be used with these partitions provided end of partition floor runner is anchored with two suitable fasteners.

For standard doors up to 3'0" wide weighing not more than 100 lbs., 25 ga. steel studs and runners may be used for framing the opening. For doors 2'8" to 4'0" wide (200 lbs. max.), rough framing should be 20 ga. studs (3-5/8" min.) and runners. For heavy doors up to 4'0" wide (300 lbs. max.), two 20 ga. studs should be used. For doors over 4'0" wide, double doors and extra-heavy doors (over 300 lbs.), framing should be specially designed to meet load conditions.

Full grouting of door frames is always recommended and is required where heavy or oversize doors are used. As a grout, use 100:2 RED TOP Brand Gypsum Plaster/sand mix, adding enough water so that the material is stiff but workable. Under no conditions should the lath and plaster terminate against the trim of the door frame.

Spot grouting for standard doors and openings or where specified is recommended as a minimum to full grouting. To spot grout, apply job-sanded RED TOP Brand Gypsum Plaster, STRUCTO-LITE Basecoat Plaster or SHEETROCK Brand DURABOND Setting-Type Joint Compound mixed in accordance with bag instructions to each jamb anchor, filling the inside face of the jamb at each point. Immediately insert plaster base into the jamb and attach to framing. Do not terminate base against the trim.

Grouting of tube-type frames or exterior door frames is not recommended at any time, as grout is unable to dry properly and may cause metal frames to rust.

3 Ceilings

Spacing of hangers and channels is designed to support only the dead load. Heavy concentrated loads should be independently supported. Lighting fixtures or troffers, air vents, and other equipment should be separately supported from the ceiling grid or structure above; gypsum base will not support these items.

To prevent objectionable sag in new gypsum base ceilings, the weight of overlaid unsupported insulation should not exceed 1.3 psf for 1/2" thick base with frame spacing 24" o.c.; 2.2 psf for 1.2" base on 16" o.c. framing and 5/8" base on 24" o.c. framing. Foil-back base or a separate vapor retarder should be installed in all roofed ceilings if required by design, and the plenum or attic space vented with a min. 1/2 sq. in. net free vent area per sq. ft. of horizontal surface.

4 Control Joints

Compensation must be made for dimensional changes in wall and ceiling surfaces caused by changes in temperature and humidity. Location of control joints is the responsibility of the design professional/architect.

Gypsum base assemblies should be isolated with control joints or by other means where: (a) partition or furring abuts a structural element (except floor) or dissimilar wall or ceiling; (b) ceiling abuts a structural element, dissimilar wall, partition or other vertical penetration; (c) construction changes within the plane of the partition or ceiling; (d) partition or furring run exceeds 30'; (e) ceiling dimensions exceed 50' in either direction with perimeter relief, 30' without relief; (f) expansion or control joints occur in the base exterior wall.

Ceiling height door frames may be used as control joints. Less-than-ceiling height frames should have control joints extending to ceiling from both corners.

SHEETROCK Brand Zinc Control Joints, when properly insulated or backed by gypsum board, have been fire-endurance tested and are certified for use in one- and two-hour fire-rated walls.

Refer to PM17, *Preventing Cracks in Veneer and Conventional Plaster Systems*, for complete information.

5 Penetrations

Penetrations of the lath-and-plaster diaphragm such as borrowed lights, access panels and light troffers, require additional reinforcement at corners to distribute concentrated stress if a control joint is not used.

6 Plaster/Metal Interface

Where a plaster surface is flush with metal, metal bucks, metal windows or metal base, the plaster should be trowel-cut between the two materials.

7 Pipe and Conduit Chase

Additional chases can be provided in steel studs (except in fire-rated construction) by cutting round holes up to 3/4 of stud width, spaced 12" apart.

Good Design Practices

8 Ceramic Tile	IMPERIAL Brand Gypsum Base and ROCKLATH Plaster Base are not recommended as a base for the adhesive application of ceramic tile and plastic-faced panels. FIBEROCK Brand AQUA-TOUGH Tile Backerboard or DUROCK Brand Cement Board is recommended for this use. Double-layer panels are required for resilient systems. Refer to SA934, <i>Moisture-Resistant Assemblies</i> , and SA927, <i>Gypsum Panels and Accessories</i> .
9 Fixture Attachment	Lightweight fixtures and trim should be installed with toggle bolts or hollow wall anchors inserted in the base, and, preferably, also through the stud. Wood or metal mounting strips for cabinets and shelving should be bolted to stud framing.
10 Zinc Alloy Accessories	Recommended where corrosion due to high humidity or saline content of aggregate is possible. Metal lath, control joints and other metal accessories, including zinc-alloy accessories, should not be used with magnesium oxychloride cement stuccos or portland cement stucco containing calcium chloride additives.
11 Joint Treatment	For steel frame systems, SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound and SHEETROCK Brand Joint Tape must be used on all joints and internal corners and allowed to set and dry before veneer plaster application. See PM5, <i>Veneer Plaster Joint Reinforcement Systems</i> , for complete information.
12 Decorating	<p>Plaster systems must be completely dry before decoration.</p> <p>Do not specify polyvinyl acetate (PVA) primers for application to plaster finishes containing lime. In the presence of moisture, these primers can cause bond loss with resultant paint delamination and job failure.</p> <p>Caution should be used in selection and use of epoxy-based finish systems over lime putty/gauging plaster and lime-containing finish plasters as these high-strength coating systems create a significant degree of surface stress at the coating/plaster interface. Use of a penetrating primer/sealer is required to adequately enhance and fortify the plaster surface when such finish coating systems are used. In all cases, the paint manufacturer should be consulted in selection and final application procedures.</p> <p>Veneer—Painting or further decoration of all plaster finishes is recommended and should be specified. However, in many residential applications, DIAMOND Brand Interior Finish and DIAMOND Brand Interior Finish Type F Plasters provide a uniform white color and may satisfy a job's specific acceptance specifications when textured and left undecorated. IMPERIAL Finish Plaster and DIAMOND Brand Interior Finish Plasters, if completely dry, may be painted the day after application with acrylic, latex or vinyl-breather-type paints.</p> <p>Conventional—Gauged-lime putty and RED TOP Brand Finish applied over conventional basecoat plasters must age 30 days and be thoroughly dry and properly sealed before decorating. Quick-drying vinyl acrylic latex or alkali-resistant alkyd primer-sealers are recommended.</p> <p>Refer to PM15, <i>Painting Plaster</i>, for complete recommendations on priming and painting. For information on decorating with color-enhanced finish plaster, see P759, <i>Decorative Interior Finish Systems</i>.</p>
13 Sound Control	Sound tests are conducted under ideal laboratory conditions per ASTM procedures. Comparable field performance depends on building design and careful attention to detailing and workmanship. Where these partitions are used for sound control, seal the partition perimeter with 1/4" min. round bead of SHEETROCK Brand Acoustical Sealant. Seal around all cutouts for lights, cabinets, pipes, ducts and electrical boxes. Back-to-back penetrations of the diaphragm, flanking paths and door and borrowed-light openings should be avoided. Where sound isolation is the primary consideration, only sand-aggregated basecoat plasters should be used.

14 Shadowing and Spotting	<p>Temperature differentials on the interior surface of exterior walls may result in collection of airborne dirt on the colder surface areas. Consequently, accumulated dirt in the form of shadowing and spotting may occur at locations of fasteners or framing where surface temperatures usually are lowest. This is a natural phenomenon which occurs through no fault of the products.</p> <p>Where temperature, humidity and soiling conditions are expected to cause objectionable shadowing and spotting, one of the following alternatives should be considered:</p> <ul style="list-style-type: none"> A. The interior facing of IMPERIAL Brand Foil-Back Gypsum Base should be furred from the exterior wall studs using a base layer of panels screw-attached to the studs and horizontally applied metal furring channels spaced 24" o.c. B. On exterior masonry walls, install rigid or semi-rigid insulation between SHEETROCK Brand Z-Furring Channels affixed to interior side of wall and finish with IMPERIAL Brand Foil-Back Gypsum Base. C. For maximum resistance to shadowing and spotting, a separate free-standing wall construction is recommended using studs that are independent of the exterior wall.
15 High-Rise Buildings	<p>Variable wind pressure can cause a structure to drift or sway. This can result in movement of the non-loadbearing partitions, causing noise. United States Gypsum Company assumes no responsibility for the prevention, cause, or repair of these job-related noises.</p>
16 Note	<p>United States Gypsum Company reserves the right to make changes or improvements in the design of all catalogued items without notice and without obligation to incorporate these changes or improvements in items already manufactured.</p>
17 Specifications	<p>The following are minimum basic guides for preparation of job specifications. They are prepared for normal construction and are not intended to cover every possible design or job condition. Specific product data sheets are available from United States Gypsum Company for additional details and plaster specifications. Requests for these publications can be directed to the local sales offices identified on the last page of this brochure.</p>
18 Additional Information	<p>See SA100, <i>Fire-Resistant Assemblies</i>, for fire- and sound-rated systems; SA933, <i>Aesthetic Assemblies</i>, for texturing specifications; SA934, <i>Moisture-Resistant Assemblies</i>; and SA927, <i>Gypsum Panels and Accessories</i>, for information on gypsum panels; and for information on moisture-resistant panels and boards.</p>

Application Guide

Specifications

This guide is provided to assist you in specification of USG Plaster Systems. If you have additional questions or would like more information regarding this or other USG products and systems, please contact USG at 800 USG.4YOU.

Part 1: General

1.1 Scope	Specify areas to receive this treatment.
1.2 Qualifications	All materials described in this publication manufactured by or for United States Gypsum Company shall be installed in accordance with its current printed directions. Warning: Store all IMPERIAL Brand Gypsum Base, FIBEROCK Brand Panels and DUROCK Brand Cement Board flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.
1.3 Delivery and Storage of Materials	All materials, except water and sand, shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the premises. See PM- 11, Transportation and Handling, Storing Services for complete information.
1.4 Environmental Conditions	<ol style="list-style-type: none">1. In cold weather, all glazing shall be completed and the building heated to a minimum of 55 °F (13 °C) before gypsum base and lath installation. Temperature of building shall be maintained in uniform range above 55 °F for an adequate period prior to application of plaster, while plastering is being done, and until plaster is dry. When required, heat shall be furnished by (. Heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or uneven heat distribution on plaster near source.2. Ventilation and air circulation shall be kept to a minimum level during veneer plastering until the plaster has set and completely dried.3. Ventilation shall be provided to properly dry conventional plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open sufficiently to provide air circulation; in enclosed areas lacking normal ventilation, provisions must be made to mechanically remove moisture-laden air.4. If glazed sashes are not in place and the building is subject to hot, dry winds or temperature differentials from day to night of 20 °F (11 °C) or more, openings shall be screened with cheesecloth or similar material.
1.5 Protection	Proper protection shall be provided during plastering for finished door and window frames and other designated areas that do not receive a plaster finish.
1.6 Basecoat Plaster General Limitations	<ol style="list-style-type: none">1. With application over interior monolithic concrete, surface must first be treated with an application of USG Plaster Bonder.2. Basecoat surface must be serrated or broomed to roughen and open the surface to allow for proper suction and to develop proper bond of the finish coat to the basecoat.3. Gypsum plasters should not be used where they will come in contact with water or excessive moisture. May be applied to exterior soffits protected from direct exposure to rain and moisture. Suitable drips and casings along the edges are required.4. Plaster application is not recommended over bituminous compounds or other waterproofing agents.5. Interior surface of exterior masonry or monolithic concrete walls shall be furred and lathed prior to plastering.

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6. STRUCTO-LITE Basecoat Plaster or basecoat plasters containing job-mixed lightweight aggregate require a lime-gauging finish plaster containing a fine aggregate to control surface cracking.
 7. Lightweight basecoat plasters shall not be specified over metal lath when smooth trowel finish is required.
 8. General practice dictates that there should be a lower sand-to-gypsum plaster ratio in the scratch coat than in the brown coat.

**1.7
Veneer Plaster
Systems
Limitations**

1. Application thickness for veneer basecoat, veneer finishing, gauging-lime or factory-prepared gauging-lime finish plasters is 1/16" - 3/32".
 2. Rapid drying conditions, steel framing and certain framing situations on 24" o.c. require use of paper tape and setting-type compound. See PM 10, Environmental Factors for complete information.
- A. Substrates**
1. Ceramic tile should not be attached directly to veneer base; plaster must be applied first.
 2. Foil-backed base should not be used as a substrate for ceramic tile, or as the face layer in multilayer systems.
 3. Masonry substrate must be clean, porous, with joints struck flush, and may need to be dampened to control excess suction. A two-coat system is required over masonry.
 4. Monolithic concrete must be clean, fully cured, and free of oils, efflorescence and other foreign materials. USG Plaster Bonder must be applied prior to plaster application.
 5. Sunfaded IMPERIAL Brand Gypsum Base should be treated with USG Plaster Bonder or a solution of USG Accelerator Alum Catalyst before plaster application when applying DIAMOND Brand Interior Finish Plaster.
- B. Basecoats**
- May be applied directly to porous unit masonry or over cured monolithic concrete treated with USG Plaster Bonder. Once the basecoat is applied and has become firm, the surface shall be raked or broomed to provide a rough, open surface necessary for proper suction and finish coat bond.
- C. Veneer Finishes**
1. Single coat veneer plaster finishes are not recommended for use over portland cement basecoats or unit masonry construction.
 2. Only job-sanded DIAMOND Brand Interior Finish Plaster is recommended for electric heat cables. When job-sanded DIAMOND Brand Interior Finish Plaster is used for a radiant heat system, the cable-sheath operating temperatures must not exceed 125 °F.

**1.8
Finish Coat Plaster
General Limitations**

1. Lime gauging finishes are not recommended for smooth application over lightweight aggregate gypsum basecoat applied over metal lath. Only sand-float finishes are recommended over metal lath.
2. Where the gypsum basecoat contains lightweight aggregate (perlite or vermiculite), the finish coat should be:
 - a) RED TOP Gauging Plaster - Perlite Aggregated.
 - b) RED TOP Brand Gauging Plaster and lime with addition of 1/2 cu. ft. of perlite fines per 100 lbs. gauging plaster, or
 - c) RED TOP Brand Gauging Plaster and lime with addition of 50 lb. of No. 1 white silica sand per 100 lbs. gauging plaster.
3. Gypsum and lime-based finishes, including Keenes Cement, should not be used directly over a portland cement basecoat or over concrete block or other masonry surfaces.
4. Smooth trowel high strength finishes such as STRUCTO-GAUGE Gauging Plaster and RED TOP Brand Keenes Cement must not be used over STRUCTO-LITE Gypsum Plaster or a basecoat with a lightweight aggregate.

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5. Gauged-lime putty and RED TOP Brand Finish applied over conventional basecoat plasters must age 30 days, be thoroughly dry and properly sealed before decorating. Quick-drying vinyl acrylic latex or alkali-resistant alkyd paints and primer-sealers are recommended.
6. Primers containing polyvinyl acetate (PVA) are not recommended and should not be specified for use with any plaster finish with the exception of IMPERIAL Brand Finish Plaster. PVA primers can cause bond loss with resultant paint delamination and job failure when used over lime containing plasters. Strictly follow the specific product recommendations of paint manufacturers for painting lime-gauging putty finishes.
7. Never use portland cement as a basecoat beneath a Keenes Cement/lime putty finish coat.

1.9 Gypsum Plaster Lath Limitations

1. Maximum frame spacing for 3/8" ROCKLATH Plaster Base should not exceed 16" o.c.
2. For general information on steel framing, consult SA100, *Fire-Resistant Assemblies*.
3. Shall be used with gypsum plasters only. Lime-based plaster and portland cement plaster are incompatible with ROCKLATH Brand Plaster Base and shall not be specified.
4. Shall not be used in areas with sustained high relative humidity or where exposed to excessive moisture for extended periods. (Galvanized metal lath and portland cement-lime plaster or a DUROCK Brand Cement Board System is recommended for wet areas. See SA700, *Exterior System Substrates*, and SA934, *Moisture-Resistant Assemblies* for more information.)

1.10 Metal Lath General Limitations

1. Metal lath products shall not be used with magnesium oxychloride cement stuccos or stuccos containing calcium chloride additives.
2. In ceiling assemblies, a min. of 1/2 sq. in. net free vent area is recommended per sq. ft. of horizontal surface in plenum or other space required.

1.11 Wood-Framed Veneer Plaster Systems Limitations

1. These constructions should not be used where normally exposed to excessive moisture, humidity or temperature.
2. TYPE S screws must be used for attachment of single-layer base to resilient channels.
3. Resilient channels must be attached to wood framing only with 1-1/2" Type W screws. Nails should not be used.
4. Resilient ceilings should not be installed beneath highly flexible floor joists.
5. SHEETROCK Brand Joint Tape and SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound must be used to treat all joints and internal angles when any of the following conditions exist: rapid drying conditions due to low humidity, high temperature, and excessive evaporation, or 24" o.c. wood frame spacing and a single layer gypsum base veneer system is specified (5/8" base with one-coat veneer finish and 1/2" or 5/8" base with two-coat veneer finish). Allow joint treatment to set and dry thoroughly before plaster application.
6. To prevent fastener popping, IMPERIAL Brand Plaster Base should be attached with fasteners driven flush with the surface, and not dimpled.

1.12 Steel-Framed Veneer Plaster Systems Limitations

1. Non-loadbearing.
2. These assemblies should not be used where exposed to excessive moisture, humidity or temperature.
3. Maximum frame spacing, and steel stud/runner structural properties limiting heights should not be exceeded. Consult stud manufacturer's tables and structural properties to determine final stud selection.
4. Select limiting heights and deflections for steel-framed veneer plaster systems as follows:
 - a) L/240 for veneer plaster systems

- b) L/360 for conventional plaster systems and other brittle surface materials
- c) L/360 is recommended in specific critical areas such as for tall walls, walls with full or partial height tile, and walls receiving eccentric loading (e.g., shelving on one side)
- 5. Joints must be finished using SHEETROCK Brand Joint Tape and SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound. Joint compound must be allowed to set before plaster application.
- 6. Control joints are required; refer to Good Design Practices, No. 4.

Part 2: Products

2.1 Framing, Furring, and Accessories	<ul style="list-style-type: none"> A. Steel Studs 25 ga. (1-5/8"), (2-1/2"), (3-5/8"), (4"), (6"), 22 ga. (2-1/2"), (3-5/8"), (4"), (6"), 20 ga. (2-1/2"), (3-5/8"), (4"), (6"). B. Steel Runners 25 ga. (1-5/8"), (2-1/2"), (3-5/8"), (4"), (6"), 22 ga. (2-1/2"), (3-5/8"), (4"), (6"), 20 ga. (2-1/2"), (3-5/8"), (4"), (6"). C. Lathing Channels Cold-Rolled Channels (3/4", 1-1/2", 2") (ptd, galv). D. Furring Channels Metal Furring Channels (DWC-25) (DWC-20) SHEETROCK Brand Z-Furring Channels (1", 1-1/2", 2", 3"). E. Resilient Channels RC-1™ Resilient Channel or equivalent. F. Metal Angles Galvanized Metal Angles (1-3/8" x 7/8") (2-1/2" x 2-1/2").
2.2 Veneer Plaster Base	<ul style="list-style-type: none"> A. IMPERIAL Brand Gypsum Base (1/2") (5/8") (3/4") thick, 48" wide, square edge, (Regular) (FIRECODE) (FIRECODE C) (Abuse Resistant). Note: Specify only with veneer plaster, SHEETROCK Brand No. 800 or No. 900 Corner Bead and IMPERIAL Brand Joint Reinforcement Tape (Type P) (Type S) or SHEETROCK Brand Joint Tape and SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound. B. DUROCK Brand Cement Board (1/2") (5/8") thick, 48" wide. C. FIBEROCK Brand Abuse-Resistant Panels (1/2") (5/8") (5/8" VHI) thick, 48" wide, tapered edge.
2.3 Plastering and Trim Accessories—Veneer Plaster Systems	<ul style="list-style-type: none"> A. Screws Size—(3/8") (7/16") (1/2") (1") (1-1/4") (1-1/2") (1-5/8") (2") (2-1/4") (2-1/2") (3"); style—(framing, TYPE S or S-12) (drywall, TYPE S) (self-drilling, TYPE S-12) (laminating, Type G) (coarse thread, Type W) (DUROCK); head—(bugle) (pan) (trim) (pancake) (low-profile) (mod. truss head); coating—(reg) (corrosion-resistant Type III coating or better per ASTM B117 (12 hours) B. Corner Bead SHEETROCK Brand No. 800 (for drywall and one-coat veneer plaster) SHEETROCK Brand No. 900 (for two-coat veneer plaster) SHEETROCK Brand 4-A Flexible Corner Bead (for archways and curved designs).

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C. Trim

SHEETROCK Brand No. 701-A (J-Type) No. 701-B (L-Type) (for two-coat veneer plaster) SHEETROCK Brand No. 801-A, No. 801-B (for one-coat veneer plaster).

D. Zinc Control Joint

SHEETROCK Brand No. 093 Control Joint.

E. Joint Reinforcement

SHEETROCK Brand Joint Tape, SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound (for use over steel framing and when rapid drying conditions exist) _____ Veneer Plaster (specify from product descriptions) and (2") (2-1/2") IMPERIAL Brand Tape (Type P) (Type S) (to embed tape over wood framing).

F. Clip

Metal Furring Channel Clip.

G. Furring Brackets

Adjustable Wall Furring Brackets.

H. Wire

Hanger Wire (8 ga.) Tie Wire (18 ga.).

I. Caulking

SHEETROCK Brand Acoustical Sealant.

J. Laminating Adhesive

SHEETROCK Brand DURABOND Setting-Type Joint Compound.

K. USG Plaster Bonder

**2.4
Plastering Material—
Veneer Plaster
Systems**

A. Veneer Plaster Basecoat

IMPERIAL Brand Veneer Basecoat Plaster, DIAMOND Brand Veneer Basecoat Plaster.

B. Veneer Plaster—Prepared Finish

IMPERIAL Brand Veneer Finish Plaster, DIAMOND Brand Veneer Finish Plaster, RED TOP Brand Finish Plaster.

C. Finish Lime

IVORY, SNOWDRIFT (type S); RED TOP, GRAND PRIZE (type N).

D. Gauging Plaster

RED TOP Brand Gauging, STRUCTO-GAUGE Gauging, RED TOP Brand Keenes Cement.

E. Grout

Job sanded (2:1) RED TOP Gypsum Plaster, STRUCTO-LITE Basecoat Plaster, SHEETROCK Brand DURABOND Setting-Type Joint Compound.

F. Water

Potable without impurities that affect the setting of gypsum.

G. Special Plasters

USG Molding Plaster, White HYDROCAL Gypsum Cement.

**2.5
Mixes—Veneer Plaster**

A. Veneer Plaster Basecoat

_____ shall be mixed in accordance with water proportions identified on bag. Mix for 2 to 5 minutes with a cage-type paddle mixer using a 900-1000 rpm 1/2" drill.

B. Veneer Plaster—Prepared Finish

Add all but 1 to 2 quarts of the required water to a non-plastic mixing container. Mix for 1 to 2 minutes, add up to 1 to 2 quarts of retained water and then mix for 1 to 2 minutes more. Mix with a cage-type paddle mixer using a 900-1000 rpm 1/2" drill. (See PM19.)

C. Conventional Plasters over a Veneer Basecoat

1. IVORY or SNOWDRIFT Lime: Shall be machine-mixed for immediate use with approx. 5-1/2 to 6 gal. water per 50 lb. bag.
2. GRAND PRIZE Lime: Shall be box-soaked or machine-mixed using approx. 6 gal. water per 50 lb. bag, and allowed to soak for 16 hours.
3. Finish Plaster: Shall be mixed in proportion by dry weight of _____ parts of gauging to _____ parts of lime (specify from coverage data), according to applicable bag directions. Over lightweight aggregate basecoats (such as STRUCTO-LITE Basecoat Plaster) add 1/2 cu. ft. of perlite fines or 50 lbs. of No. 1 silica sand per 100 lb. of gauging plaster or use RED TOP Gauging Plaster - Perlite Aggregated.

D. USG Decorative Interior Finish System

**2.6
Conventional Plaster
Lathing Materials**

A. ROCKLATH FIRECODE Plaster Base

(3/8" x 24" x 96"). **Note:** 3/8" x 24" x 96" ROCKLATH FIRECODE Core Plaster Base is standard available product.

B. Metal Lath

Diamond Mesh Lath (2.5, 3.4) lb., (ptd, galv); Self-Furring Diamond Mesh Lath (2.5, 3.4) lb., (ptd, galv), (Paper-Backed—Grade B or Grade D), Flat Riblath (2.75, 3.4) lb., (ptd, galv), 3/8" Riblath (3.4) lb., (ptd, galv).

**2.7
Lathing Accessories—
Conventional
Plaster Systems**

A. Screws

Select from listing in 2.3 A (above).

B. Corner Bead

1-A Expanded, Double-X.

C. Casing Beads

Casing Bead #66 Expanded Flange (1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/4") (galv, zinc), Casing Bead #66 Short Flange (1/4", 3/8", 1/2", 3/4", 7/8") (galv, zinc).

D. Zinc Control Joint

SHEETROCK Brand Zinc Control Joint (#50, #75, #100) (zinc), Double-V Expansion Joint (1/2", 3/4") (galv, zinc).

E. Reinforcement

Cornerite, Striplath.

F. Wire

Hanger Wire (8 ga.), Tie Wire (18 ga.).

**2.8
Plastering Material—
Conventional Plaster
Systems**

A. Basecoat Plaster—Conventional

RED TOP Brand Gypsum Plaster, RED TOP Brand Wood Fiber Plaster, STRUCTO-BASE Gypsum Plaster, STRUCTO-LITE Basecoat Plaster.

B. Aggregate

Sand, perlite (meeting ASTM C35) sand for float finishes shall be graded (white) silica sand passing a (30 mesh) (20 mesh) screen.

C. Finish Lime

IVORY, SNOWDRIFT (type S); GRAND PRIZE (type N).

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D. Gauging Plaster

RED TOP Brand Gauging, STRUCTO-GAUGE Gauging, RED TOP Brand Keenes Cement.

E. Grout

RED TOP Brand Gypsum Plaster, job-sanded, STRUCTO-LITE Basecoat Plaster, SHEETROCK Brand DURABOND Setting-Type Joint Compound.

F. Water

Potable without impurities that affect the setting of gypsum.

G. Special Plasters

USG Molding Plaster, White HYDROCAL Gypsum Cement.

H. Portland Cement

Type 1 or 2, per ASTM C926.

2.9 Mixes— Conventional Plaster

A. Basecoat Plaster—Conventional

Basecoat plaster and aggregate shall be mixed in proportions of _____ (specify from technical data).

B. IVORY or SNOWDRIFT Lime

Shall be machine-mixed for immediate use with approx. 5-1/2 to 6 gal. water per 50 lb. bag.

C. GRAND PRIZE Lime

Shall be box-soaked or machine-mixed using approx. 6 gal. water per 50 lb. bag, and allowed to soak for 16 hours.

D. Finish Plaster

Shall be mixed in proportion by dry weight of _____ parts of gauging to _____ parts of lime (specify from coverage data), according to applicable bag directions. Over lightweight aggregate basecoats (such as STRUCTO-LITE Basecoat Plaster) add 1/2 cu. ft. of perlite fines or (50 lbs. of silica sand to meet ASTM C35 per 100 lb.) of gauging plaster or use RED TOP Brand Gauging Plaster - Perlite Aggregated.

E. Portland Cement

Mix TYPE S lime (MORTASEAL™ Mason's Lime) or Type SA lime (BONDCRETE® Lime per ASTM C207) with portland cement and sand according to ASTM C926, Type L mortar; suggested portland cement to lime to sand ratios by volume. Basecoat: Scratch coat—1:1:8; brown coat—1:1:10.

Part 3: Execution

3.1 Steel Framing and Furring Installation

A. Partition Framing Installation

Attach steel runners at floor and ceiling to structural elements with suitable fasteners located 2" from each end and spaced 24" o.c., or to suspended ceilings with toggle or hollow wall anchors spaced 16" o.c.

Position steel studs vertically, engaging both floor and ceiling runners, and spaced max. (16") (24") o.c. When necessary, splice studs with 8" nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are attached to exterior walls and possibility of water penetration through walls exists, install asphalt felt strips between studs and wall surfaces.

Anchor all studs adjacent to door and window frames, partition intersections, corners and free-standing furring to ceiling and floor runner flanges with metal lock fastener tool or screws. Securely anchor studs to jamb and head anchors of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place a

cut-to-length section of runner, with a web-flange bend at each end, and secure to strut-studs with two screws in each bent web. Position a cut-to-length stud (extending to ceiling runner) at vertical plaster base joints over door header. When attaching studs to steel grid system, structural adequacy of grid to support end reaction of wall must be determined.

B. Chase Wall Framing Installation

Align two parallel rows of floor and ceiling runners spaced apart as detailed. Attach to concrete slabs with concrete stub nails or power-driven anchors 24" o.c., to suspended ceilings with toggle bolts or hollow wall anchors 16" o.c., or to wood framing with suitable fasteners 24" o.c.

Position steel studs vertically in runners (16") (24") o.c., with flanges in the same direction, and with studs on opposite sides of chase directly across from each other. Anchor all studs adjacent to door and window frames, partition intersections and corners to floor and ceiling runner flanges with metal lock fastener tool or screws.

Cut cross bracing made from gypsum base 1/2" high by wall width. Place between rows of studs. Space braces 48" o.c. vertically and attach to stud webs with six TYPE S screws per brace. If larger braces are used, space screws 8" o.c. max. on each side. Attach single-layer or base-layer gypsum base with (1") TYPE S screws spaced 12" o.c. in field and 8" o.c. staggered at joints.

Bracing of 2-1/2" steel studs may be used in place of gypsum braces. Anchor web at each end of steel brace with two pan head framing screws. When chase wall studs are not opposite, install steel stud cross braces 24" o.c. horizontally and securely anchor each end to a continuous horizontal 2-1/2" runner screw-attached to chase wall studs within the cavity.

C. Ceiling Grillage Installation

Space 8 ga. hanger wires 48" o.c. along carrying channels and within 6" of ends of carrying channel runs. In concrete, anchor hangers by attachment to reinforcing steel, by loops embedded at least 2" or by approved inserts. For steel construction, wrap hanger around or through beams or joists.

Install 1-1/2" carrying channels 48" o.c., and within 6" of walls. Position channels for proper ceiling height, level and secure with hanger wire saddle-tied along channel. Provide 1" clearance between runners and abutting walls and partitions. At channel splices, interlock flanges, overlap ends 12" and secure each end with double-strand 18 ga. tie wire.

Erect metal furring channels at right angles to 1-1/2" carrying channels or main support members. Space furring (16") (24") o.c. and within 6" of walls. Provide 1" clearance between furring ends and abutting walls and partitions. Secure furring to carrying channels with clips or saddle-tie to supports with double-strand 18 ga. tie wire. At splices, nest furring channels at least 8" and wire-tie each end with double-strand 18 ga. tie wire.

At light troffers or any openings that interrupt the carrying or furring channels, install additional cross reinforcing to restore lateral stability of grillage.

D. RC-1 Resilient Channel (or Equivalent) Installation

Position resilient channel at right angle to steel studs, spaced 24" o.c., and attach to steel stud flanges with pan head framing screws driven through holes in channel mounting flange and to wood framing with 1-1/4" wood screws of Buildex Type W. Install channel with mounting flange down, except at floor to accommodate attachment. Locate channels 2" from floor and within 6" of ceiling. Extend channels into all corners and attach to corner framing. Cantilever channel ends no more than 6". Splice channel by nesting directly over framing member. Reinforce with screws located at both ends of splice. Use of a filler strip at the base may reduce STC rating.

Where cabinets will be installed, attach resilient channels to studs at top and bottom cabinet hanger brackets. When distance between hangers exceeds 24" o.c., install additional channel at midpoint between hangers.

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E. Z-Furring Channel Installation

Install insulation vertically and hold in place with Z-furring channels spaced 24" o.c. Except at exterior corners, attach narrow flanges of furring channels to wall with concrete stub nails or power-drive fasteners spaced 24" o.c. At exterior corners, attach wide flange of furring channel to wall with short flange extending beyond corner. On adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. Start from this furring channel with a standard width insulation panel and continue in regular manner. At interior corners, space second channel no more than 12" from corner and cut insulation to fit. Hold mineral-fiber insulation in place until gypsum base is installed with 10" long staple field-fabricated from 18 ga. tie wire and inserted through slot in channel. Apply wood blocking around window and door openings and as required for attachment of fixtures and furnishings.

F. Wall Furring Channel Attachment—Direct

Attach metal furring channels vertically, spaced (16") (24") o.c., to interior of masonry or concrete surfaces with hammer-set or power-driven fasteners or concrete stub nails staggered 24" o.c. on opposite flanges. Where furring channel is installed directly to exterior wall and a possibility of water penetration through walls exists, install asphalt felt protection strip between furring channel and wall.

3.2 Sound Attenuation Fire Blanket Installation

Install mineral fiber insulation after gypsum base is applied directly to the face of the studs on one side of the partition. Insert the 25" wide blanket in the stud cavity by bowing the blanket slightly. After inserting, make a vertical cut in the blanket (about 1" deep) on a centerline between the studs. Butt ends of blankets closely together and fill all voids. Apply gypsum base directly to studs or to RC Channels (or equivalent) on the opposite side of the partition.

3.3 Veneer Plaster Base Installation

A. Ceiling Installation

Apply gypsum base of maximum practical length wherever possible on ceilings first with long dimension perpendicular to furring channels with blue face paper down. Position end joints over framing and stagger in adjacent rows.

Fit ends and edges closely, but not forced together. Fasten base to channels with 1" TYPE S screws spaced 12" o.c. in field of base and along abutting ends and edges.

For single-layer resilient ceiling system, apply IMPERIAL Brand Gypsum Base, ceiling first, with long dimension at right angles to channels, and end joints neatly fitted and centered over channel attachment flange. Attach with 1" TYPE S screws spaced 12" o.c. across each channel and perimeter screws not less than 3/8" from ends and edges. Support gypsum base around all cutouts and openings.

For double-layer resilient ceiling system, apply base layer with long edges across joists and end joints staggered. Fasten base to framing with 8d cement-coated nails spaced 7" o.c. Attach resilient channel through base layer perpendicular to framing with 1-7/8" TYPE S screws. Install face layer with long dimension across channels; use 1" TYPE S screws spaced 12" o.c.

B. Single Layer Gypsum Base Installation

Apply gypsum base (parallel to studs) (perpendicular to studs). Position all edges over stud flanges for parallel application; all ends over stud flanges for perpendicular application. To maintain a true surface plane, arrange direction of application so leading edge of base is attached first to open edge of stud flange. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together. Stagger joints on opposite sides of partition placed on different studs.

Fasten base to stud framing with screws spaced 12" o.c. in field of base and along abutting end joints. Screw spacing shown is for non-rated construction. For fire-rated construction, obtain screw spacing from test report.

Drive fasteners in field of base in wood framing first, working toward ends and edges. Hold base in firm contact with framing while driving fasteners. Space nails 7" o.c. on ceilings, 8" o.c. on walls, screws 12" o.c. and perimeter fasteners not less than 3/8" from ends or edges. Drive fastener heads flush with surface of base, not dimpled, and without breaking paper. Wherever base is not tight against framing, drive another fastener within 1-1/2" of first fastener. Float gypsum base at vertical interior angles by attaching the overlapping sheet of base only, at the angle; at horizontal interior angles by attaching both sheets of base no closer than 8" from the angle.

C. Double Layer Gypsum Base Erection

For screw attachment, space screws 24" o.c. for base layer and 12" o.c. for face layer. Apply both layers of gypsum base parallel to studs with joints in face layer offset from base layer joints. For 1/2" or 5/8" base, use 1" screws for base layer and 1-5/8" screws for face layer.

In double-layer laminated construction, attach base layer with 1" TYPE S screws spaced 12" o.c. in field of base and along abutting ends and edges. Apply face layer parallel to studs with specified SHEETROCK Brand DURABOND Setting-Type Joint Compound or SHEETROCK Brand Taping or All Purpose Ready-Mixed Joint Compound spread on back side, joints staggered approx. 12" and fastened to base layer with 1-1/2" Type G screws. Drive screws approximately 2' from ends and 4' o.c. in field of panel, 1' from ends and 3' o.c. along a line 3" from vertical edges. Screw spacing is for non-rated construction. For fire-rated construction, obtain screw spacing from test report.

D. DUROCK Cement Board

Install DUROCK Cement Board to steel framing with DUROCK Screws spaced 8" o.c. Treat joints as specified in Section 3.4.G.

E. FIBEROCK Brand Panels

In this two-coat veneer plaster system, DIAMOND Brand or IMPERIAL Brand Veneer Basecoat Plaster and DIAMOND Brand or IMPERIAL Brand Veneer Finish Plaster are applied over FIBEROCK Brand Panels attached to framing. Space wood or steel framing 16" o.c. or 24" o.c. Position all ends and edges of panels over framing members, except when joints are at right angles to framing members, as in perpendicular application or when end joints are back-blocked. On walls, fasteners are spaced a maximum of 12" o.c. whether framing spacing is 24" o.c. or 16" o.c. For ceiling applications, nails should be spaced no more than 7" o.c., screws 12" o.c. Note that 5/8" FIBEROCK Brand Panels can be substituted for 5/8" IMPERIAL Brand FIRECODE Core Gypsum Base or 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base in certain fire-rated partition designs in this brochure as long as 20-gauge steel framing is used and the joint treatment procedure in Section 3.4.G is followed. Refer to the UL Fire Resistance Directory for applicable designs.

3.4
Accessory Application—
Veneer Plaster Systems

A. Corner Bead

Attach to all vertical and horizontal exterior corners with nails, screws, or 9/16" galvanized staples spaced 12" o.c. along both flanges along the entire length of board.

B. Control Joints

Install where indicated on plans. Break base behind joint and back by double studs. Apply acoustical sealant behind control joint. (SHEETROCK Brand Control Joint No. 093—square-cut end joints, butt together and align for neat fit.) Remove protective tape after plastering.

1. **Interior Ceilings**

Position control joints to intersect light fixtures, heating vents, air diffusers, etc.

2. **Interior Walls and Partitions**

Space control joints maximum of 30' apart; control joints may occur over door frames as indicated in drawings.

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C. Casing Beads and Metal Trim

Apply to IMPERIAL Brand Gypsum Base with fasteners or 9/16" galvanized staples 12" o.c. Cut and miter ends accurately and install where partitions or ceilings terminate against masonry or dissimilar material, and where indicated.

D. Screws

Power-drive and set flush with surface of IMPERIAL Brand Gypsum Base without tearing through the paper.

E. Laminating Adhesive

For laminating double layers of IMPERIAL Brand Gypsum Base, spread to provide full 1/2" adhesive beads 4-1/2" o.c. for full sheet lamination. For strip lamination, apply adhesive in vertical strips of four 1/2" beads to 2" o.c. Space strips 24" o.c.

F. Joint System

For veneer plaster systems, use SHEETROCK Brand Joint Tape and SHEETROCK Brand EASY SAND Lightweight or DURABOND Setting-Type Joint Compound to treat all joints and internal angles when any of the following conditions exists: rapid drying conditions due to low humidity, high temperature or excessive evaporation; metal framing is specified; 24" o.c. wood frame spacing and a single-layer gypsum base veneer system is specified (5/8" base with one-coat veneer finish and 1/2" or 5/8" base with two-coat veneer finish). Allow joint treatment to set and dry thoroughly before plaster application.

Over wood framing, firmly embed IMPERIAL Brand Type P Tape to ensure wrinkle-free attachment or use 3/8" staples to apply IMPERIAL Brand Type S Tape. Use two staples at each end of tape and stagger intermediate staples 24" o.c. along length of tape. At intersections and corners, staple 24" o.c. on one edge only. Do not overlap tape at intersections, and apply over full length of gypsum base.

G. Joint System (DUROCK Brand Cement Board or FIBEROCK Brand AR Interior Panels)

Apply USG Plaster Bonder in a continuous film to joint areas, then treat joint areas with SHEETROCK Brand Joint Tape and SHEETROCK Brand DURABOND or EASY SAND Setting-Type Joint Compound. Provide an additional coat of setting-type compound to fully conceal the tape. Allow to completely dry.

3.5
IMPERIAL Brand
Basecoat and DIAMOND
Brand Veneer
Basecoat Plasters

A. Gypsum Base

When applied directly to IMPERIAL Brand Gypsum Base, embed tape and fill beads, and allow plaster to set, then scratch and immediately double back to a thickness of 1/16" to 3/32", in accordance with manufacturer's directions.

B. Concrete Block

When applied directly over unglazed concrete block, fill all voids and depressions including joints. Spray concrete block uniformly with water immediately before applying basecoat. Apply basecoat and leave rough and open and allow to set prior to lime putty or veneer plaster finish application. USG Accelerator may be used to quicken set. Total basecoat shall be 1/16" to 3/32" thick.

C. Monolithic Concrete

When applied to monolithic concrete to which USG Plaster Bonder is to be applied, surface shall be free of dirt, dust, grease, wax, oil, or other unsound surface conditions. Laitance, efflorescence and parting compounds shall be chemically removed. Apply USG Plaster Bonder to concrete surface in a continuous film according to product directions. Apply basecoat plaster with firm pressure in a thin coat over the bonding agent. Immediately double back to a completed thickness of 1/16" to 3/32" with a level surface. It is essential that the applied basecoat surface be raked or broomed once the material has become firm for a rough and open surface to provide proper suction for finish coat. Failure to do so may result in delamination of the finish plaster.

D. Where plaster is flush with metal base, metal door frames, etc., trowel-cut at the junction to reduce the possibility of chipping. Cut basecoat plaster free from these metal sections before plaster sets.

E. DURORCK Brand Cement Board or FIBEROCK Brand Panels

When SHEETROCK Brand Joint Tape and Setting Type Compound has completely dried, treat the entire wall surface with USG Plaster Bonder according to the application directions. Then apply DIAMOND or IMPERIAL Brand Veneer Basecoat Plaster 1/16" to 3/32" thick using scratch and double-back technique. When basecoat plaster is firm, broom the surface to leave it rough and open for finish. With basecoat set and partially dry, apply DIAMOND or IMPERIAL Brand Veneer Finish Plaster as specified in Section 3.7.C. Leave finished surface smooth and dense for decorating.

**3.6
Plaster Thicknesses—
Veneer Plaster Systems**

Shall be shown on plans; however, in no case shall the grounds be less than:
Masonry units and DURORCK Brand Cement Board—up to 3/16" for two-coat veneer applications
Monolithic concrete ceilings—3/32" (3/8" maximum)
Monolithic concrete walls—3/32" (5/8" maximum)
IMPERIAL Brand Plasters—1/16" to 3/32" (over special gypsum base)
DIAMOND Brand Veneer Finish (for electrical cable ceilings)—3/8" (over special gypsum base or monolithic concrete).

**3.7
Veneer Plaster
Finish Applications**

A. DIAMOND Brand Veneer Finish

Over IMPERIAL Brand Gypsum Bases embed tape, fill beads, and allow to set; then apply a thin, tight scratch coat over entire working area. Immediately double back with material from same batch to a nom. 1/16" to 3/32" thickness. Over DIAMOND Brand Veneer Basecoat Plaster, scratch and immediately double back to 1/16" to 3/32" thickness. Over monolithic concrete, apply USG Plaster Bonder, then scratch and double back with a job-aggregated plaster to a 3/32" thickness.

B. DIAMOND Brand Veneer Finish (for electrical cable ceilings)

Over monolithic concrete ceilings, prepare the surface with USG Plaster Bonder in a continuous film. Apply job-sanded DIAMOND Brand Veneer Finish to a total thickness of 3/8"—consisting of a 5/16" fill coat to completely cover cable and anchoring devices, and 1/16" finish coat.

C. IMPERIAL Brand Veneer Finish

Over IMPERIAL Brand Gypsum Base embed tape, fill beads and allow to set; then scratch and immediately double back to a thickness of from 1/16" to 3/32" in accordance with manufacturer's directions. Over IMPERIAL Brand Veneer Basecoat, scratch and immediately double back to 1/16" thickness.

D. Other Finishes

In addition, other conventional plaster finishes may be applied over veneer basecoat:

1. IVORY or SNOWDRIFT Lime

Shall be machine-mixed for immediate use with approx. 5-1/2 to 6 gal. water per 50 lb. bag.

2. GRAND PRIZE Lime

Shall be box-soaked or machine-mixed using approx. 6 gal. water per 50 lb. bag, and allowed to soak for 16 hours.

3. Finish Plaster

Shall be mixed in proportion by dry weight of _____ parts of gauging to _____ parts of lime (specify from coverage data), according to applicable bag directions. Over lightweight aggregate basecoats (such as STRUCTO-LITE Basecoat Plaster), add 1/2 cu. ft. of perlite fines or 50 lb. of silica sand to meet ASTM C35 per 100 lb. of gauging plaster or use mill-aggregated gauging plaster.

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4. Trowel Finish Coats

Scratch plaster in thoroughly and immediately double back to fill out to a smooth, dense surface for decoration, free of surface blemishes and irregularities. Apply finish coat as thin as possible, preferably 1/16" to not more than 3/32" maximum thickness. Trowel RED TOP Brand Keenes Cement finishes extensively until the material sets.

4. Float Finish Coats

Scratch plaster in thoroughly and immediately double back to a true, even surface. Float using a (shingle) (cork) (wood) (carpet) (sponge), or (rubber) float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces, and other blemishes. Use water sparingly on natural color, and no water on colored finishes.

5. Machine-Applied Spray Finishes

Apply initial coat of finish by hand and float to uniform texture surface to provide a background. Then apply plaster in a uniform spray pattern to produce a texture approved by the architect or owner.

E. Finish Coat

Brown coat must be left roughened, open and partially dry (green state) to receive finish coat.

The following finishes are recommended and listed in descending order of hardness and abrasion resistance:

1. RED TOP Brand Finish Plaster—Machine mix mill-mixed plaster following the directions on the bag. Apply a tight scratch coat over the entire working area. Immediately double-back with material from the same batch and fill out to a true and even surface nominally 1/16" thick. Allow surface to become firm, then trowel well with water. Do final troweling after the finish has begun to set. Surface shall be free from cat faces and other blemishes or irregularities.
2. STRUCTO-GAUGE Gauging Plaster with IVORY, SNOWDRIFT or GRAND PRIZE Lime—Mix lime in a clean mechanical mixer or a portable drill mixer; add one bag of lime to 5-1/2 to 6 gallons of water and mix until putty is smooth. Mix finish plaster in proportions by dry weight of 1 part gauging plaster to 1 part lime. Apply finish plaster as described for RED TOP Finish Plaster.
3. RED TOP Gauging Plaster with IVORY, SNOWDRIFT or GRAND PRIZE Lime—Mix lime as described in No. 2, above. Mix finish plaster in proportions by dry weight of 1 part gauging plaster to 2 parts lime. Apply finish plaster as described for RED TOP Finish Plaster.
4. RED TOP Brand Keenes Cement with IVORY, SNOWDRIFT, or GRAND PRIZE Lime for a sand float finish—Mix lime as described in No. 2, above. Mix finish plaster in proportions by dry weight to 100 lbs. Keenes Cement Plaster to 200 lbs. lime to not more than 800 lbs. of sand aggregate. Apply float finish coat by scratching plaster in thoroughly and immediately double back to a true, even surface. Float using a shingle, cork, wood, carpet or rubber float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces and other blemishes. Use water sparingly.

3.8

Gypsum Plaster Lath Installation

Plaster Base Installation

Apply 3/8" ROCKLATH Brand Plaster Base, bottom course first, with face out, long dimension at right angles to studs and joints butted together. Cut lath so it slips easily into place without forcing, and fits neatly around electrical outlets, openings, etc. Install any lengthwise raw cut edges at bottom strip or wall-ceiling angle. Nail, screw or staple to wood studs, leave fasteners flush with board surface without penetrating the face paper. Screw attach to steel studs and metal furring. Use 4 fasteners 6" o.c. per 24" length. Check "Frame and Fastener Spacing- Rocklath Plaster Base" table for recommendations for base thickness and types of framing.

3.9

Accessory Application— Conventional Plaster Systems

A. Control Joints

Install where indicated on plans. Break base or lath behind joint and back by double studs. Where channel framing is used, also break the channels. (Control joint Nos. 50, 75, 100—splice ends together with 16 ga. tie wire inserted into openings in the key-lock sections.)

1. **Interior Ceilings**

Position control joints to intersect light fixtures, heating vents, air diffusers, etc.

2. **Interior Walls and Partitions**

Space control joints maximum of 30' apart; control joints may occur over door frames as indicated in drawings.

3. **Portland Cement Stucco—Exterior Walls, Soffits, and Canopies**

Space control joints not exceeding 10' in either direction. Where there is an intersection of vertical and horizontal joints, use continuous vertical joint and butt the horizontal joint. Caulk splices and intersections exposed to the elements with a silicone rubber caulking cement. In soffits and canopies, break lath and channel behind control joints.

B. Reinforcing

Install self-furring Diamond Mesh Lath or Cornerite over joints between dissimilar conventional plaster bases. Reinforce openings with Striplath stapled diagonally across corners. Install Cornerite in all interior angles.

**3.10
Plaster Thicknesses—
Conventional Plaster
Systems**

Shall be shown on plans; however, in no case shall the grounds be less than:

Metal lath—5/8" (from face of lath)

ROCKLATH Brand Plaster Base—1/2"

Masonry units—5/8" conventional

**3.11
Basecoat Plaster—
Conventional**

A. Mixes

1. **Basecoat application**

Mix basecoat plasters by hand or in a mechanical mixer to a uniform consistency following manufacturer's directions.

Apply basecoat plaster by (hand) (machine) in (1) (2) coats. Monolithic or unit masonry surfaces that exhibit high suction shall be moderately wetted immediately before plastering.

2. **Two-coat work**

Over gypsum lath and masonry, apply base (first) coat with sufficient material and pressure to form good bond to base and to cover well, and then double back to bring plaster out to grounds. Straighten to a true surface with rod and darby without use of additional water and leave rough to receive finish (second) coat.

3. **Three-coat work**

Apply scratch (first) coat with sufficient material and pressure to form good full keys on metal lath, and good bond on other bases, and then cross-rake. Apply brown (second) coat after scratch (first) coat has set firm and hard. Bring out to grounds and straighten to a true surface with rod and darby without use of additional water. Leave rough to receive finish (third) coat.

**3.12
Finish Coat Plaster
Applications—
Conventional and Other**

A. Mixes

1. **Veneer Plaster—Prepared Finish**

Add all but 1 to 2 quarts of the required water to a non-plastic mixing container. Mix for 1 to 2 minutes, add up to 1 to 2 quarts of retained water and then mix for 1 to 2 minutes more. Mix with a cage-type paddle mixer using a 900-1000 rpm 1/2" drill.

2. **IVORY or SNOWDRIFT Lime**

Shall be machine-mixed for immediate use with approx. 5-1/2 to 6 gal. water per 50 lb. bag.

3. **GRAND PRIZE or RED TOP Lime**

Shall be box-soaked or machine-mixed using approx. 6 gal. water per 50 lb. bag, and allowed to soak for 16 hours.

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4. **Finish Plaster**

Shall be mixed in proportion by dry weight of _____ parts of gauging to _____ parts of lime (specify from coverage data), according to applicable bag directions. Over lightweight aggregate basecoats (such as STRUCTO-LITE Gypsum Plaster), add 1/2 cu. ft. of perlite fines or 50 lb. of No. 1 silica sand per 100 lb. of gauging plaster or use RED TOP Gauging Plaster Perlite Aggregated.

5. **Trowel Finish Coats**

Scratch plaster in thoroughly and immediately double back to fill out to a smooth, dense surface for decoration, free of surface blemishes and irregularities. Apply finish coat as thin as possible, preferably 1/16" to not more than 1/8" maximum thickness. Trowel RED TOP Keenes Cement finishes extensively until the material sets.

6. **Float Finish Coats**

Scratch plaster in thoroughly and immediately double back to a true, even surface. Float using a (shingle) (cork) (wood) (carpet) or (rubber) float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces and other blemishes. Use water sparingly on natural color, and no water on colored finishes.

7. **Machine-Applied Spray Finishes**

Apply initial coat of finish by hand and float to uniform texture surface to provide a background. Then apply plaster in a uniform spray pattern to produce a texture approved by the architect or owner.

8. **Finish Coat**

Brown coat must be partially dry (green state) to receive finish coat.

The following finishes are recommended and listed in descending order of hardness and abrasion resistance:

- a. **IMPERIAL Brand Veneer Finish Plaster**—Mix plaster as recommended per PM 9 "Mixing Veneer Plaster and Equipment". Apply a tight scratch coat over the entire working area. Immediately double-back with material from the same batch to a nominal 1/16" thickness. Lay on material in a uniform manner to avoid trowel marks, laps and excess material. Under no circumstances should the surface be rewetted with water or over-worked, as this will only result in subjecting the surface to blistering and further trowel marks. The surface is smooth-troweled only after initial firmness is reached, and final troweled once full firmness occurs. Water troweling must be avoided. The wall surface must be left "under the trowel"; do not use water brush or blister brush on finished surface.
- b. **DIAMOND Brand Veneer Finish Plaster**—Mix plaster as recommended per PM 9 "Mixing Veneer Plaster and Equipment". Apply a tight scratch coat over the entire working area. Immediately double-back with material from the same batch to a nominal 1/16" thickness. START finish troweling as soon as material has become sufficiently firm to achieve a smooth surface free from marks, voids, and other blemishes. Smooth and level the surface with the trowel held flat; use water sparingly to lubricate. Final smooth troweling should be accomplished prior to set as indicated by darkening of the surface.
- c. **RED TOP Brand Finish Plaster**—Machine mix mill-mixed finish plaster following the directions on the bag. Apply a tight scratch coat over the entire working area. Immediately double-back with material from the same batch and fill out to a true and even surface nominally 1/16" thick. Allow surface to become firm, then trowel well with water. Do final troweling after the finish has begun to set. Surface shall be free from cat faces and other blemishes or irregularities.
- d. **STRUCTO-GAUGE Gauging Plaster with IVORY, SNOWDRIFT or GRAND PRIZE Lime**—Mix lime in a clean mechanical mixer or a portable drill mixer; add one bag of lime to 5-1/2 to 6 gallons of water and mix until putty is smooth. Mix finish plaster in proportions by dry weight of 1 part gauging plaster to 1 part lime. Apply finish plaster as described for RED TOP Finish Plaster.
- e. **RED TOP Gauging Plaster or Perlite Aggregated with IVORY, SNOWDRIFT, or GRAND PRIZE Lime**—Mix lime as described in No. 4, above. Mix finish plaster in proportions by dry weight of 1 part gauging plaster to 2 parts lime. Apply finish plaster as described for RED TOP Finish Plaster.

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- f. Keenes Cement with IVORY, SNOWDRIFT or GRAND PRIZE Lime for a sand float finish—Mix lime as described in No. 4, above. Mix finish plaster in proportions by dry weight to 100 lbs. Keenes Cement Plaster to 200 lbs. lime to not more than 800 lbs. of sand aggregate. Apply float finish coat by scratching plaster in thoroughly and immediately double back to a true, even surface. Float using a shingle, cork, wood, carpet or rubber float to bring aggregate to the surface to produce a finish of uniform texture free of slick spots, cat faces and other blemishes. Use water sparingly.

3.13 Special Applications

A. Column Fireproofing Installation

1. UL Design X518—2 hour

Attach inner layer 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base to 1-5/8" steel studs with 1" TYPE S screws spaced 24" o.c. and place assembly with gypsum base next to column flange. Install gypsum base layer vertically around column using 1" TYPE S screws to attach base layer to stud web 24" o.c. and face layer to stud flange 12" o.c. Apply face layer vertically over web face side of column and fasten through base layer to web of studs with 1-5/8" TYPE S screws spaced 12" o.c. and staggered from screws in base layer. Apply corner bead at all corners and 1/16" veneer finish.

2. UL Designs X521—2 hour and X514—3 hour

For all W14 x 228 steel columns, provide fire protection with 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base applied vertically over 1-5/8" steel studs positioned at corners. Attach base to studs with 1" TYPE S screws spaced 12" o.c. For 3-hour rating install additional layer over web surface and attach to studs with 1-5/8" TYPE S screws spaced 12" o.c. Apply corner bead at all corners and 1/16" veneer finish.

3. UL Design X515—3 hour

Attach inner layer 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base to 1-5/8" steel studs with 1" TYPE S screws spaced 12" o.c. and place assembly with gypsum base next to column flange. Install two additional layers to stud flange and three additional layers to stud web over web face side of column. Fasten base layers with 1" TYPE S screws, middle layers with 1-5/8" screws and face layers with 2-1/4" screws. Space all screws 12" o.c. vertically. Apply corner bead at corners and 1/16" veneer finish.

4. UL Design X507—4 hour

For all W14 x 228 steel columns, provide fire protection with double-layer 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base applied vertically over 1-5/8" steel studs positioned at corners. Attach base layer to studs with 1" TYPE S screws spaced 12" o.c. and attach face layer with 1-5/8" TYPE S screws spaced 12" o.c. and staggered 6" from base layer screws. Apply corner bead at corners and 1/16" veneer finish.

5. UL Design X524—2 hour

Provide fire protection to all columns with three layers 1/2" IMPERIAL Brand FIRECODE C Core Gypsum Base, screw-attached to 1-5/8" steel studs positioned at column corners. Cut studs 1/2" to 3/4" less than column height. For columns having depth of 36" or less, apply panels vertically and stagger joints between layers at least 30".

When column depth exceeds 36", install additional 1-5/8" studs in each web recess inside and along column flanges and at the web center. Set studs in runners placed horizontally, parallel to web between column flanges and spaced max. 8' o.c. vertically. Fasten studs to runners at top and bottom with 1/2" TYPE S-12 pan-head screws.

Apply gypsum base horizontally and stagger joints between layers at least 12".

B. Caged Beam Fireproofing

Position ceiling runners at least 1/2" from and parallel to beam, and fasten to floor units with 1/2" TYPE S-12 pan head screws spaced 12" o.c. Fabricate hanger brackets from 1-5/8" steel runners allowing 1" clearance at bottom of beam. Space brackets 24" o.c. along beam and attach to ceiling runners with 1/2" TYPE S-12 screws. Install lower corner runners parallel to beam and fasten to brackets with 1/2" TYPE S-12 screws. Screw-attach (two) (three) layers of 5/8"

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IMPERIAL FIRECODE Core Gypsum Base to channel brackets installing vertical panels first, with bottom panels overlapping lower edges of vertical panels in each layer. Attach panels to channel brackets with (1") (1-1/4") TYPE S screws 16" o.c. for base layer, 1-5/8" TYPE S screws 12" o.c. for middle layer, and (1- 7/8") (2-1/4") TYPE S screws 8" o.c. for face layer. For 3-hour assembly, install wire mesh over bottom middle-layer panel, extend 1-1/2" up each side and fasten with 1-5/8" screws used to fasten panels.

C. Solid Studless Metal Lath Partition

Apply scratch coat to side opposite bracing, and allow to set and partially dry. Then apply brown coat to side opposite braces, allowing it to set thoroughly before removing temporary braces. Next apply brown coat to previously braced side to bring plaster out to grounds. Straighten to a true surface with rod and darby without use of additional water, and leave surface rough to receive finish coat.

D. Solid Channel Stud Metal Lath Partition

Apply scratch coat to lath side and allow to set and partially dry. Then apply back-up coat to channel side to full grounds, 1/2" over channels, in not less than two operations; allow to set. Apply brown coat on lath side to bring plaster out to grounds. Straighten to a true surface with rod and darby without use of additional water, and leave surface rough and open to receive finish coat.

E. Handball/Racquetball Courts

See product descriptions, technical data, and specifications in PM14.

F. Portland Cement Basecoats

Shall be proportioned as specified in Section 2.9E, and applied in two coats. Rake scratch coat perpendicular to framing; after set, damp-cure for not less than 48 hours. Damp-cure brown coat after set for not less than 48 hours.

G. Steel Door Frames

Grout all steel door frames with sanded plaster (see Good Design Practices, No. 2) in steel stud partitions prior to lathing.

**3.14
Ornamental
Plastering**

Execute ornamental plaster in accordance with scale details shown on the drawings. Run cornices and mouldings full, straight, and true with moulding plaster, using clean-cut metal conforming to the profiles shown on the drawings. Align lines accurately with square intersections, and accurate miters at corners and angles. Prepare enriched ornamental work that cannot be run in place with White HYDROCAL Gypsum Cement cast in gelatin molds. Back the work solidly with jute or burlap and properly reinforce with galvanized steel. Make all joints carefully and point neatly so as to be invisible. Sandpaper rough spots and leave entire work ready for decoration.

**3.15
Patching**

Point up around trim and other work. Cut out and patch defective and damaged plaster. Patch plaster to match existing work in texture and finish flush and smooth.

**3.16
Completion**

At the completion of the finish plaster work, clean all plaster from beads, screeds, metal base, and metal trim, leaving work ready for decoration by others. Remove all plaster rubbish, excess material, scaffolding, tools and equipment from the building, leaving floors broom-clean.

About the cover:

Project

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Seattle, WA

Recipient of the 1998 AIA Honor Award

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Product Information

See usg.com for the most up-to-date product information.

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