Glass Reinforced Gypsum: What Will They Think of Next?

By Wally Wilson

You’ve picked up a plan on a “real nice” project that has great street appeal, and you intend to bid the drywall and acoustical work. Unrolling the plans and looking at the specs, you discover materials covered under Section 9250 gypsum drywall called Glass Reinforced Gypsum. The plans show all these strange looking, round columns that have a decorative capital and reveals in them. “What else is going to come along and complicate my life?” you wonder. You’ve got your hands full already doing steel studs, drywall, drywall finishing and acoustical systems. But, like every good drywall man, you’re just nuts enough to investigate this GRG further.

You remember seeing a guide to glass reinforced gypsum with AWCI Pre Bid Checklist GRG Manufacturers Company Comparison

<table>
<thead>
<tr>
<th></th>
<th>COMPANY A</th>
<th>COMPANY B</th>
<th>COMPANY C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will do a take off</td>
<td>No</td>
<td>Yes</td>
<td>No, only if complicated shape like a dome</td>
</tr>
<tr>
<td>Will do plans and</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>specifications</td>
<td></td>
<td></td>
<td>No, offers a 2% cash discount</td>
</tr>
<tr>
<td>contract</td>
<td></td>
<td></td>
<td>Cribbed into truck, handled one at a time</td>
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<tr>
<td>Requires a down</td>
<td>Yes, 20% with order</td>
<td>Yes, at time of shop drawing</td>
<td>No</td>
</tr>
<tr>
<td>payment</td>
<td></td>
<td></td>
<td>Contractor provided</td>
</tr>
<tr>
<td>Shipping</td>
<td>Ship loose, handled one at a time</td>
<td>Cribbed into truck, handled one at a time</td>
<td>Crated for machine unloading. Multipart handling</td>
</tr>
<tr>
<td>Storage job site</td>
<td>Contractor provided</td>
<td>Contractor provided</td>
<td>Stored in crates</td>
</tr>
<tr>
<td>Acceptance of</td>
<td>Tailgate truck</td>
<td>Tailgate truck</td>
<td>At removal from crates</td>
</tr>
<tr>
<td>material</td>
<td></td>
<td></td>
<td>FOB plant, freight estimated</td>
</tr>
<tr>
<td>Freight policy</td>
<td>Included in price FOB job</td>
<td>FOB plant, freight allowed</td>
<td>Yes, primer ready</td>
</tr>
<tr>
<td>Surface finish of</td>
<td>No/ some pinholes</td>
<td>Optional - you must choose</td>
<td>No</td>
</tr>
<tr>
<td>parts. Part ready for primer</td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Collect your State and local taxes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Shop drawings</td>
<td>Priced separately</td>
<td></td>
<td></td>
</tr>
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</table>
and CISCA logos on it. What happened to that? You find the guide, and notice that the three manufacturers listed in the architect’s specs are also listed in the guide. Just then a sales rep for one of the three firms calls to ask if you are bidding the job and offers his help. You agree that you really need help and make an appointment with him, then call the other two manufacturers. One of them has a rep in your area; the other doesn’t but wants to help you with the project over the phone and by fax.

You go over the plans and specs with the two local reps in your office and via phone with the third inside salesperson. From your initial conversation with the three manufacturers, you find that they are all different.

You try to sort out the facts by making a checklist showing the differences between the manufacturers and their impact.

You submit copies of the details showing the columns and specs to the three manufacturers. Since you certainly wouldn’t want to bid your labor, margin and profit from someone else’s quantity takeoff, you do your own takeoff of the columns along with the drywall, metal studs and acoustical work. In your takeoff you find that while the columns are all the same style and shape, they vary in height and some are used as pilasters instead of full columns.

Your quantity survey shows 30 full columns 10’3” high, 20 full columns 12’3” high, and 10 pilasters 12’3” high. All three manufacturers priced each column in four pieces and the pilasters in two pieces.

One of the manufacturers requires metal studs inside the columns at the joints. The other two require adhesive at the joints with temporary banding to hold them together while the glue sets. All three require bracing from the column cover to the structure at the top to hold them. One supplies a clip at the bottom to be shot to the floor and face screwed.

Details of one manufacturer’s joint.
The other two turn a flange at the bottom and you “shoot” down through the flange to fasten the first side. The second side is adhesively attached to the floor. The manufacturer that crates the material also has shipping blocks (bead board half moons) that must be knocked out of the part before installation.

All three manufacturers cast tapered edges into the parts to allow room for the taping and finishing of the joint between two pieces on the full columns.

The manufacturers say that half an hour per piece erection labor is a safe number and that most straight shaft columns take half an hour to tape and finish with three coats over the tape. These columns have a different con-
Above, mould makers cut a plaster “pattern.” Below left, a complete plaster pattern ready to make FRP mould. Below right, an FRP mould with “gates.”
You calculate these costs for the three manufacturers and add them to their respective bids. The lower price may or may not have the cheapest cost.

You’ve done the best job you could in putting together the most profitable bid for your company. You incorporate this portion into your bid package, along with the drywall studs and acoustical work, and submit your bid to the generals.

You find out you were not low bidder, but because of your outstanding reputation for high quality work, service, and character, you are going to get the job anyway. (This whole article is not a Fairy Tale, just this paragraph.)

The three manufacturers all give you another sales pitch, and now you must choose between them. You understand your drywall and stud suppliers, but what do you understand about the manufacture of glass reinforced gypsum? Here’s a checklist of concerns to help you decide.

### Pre-Buy Checklist - GRG Manufacturers

1. What is the company’s general reputation? Are their business practices fair for both parties? Check it out.
2. What is the company’s business? Is it GRG? Is GRG a sideline or new to them? How much do they know about the business, and what is the manufacturer’s experience?
3. What is the company’s financial strength? Can they handle the job from a financial basis? (If the job is a year or more from now you are going to send a deposit.)
4. Who is available to handle problems and give on-site advice and guidance? Is it the sales rep, factory man, or nobody? Ask!
5. Are the manufacturer’s shop drawings clear, professional and easily read and understood?
6. What are the tolerances the manufacturer proposes to use on the job? Plus or minus 1/16”? 1/8”? 3/16”?
7. How do they manufacture the product: hand layup or spray layup? Investigate the difference and understand what it means to you.
8. What is their time frame to produce the shop drawings, make the moulds and manufacture the product? Do they live up to quoted time frames? (Don’t expect the manufacturer to beat his time frames or make up for any delays caused by slow order placement or long approval times.)
9. What are their packing and shipping methods? If shipped loose in a truck, how much packing material and dunnage can you expect? If crated, what sizes are the crates? (You’ll have trouble getting an 8’6” crate through a 6’8” door. Check it out!)
10. Once an order is placed, who do you talk to? Is it the rep, the inside salesman or a customer service department?
Satisfied that the best priced manufacturer is qualified, you execute a purchase document. (Don’t count on anyone starting shop drawings until you do.) A full set of plans are sent off so the shop drawings can be prepared. During this process, questions about interpretation of the drawings may be asked, and you should expedite your answers.

Because your job is straightforward and clear, you receive your shop drawings with no questions. Since most manufacturers will build just what is on these drawings including tolerances, they’ll expect you to accept and use the finished product if it matches the drawings. Therefore, a careful review of the drawings is in order. Consider:

(1) Do they show the number of pieces of each size needed? (2) Do they show tolerances appropriate for your job? (3) Will the details work for the job and do you understand them? (4) Are the dimensions correct?

Time is of the essence on this job because the manufacturer quoted a time frame of four to six weeks to produce the material from the time he receives final approved shop drawings. You need the material in 12 weeks, and therefore need to push for approval in no longer than four weeks. (This gives you an extra two weeks to allow for any revisions which could delay final approval of the drawings.)

Three weeks pass and the approval process is nearly complete so the drawings should be ready when you asked for them. The next week the drawings are returned for your approval, and after you review them again, you send them to the manufacturer whose meter starts running again. He has one mould to build and one mould to modify, along with 105 pieces to manufacture for your job.

Some manufacturers build their own moulds in house and some send them out. Yours builds his own and starts on them once he has completed his internal paperwork, including a special revision of the shop drawing for the plant, some material lists and a job order.
Half of a column cover in the process of being layed up by the spray method

Moulds are commonly made from wood, metal, rubber, fiber-reinforced plastic (FRP), or plaster. Your capital mould will be made from a plaster pattern by cutting with a metal edge, with the shape of the capital pivoted off the center line of the part, forming the plaster which has been applied over a rough form. This plaster “pattern” is then fitted with gates to create stops for the FRP mould. The FRP is spray laid on the pattern to make the mould, then backed up with a frame, and fitted with gates to create the edge of the parts. This mould building process generally takes 10 working days for actual work, drying and curing times.

The shaft of the column will be a 20” FRP mould from stock, with the 2-1/4” by 3/4” reveals created by layering a material that size into the mould. The stock mould is brought from storage, cleaned up from its last use and fitted with the reveals and gates to create the length of the part. This process takes several working days to complete, so in your case, the shaft mould is ready a week before the capital mould.

The layup process varies between manufacturers. Some use a “hand layup” process where several people work on a part, hand applying the plaster with layers of a continuous woven roving glass fiber reinforcement 10/20/30 mils thick. The glass fiber comes in rolls and is cut to fit the part. Generally half an hour after the layup is complete, the part is demoulded, cleaned up and the process is repeated.

Your supplier uses a “spray layup” process. The plaster is pumped to a spray nozzle, and a “chopper” cuts and blows 1” lengths of continuous roving glass fibers into the plaster slurry. This is sprayed into the mould until the desired thickness is obtained. Once this process is complete, the plaster sets in approximately 30 minutes. The part is demoulded, cleaned up and the mould placed back in production rotation.

The manufacturer can turn six parts a shift out of an individual mould and generally works three shifts to make approximately 15 parts a day. You
need 110 capital pieces plus 60 pieces of shafts for the 13'3" units and 50 pieces for the 12'3" units. Eight working days are required for the capitals; eight working days are required for the columns, plus one day to change the height from 13'3" to 12'3".

After “layup,” your supplier checks each part for surface finish and defects, and repairs those that will not pass 100% inspection and dimensional conformance to the shop drawings.

The parts are then placed in a wooden crate custom built to prevent “cold creep.” Cold creep is best described by looking at the bottom sheets of gypsum wallboard in a pile with insufficient dunnage under it. The sheets sag and deform under their own weight when not properly supported. The same thing can happen to glass reinforced gypsum, so handling is extremely important, both in the plant and on the job.

The column shafts are ready before the capitals because of the mould time. The supplier stores them in his warehouse until the job is complete.

You are advised that your order is ready and will ship the next week on a flatbed truck requiring mechanical unloading. The job has the roof on, the slab poured, and the general contractor has left access so the crates can go
through the opening in the building. The masonry contractor has a fork lift on the job, and you arrange to rent it. You get a pallet dolly from your warehouse to move the material inside the building.

The truckers are supposed to call you 24 hours in advance of delivery. So, when he calls on Monday and says he will be there Tuesday noon, you advise him he can unload at 1:00. You send your forklift driver and helper to the job, and they unload and place the crates in the job in a couple of hours. Your people inspect for damage, compare the tickets to the parts and find everything is okay.

It will be about a month before you install the parts. You go over the copies of the shop drawings with your field man, explaining all you know, including tolerances. You give him copies of the installation instructions and literature. You call the sales rep and arrange for him to be there when you start the job, which may help shorten your learning curve installing this new material.

The big day arrives and the sales rep says to saw open the crates. When the first two parts are put together, they fit pretty well—with a little variation but within tolerance. You notice variation in the height on one side of the top and not on the other. There is also some variation at the reveal lines. You put a level on the column and it is plumb, but the joint is not plumb. After “racking” the column joint to plumb, the top and
reveals are now offset where they meet, but they are even. You look at the floor, and sure enough, when you shim one part up, the column looks good.

You fasten in the column, then get two pieces of capital and set them in place. They don’t meet the column shaft perfectly, so you shim here and there. They look good now, but it has taken three and a half hours to install the first unit. You know the next one will go better, and you feel good because you think you can beat the estimate.

The rep tells you that, if your men get careless with a part and it “cold creeps,” you can wet it on the back side and force it back into shape.

He also gives you a tip on joint finishing:

(1) Embed the paper tape and wipe down quickly to prevent suction in the plaster from crowning the joint by having too much mud under the tape.
(2) Use a flat piece of fairly stiff, flat rubber base to draw your first fill into the general curvature of the column.
(3) Apply the next couple of skims and wipe them down by drawing a broad knife around the column.

In several weeks you visit the job. The columns look great and your field people have beaten your estimate. The painter asks you how he is ever going to paint those things, and you tell him to roller prime them with a primer suitable for plaster and a finish coat compatible with the primer. He does this and is satisfied.

Looking back, you think this was a lot of work to make a few bucks. Yet the job had more dollars in it than if it had been square drywall columns—plus you made your margin. But by golly, the next time this material is specified on a job, you certainly will know enough to be dangerous. Who knows, you may do a job like this again some day.

About the Author

Wally Wilson started in the drywall construction business in 1953 at the age of 15, by scraping floors and sanding part time in the summer and mixing powdered mud before school in the winter for Cather & Sons Drywall in Lincoln, Nebraska. He continued to work as a hanger and finisher during the summers and part time through college at the University of Nebraska. He was a field sales rep for U.S. Gypsum for six years before going to work for Eliason & Knuth Drywall in Omaha as an estimator, where he became vice president in charge of estimating in 1974. He started Plastrglas as a subsidiary of E&K in 1978 and purchased Plastrglas, Inc. from them in 1984. Wally likes drywall people because they are willing and capable of developing new ways to make a larger dollar segment of the construction business for themselves.