Nothing Works—Like Imagination

New beadless corner system enables award winning South Texas and Lone Star Drywall to achieve project objectives where other construction approaches had failed

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Over the years South Texas Drywall has won more than its share of the Central Ohio Craftsmanship Awards competitions, annually presented by the Builders Exchange—and 1989 was a banner year for the company.

Before last year, no other company had won more than two of these awards in a calendar year. South Texas had five men win these coveted Craftsmanship Awards in 1989.

South Texas Drywall specializes in drywall, lath and plaster, structural and non-load bearing metal framing, acoustical ceilings, sound control, carpentry and other finishes. The company also entered the scaffold business when they were awarded a large theater and two large atrium jobs.

South Texas Drywall’s estimating and sales staff have aided architects and construction managers with budget, design and technical support in the Ohio area for many years and the company has traditionally been the largest employer of union carpenters and finishers in central Ohio.

The award winning construction performance capabilities of the company were never more evident than in the recent state building where the company’s patented beadless corner construction played such a prominent role.

On this project, the architects, designers and specification writers had completed their work and the owner had advertised for bids. The project issued was the Bureau of Workers Compensation/Industrial Commission Building for the State of Ohio, Phase VIII Interior Tenant Finishes.

Previous to this project’s being released for bid, extensive mock-ups of the interior work were erected. These full-sized mock-ups were complete in almost every detail. They illustrated the relationship of duct runs to finished soffits and ceilings. They also detailed the correlation of finished columns details to the concealment of fin tube radiant heat and showed light covers and reflectors.

The light coves and reflectors were mocked-up three times, at considerable expense, out of drywall, sheet metal and wood. The problem: none of these resulted in the quality that the owner and the architect required.

With the issuance of the specifications, the determination was made to use a fiberglass reinforced gypsum plaster molded product for these light coves and reflectors.

The architects, Patrick & Associates of Columbus, Ohio, had designed a complicated lighting scheme for the open office area. Predominant architectural features of this lighting scheme included a light cove with a series of square corners coupled with reveals. The latter were aligned with the perimeter columns and a large light reflector above the cove light which mated to an acoustical ceiling. The bottom of the light cove beyond the reveal continued into either an acoustical ceiling, a flat drywall ceiling, or a stepped drywall soffit.

In creating the mock-ups for this project, the construction managers, Turner, Smooth and Zunt of Columbus, Ohio, had originally experimented with 30’ by 40’ light coves and reflectors of standard metal framing and drywall construction.

Such an approach offered numerous problems. How could
a contractor control the alignment of the ten individual breaks and corners? Further, how could the contractor control these conditions when the framing for these items had to be off set around the mechanical work which would be in place before the finish work started.

After attempting to build these coves and reflectors with field hung drywall and trim beads, it was decided that this look did not create the true 90° angles. Also, the end butted trim beads did not align sufficiently for the quality required. An effort was made to use wood in lieu of drywall for the finish pieces. Of course, the wood could be installed straight enough and was strong enough to help stabilize the off set framing. But the many joints could not be concealed well enough to make the whole unit appear monolithic. An alternative called for the coves and reflectors to be bent from sheet metal. Again, the metal panels had a large tendency to oil can and end butting the individual pieces together created aesthetic problems. After seeing the multitude of problems caused by the materials used in the models the decision was made to employ a product of molded reinforced plaster to try to insure the quality that this design demanded. Because of the long lead time required for both shop drawings and the making of casting molds, this product was not mocked-up.

At this time, South Texas Drywall was using a considerable amount of these performed plaster products on other projects. The company enjoyed great success with these products when the design called for a single length or radii construction. When the design called for end butting large flat pieces or when pieces with crisp sharp corners were required touch, a large degree of difficulty was encountered in controlling the quality of the finished product. It was apparent that with more than 25,000 lineal feet of coves and reflecton, a better alternative was needed to achieve the look on this project that the owner and the architect expected.

After several sleepless nights for all concerned, South Texas Drywall decided it was an insurmountable task using a molded fiberglass reinforced gypsum panel. It was decided to try turning the required corners and reveals without cornerbeads or trimbeads. By routing the backside of the drywall panels and using square edge board we could accomplish much better results. We were able to overcome the problems of critical dimensions and intersecting points of alignment of coves and reflectors in conjunction with columns, window pockets and acoustic ceilings. We made the decision to create our own mock-ups. After several attempts we constructed a prototype. In critiquing this assembly, we determined that this was a very viable alternative to what had been specified.

South Texas Drywall approached the project manager with this idea. We were told that the only way our system could be considered was that if we were the successful bidder using the specified material, we could, at the time of bid and on the bid form, offer our new product as a volun-
tary alternative for future consideration, We did what was required by the bid form and were subsequently awarded the job and our alternate was considered.

After extensive review of our prototype South Texas was allowed to install a full sized 30' x 40' mock-up on site. After an on site review our alternate was selected as the product to be used on this project.

The project required almost five miles of light cove and reflector. These 25,000 plus lineal feet all had a similar look but there were several different configurations and conditions to differing locations that presented many problems.

Typically each of the 22 tenant floors had a north and south side configuration of three 30' x 40' light cove bays which were joined by an acoustical ceiling. (see Photo 1)

The east and west side had a single 40' x 30' bay. The biggest problem presented by this layout was that single column covers on the building perimeter determined the layout of each individual light cove bay. These column covets not only concealed the structural framing but also enclosed the radiant heat piping and aligned with the glass and stone exterior of the building. (see Photo 2)

A field survey showed that these enclosures varied in all locations. This meant that each approximately 30' long section had to be either individually made or manufactured so that they could be trimmed. The basic design of the light cover had a 3/8" reveal in the bottom that in each bay aligned exactly with the corner of the perimeter column cover and continued around its 140' length. The alignment of this reveal and the corner of the column caused a zero tolerance condition.

The radiant heat riser contained in the perimeter column covers ran back to the building core.
above the light cove and the acoustical ceiling between the three bay areas. The supply air ducts for heating and cooling the interior of the rest of the space are contained in these areas. In addition to the mechanical work in this space the sprinkler piping and the structural beams were also concealed by the light coves and acoustical ceilings. The phasing of the construction of this building had these items in place before the interior finish was bid. By contract South Texas had to devise a way of installing our preformed coves and reflectors around these encumbrances. (See Photo 3)

The functions of the perimeter columns and the areas between the light coves presented several problems. We had to make the preformed product to the dimensions shown on the design drawing. These drawings called for a 2" step up from the lowest elevation. To accommodate an offset of this size we had to make down sized framing of sufficient strength to support the cantilevered light cove and act as a base for the bottom finish. This base had to be strong enough to support also the 10' length these pieces would be preformed in (See Photo 4), be able to be supported indirectly from the structure, and have a trim to length capability.

They also had to serve as the lower mounting framing for the upper reflector piece. These framing members had to have the ability to be off set to miss the obstacles either mechanical or structural but also on the correct spacing to hold the modular sections of both the coves and reflectors. (See Photo 5)

By using a laminate bottom piece of drywall and making the 90° vertical preformed parts of sufficient strength we were able to produce a product which would allow irregular attachments and be adequately rigid to hold the required shape for the entire length of the assembled preformed section.

Making the preformed panels presented several problems. We were incorporating seven separate pieces of material in the assembly of one 10' section of light cove. These parts were all individually cut, formed or joined and then assembled. As each piece was made it had to be exactly the same as all the pieces similar to it so that in assembly there would be no differences in appearance. This required a cutting jig and a setting jig for each of the pieces that incorporated our beadless corner plus a different jig for each size of piece. To further insure the straight alignment of these sections we assembled the segments in 30' or 40' lengths with the end panels aligned before they were attached together. (See Photo 6) As the panels were removed from the assembly tables they were marked for reassembly in the field.

While working with these soffit pieces on this project we noticed an amazing feature. When on site
damage occurred to one of our preformed corners, either on a wall or a soffit after it had been painted, repair work was easier and faster to complete than standard cornerbead construction. When a typical corner was struck by a cart or a scaffold the corner or trimbead would crack for its entire length. (See Photo 7) To repair this damage the entire bead had to be replaced and several spackling coats were required to get the damaged corner ready for paint. With our bead-less corner only the point of impact had to be repaired. We have found that most damage can be repaired with only one application of topping compound.

Photo 5: Framing members had to have the capacity to be off set to miss obstacles and offer correct spacing to hold coves and reflectors.
The large light reflector above the light cover offered a different problem. The high intensity light scheduled for installation in the cove would provide lighting for the open office and would wash our preformed reflector panel area. The design of this reflector required two parallel horizontal lines at either side of a flat vaulted panel.

These two lines would also parallel the edge of the acoustical ceilings on the top and the leading edge of the light cove on the bottom. These preformed panels had to mate up exactly with each other at eight different points per section. We found that we had to saw cut these panels to square then saw cut the breaks to create the desired angle of light reflection. We did this again with a series of sawing templates. After sawing the edges and the breaks we set these panels on a casting table where they would be reinforced and weighted to the required dimensions and angles while the setting mastic cured. This process created a very rigid piece, in four foot wide sections, which left the original tapered edges in place for field finishing. These panels were anchored at the bottom to the vertical framing of the light cove and were suspended at the top to mate with the future acoustical ceiling. By the strength of our reinforcing process we were able to suspend these panels with wire. This was done by avoiding all of the mechanical interruptions in the space above that would have interfered with standard metal stud framing.

Perhaps the biggest challenge to South Texas Drywall was the project completion schedule. All five miles of both the light cove and the reflector had to be installed within eight months of the acceptance of our alternate. We had to secure a plant big enough to receive the necessary materials, cut and assemble the metal components, sort and precut the drywall base material, rout and set the beadless corner and reflector pieces and have room to store these on the many jigs and casting tables while the setting process was completed as well as sorting finished panels for shipment to the job site on a daily basis. We also had to design and build all of the routing and cutting tables required for the many pieces. We had the problem of removing the drywall dust from the cutting and routing processes.

We were able to secure a lease on a building in the same area of town as our general offices which had sufficient square footage. It had the overhead and loading dock doors which would handle our material and completed product flow. The configuration of this space was also conducive to a good flow from cutting to routing to setting the individual pieces. We had the space to stock the individual preformed pieces adjacent to the assembly and shipping areas.

The design and manufacturing and sawing tables was a process which did involve trial and error at first. Removing the dust required an ingenious series of ducts, fans and collectors.

Despite the demanding completion schedule on the Bureau of Workmans Compensation project we found the time to incorporate many other applications of our beadless corner system on other projects. We used this system in our new office, warehouse and shop complex. We worked with several retail outlets in the new Nationwide Insurance Company.
building which share a common atrium with the BWC building to add crisp details to the finish work on their new stores. We use this product to produce simple rectangular column covers and soffits on several projects this past year.

We at South Texas are extremely proud of the quality of our new product and have applied for a patent on this process. As a contractor doing manufacturing we seem to have found the key to the many needs of owners, architects, designers and contractors in completing both difficult and simple drywall assemblies with our beadless corner system and our continuing concern for both quality and workmanship. 📸

Photo 7: When a corner was struck, entire length cracks were avoided because the beadless corner needed repair only at the pint of impact.