

8

Checking Alignment

Once form walls are completely assembled and braced, check the accuracy of the form's straight walls by stretching a stringline from corner to corner. Compare the alignment of the assembled wall and string. It may be necessary to adjust lateral braces or additional braces, to bring wall into full alignment. (*diagram 8-1*)

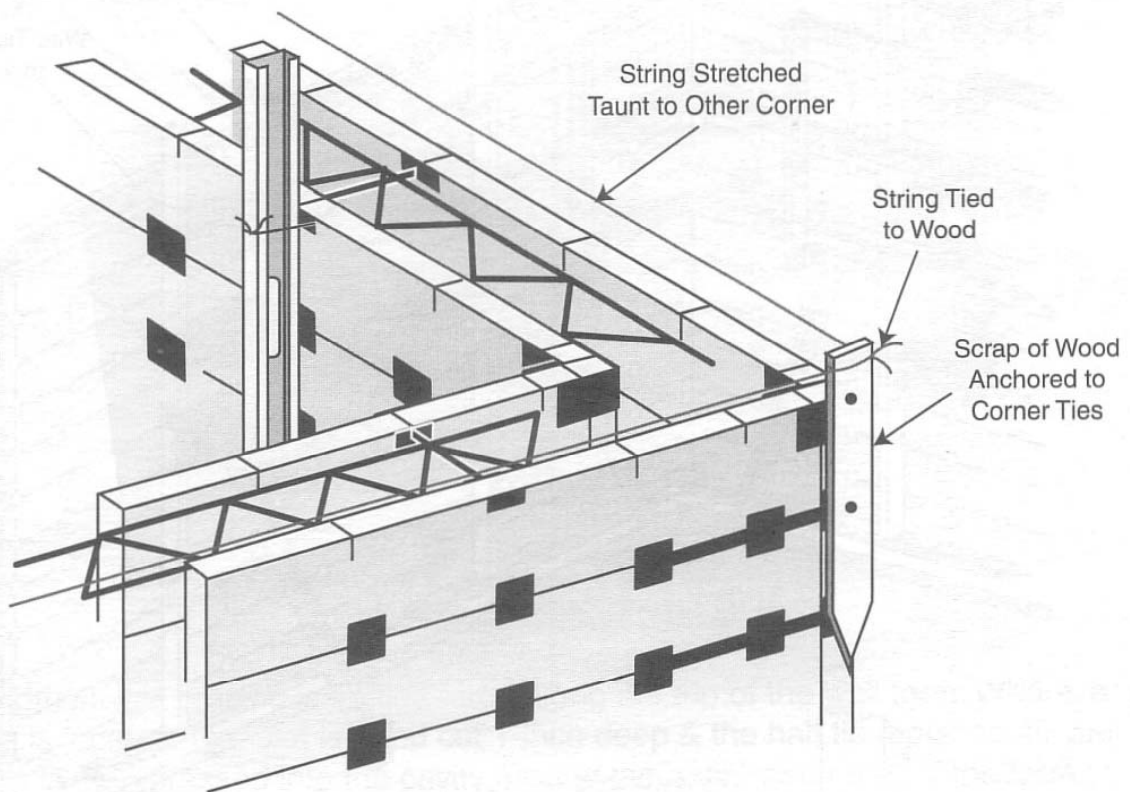


diagram 8-1

Before Pouring Concrete, Complete Check List!

- ✓ All ties are in place
- ✓ Rebar is in position
- ✓ All bracing is safely anchored in place
- ✓ Blockouts & bulkheads are braced
- ✓ Final check on dimensions & alignment

9 Blow-Out Repair Kit

A blow-out repair kit should be made BEFORE the concrete arrives. It is used to repair a form blow-out or break and is constructed of 2 pieces of wood 2x4s approx. 18-inches long, a piece of 1/4-inch thread rod, nuts, and washers. Thread rod must be long enough to go through the forms and 2x4s. (diagram 9-1)

As concrete is being placed, forms should be visually checked for possible breaks. Form breaks rarely happen but when they do, it's important to stop pouring the concrete as soon as possible...remove the built-up concrete from opening and reposition or replace the broken form pieces. Repair kit is placed over both sides of the break and tightened snugly. Resume placing concrete and remove kit in approximately 30 minutes. Holes created by the blow-out kit should be filled with expandable insulation or fresh concrete to insure against water penetration later. (diagram 9-2)

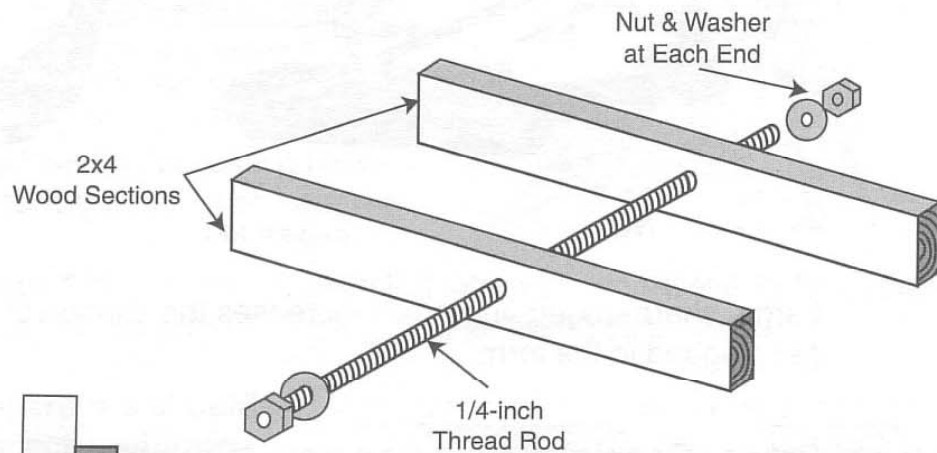


diagram 9-1

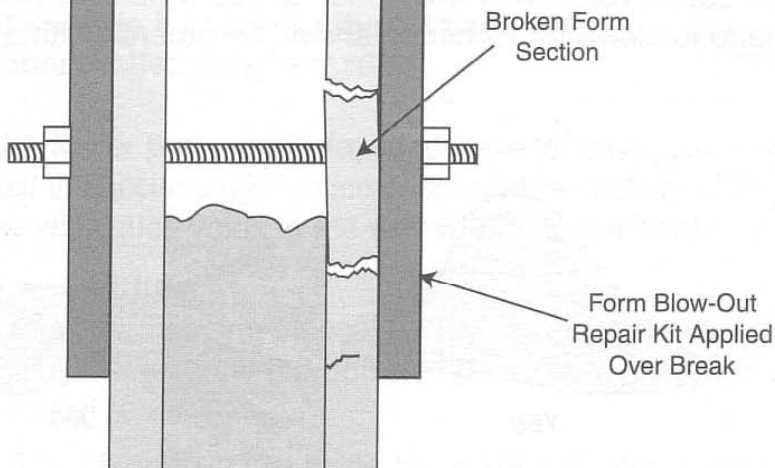


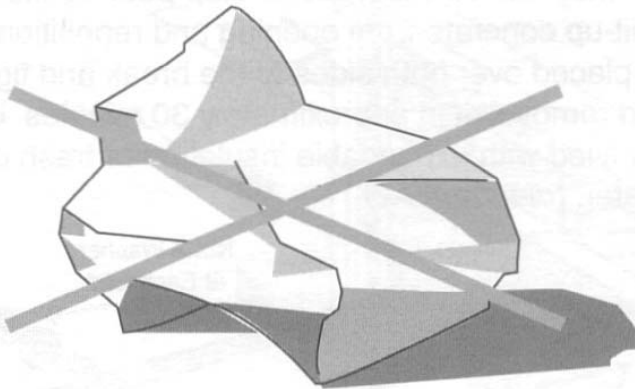
diagram 9-2

10 Concrete Specifications

Size and Type of Concrete "Aggregate"

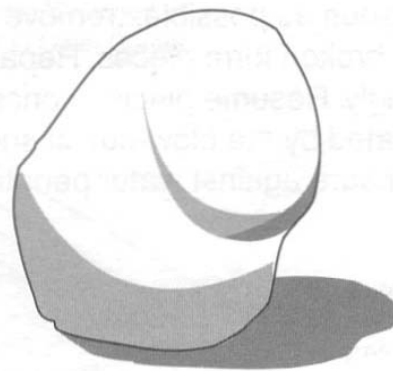
Aggregate refers to the rocks and stones in the concrete. Concrete suppliers must receive clear instructions on the proper aggregate size and type. Smooth aggregate of 1/2 to 3/4-inch is recommended. (diagram 10-1)

Sharp Aggregate



NO

Smooth Aggregate



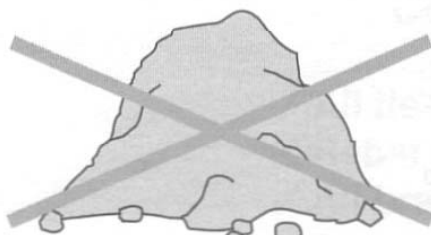
YES

diagram 10-1

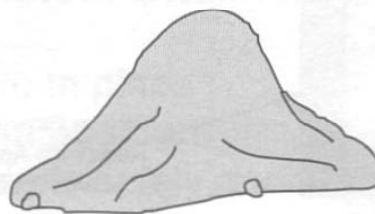
Large, sharp-edged aggregate increases the chance of concrete to lodge or get plugged in the form.

Proper Consistency of Concrete "Slump"

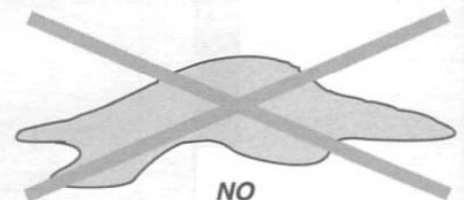
Slump refers to how thick or thin the concrete mixture is. Very thick concrete doesn't fill the forms well and may cause voids. Very thin concrete pours well but increases form pressure and may lead to blowouts. Concrete should be ordered with a 4 to 6-inch slump. (diagram 10-2)



NO



YES



NO

diagram 10-2

Concrete Specifications *continued*

Placing the Concrete

Concrete is often placed in the insulating form walls with a concrete pump. Be sure and follow these simple steps so that your project goes well:

a. Do **NOT** insert the delivery hose straight down, into the form. Lay the hose flat, on top of the form and let concrete drop naturally into the form. If your concrete supplier has them, request two, 90° elbows for the end of the delivery hose. The elbows reduce the pressure of the concrete as it is being placed. (*diagram 10-3*)

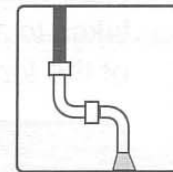
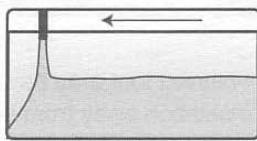
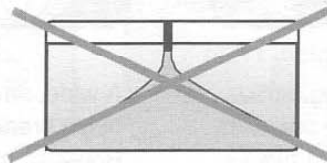


diagram 10-3

b. Do **NOT exceed 4-foot lifts** at a rate of approximately 8-feet per hour. Pouring in higher than 4-feet can cause immediate form failure. (*diagram 10-4*)



Move Around the Top
of the Entire Form



Do NOT Stay in
One Spot and Pour

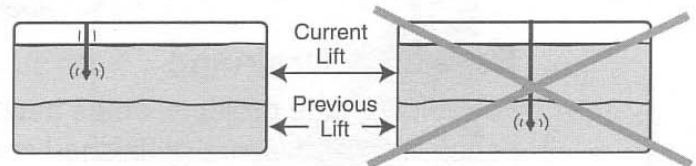
diagram 10-4



c. Use a 3-inch delivery hose. If necessary, have your concrete pumper supply a reduction coupling.

d. Do **NOT** pour into forms which are over 12-feet tall. If total wall is to exceed 12-feet, stage the project as two separate pours with reinforcing steel between cold seams.

e. **Only experienced operators should be allowed to use an electric vibrator with 1-inch head to consolidate concrete. Concrete can also be consolidated from the outside by tapping the tie pads with a rubber mallet.** (*diagram 10-5*)



Do NOT Extend Vibrator Into Level of Previous Lift.
Doing so can Cause Immediate Form Failure.

diagram 10-5

f. If a winter project is delayed for several days, assembled forms should be covered to avoid the accumulation of ice or snow at the bottom of the form. If this debris is not removed, they will cause voids in the wall when the concrete is placed.

Form Settling

As concrete is being placed, a small amount of settling or compacting of the forms may occur. This is due to the downward pressure (by the concrete) on the plastic spacer ties and steel rebar.

An 8-foot high form can settle 1/4 to 1/2-inch after concrete is placed. This minor difference in height is not a problem on most projects. If minor differences in height or accuracy are critical, allowance should be made prior to placement of concrete.

11

Stripping & Backfilling

Stripping the Insulation

If the forming insulation is to be stripped off after concrete placement, the form must be assembled using XPS (Extruded Polystyrene) insulation planks. Planks should not be treated with release agents prior to assembly. Care should be taken to assemble the form so that the manufacturer's imprint is on the OUTSIDE of the form.

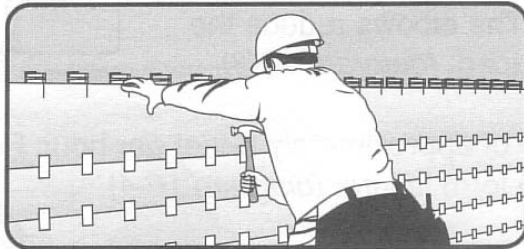


diagram 11-1

To prepare insulation for stripping, strike the head of the exposed plastic tie pad with a hammer, breaking it loose from the tie.

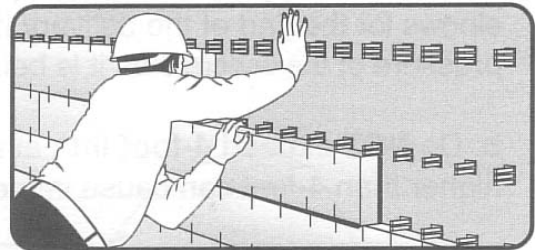


diagram 11-2

A wide, smooth-bladed tool may be used to begin breaking insulation away from concrete. However, most planks can be removed by hand and salvaged for assembly into another form.

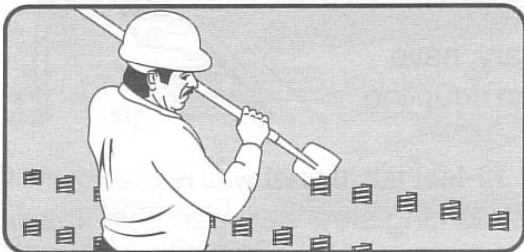


diagram 11-3

Once insulation is removed, a sharp-bladed tool is used to cut plastic ties flush with concrete surface. For best results, insulation should NOT be stripped SOONER than three days after concrete placement.

Backfill & Drainage

For below-grade projects, steps must be taken (BEFORE backfill is placed) to avoid water penetration and failure of finished concrete walls. Local building code officials are familiar with the techniques which are recommended or required for their area. Some common techniques are:

1. Cover footing and wall (up to grade) with proper waterproofing material*
2. Install a drainage system at the footing
3. Add backfill material which promotes good drainage
4. Site should be landscaped to avoid water build-up near the wall
5. Include a rain gutter system to catch and move water away from wall

Backfill should be done NO SOONER than 48 hours after concrete placement. Care should be taken when operating heavy equipment near the wall to avoid damage to it.

*To avoid damage to the insulation, select products which are specifically approved for application directly over rigid Polystyrene insulation.

12 Exterior Finishing

Wait approximately 12 hours after inserting concrete, then remove all bracing. If a portion of the insulation form is to be removed, it should be done now by breaking the outer tie pad with a hammer (*diagram 12-1*) and prying the foam form off by hand. (*diagram 12-2*) Then cut the tie pads from the concrete with a sharp blade such as an ice scraper or straight edge spade. (*diagram 12-3*)

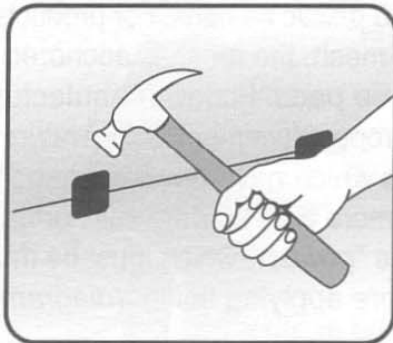


diagram 12-1

A Hammer Can be Used to Break the Outer Tie Pad.

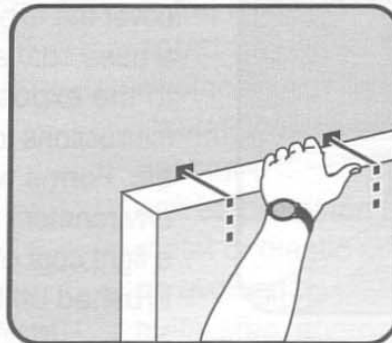


diagram 12-2

Insulation is Slowly Pried Off by Hand and May be Used Again.

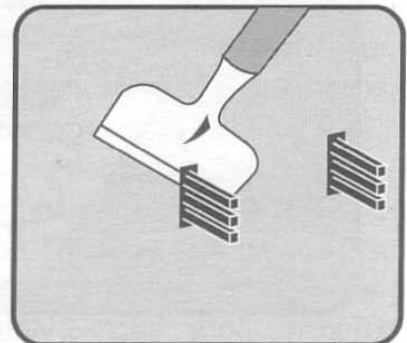


diagram 12-3

Blade is Placed Between Concrete and Forming Tie.

Below Grade Finishing

Local building codes may require different treatments. Follow manufacturer's directions for all products.

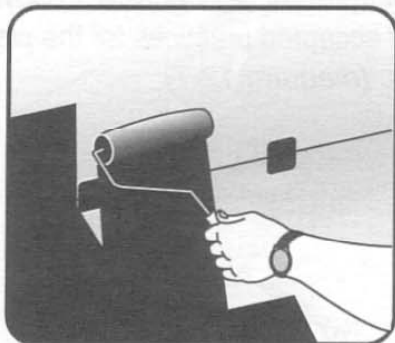


diagram 12-4

Damproofing

Select only latex or low-solvent liquid damproofing which is approved for application directly onto rigid polystyrene insulation. Apply a liberal coating directly onto the form, sealing around the exposed plastic ties and seams in the form wall. (*diagram 12-4*)

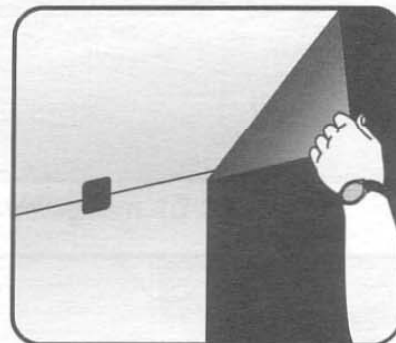


diagram 12-5

Waterproofing

Self-adhesive membranes or approved liquid waterproofing materials can be applied directly to the form walls. Follow manufacturer's recommendations for application directly onto rigid polystyrene insulation. (*diagram 12-5*)

Exterior Finishing *continued*

Above Grade Finishing

Local building codes may require different treatments.
Follow manufacturer's directions for all products.

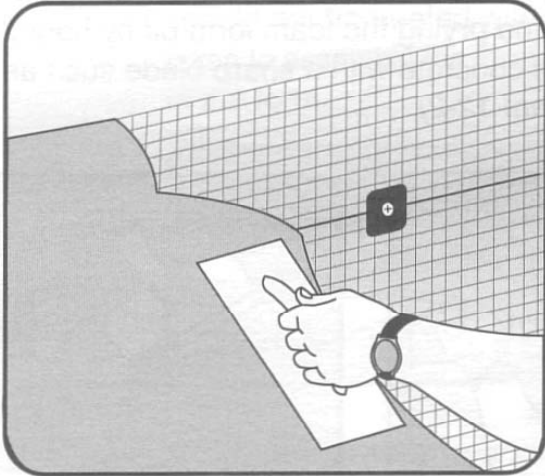


diagram 12-6

Stucco, EIFS, Synthetic Masonry

Insulation surface must first be roughened by sanding or scratching. For single coat products, a generous coat of material is recommended to thoroughly cover the exposed plastic tie pads. For products having a base coat and mesh, the mesh is anchored directly to the exposed tie pads. Follow manufacturer's instructions for proper placement, temperature control, etc. Forms walls which have been exposed to the environment for more than 90 days will normally have a light coat of fine "powder" which must be thoroughly brushed off before applying finish. (*diagram 12-6*)

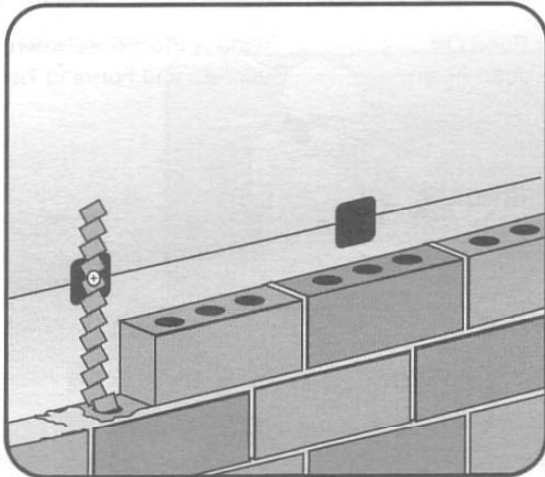


diagram 12-7

Brick

With a concrete brick ledge, brick veneer (fascia) can be added directly over the form walls. Brick anchors may be attached to the exposed plastic tie pads or may be inserted through the form wall, into the form cavity, prior to placement of concrete. Follow local building codes or accepted practices for the placement of brick anchors. (*diagram 12-7*)

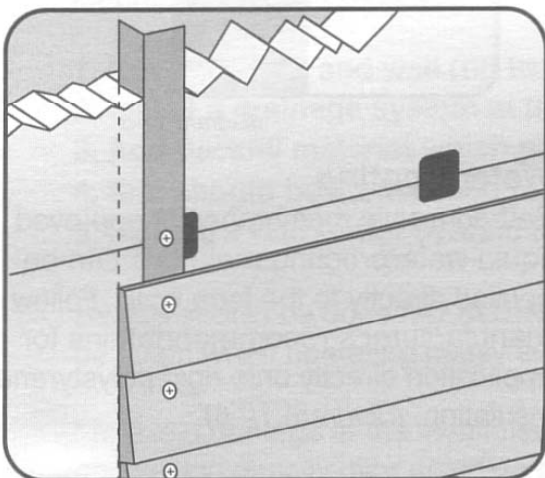


diagram 12-8

Siding

Wood, metal, or synthetic siding may be added directly to the form walls. This is done by attaching a continuous vertical drywall metal "L" (1/2"x1") furring strip to the tie pads. A 1-inch deep vertical slot is first cut next to a row of tie pads using a saw or hot knife. The "L" angle is inserted into the slot and anchored to the tie pads. Follow manufacturer's recommendations for proper spacing of furring strips and anchoring of siding (*diagram 12-8*)

13

Interior Finishing

Electrical/Plumbing Lines

Follow local codes for the types of electrical and plumbing components which are acceptable for the project.

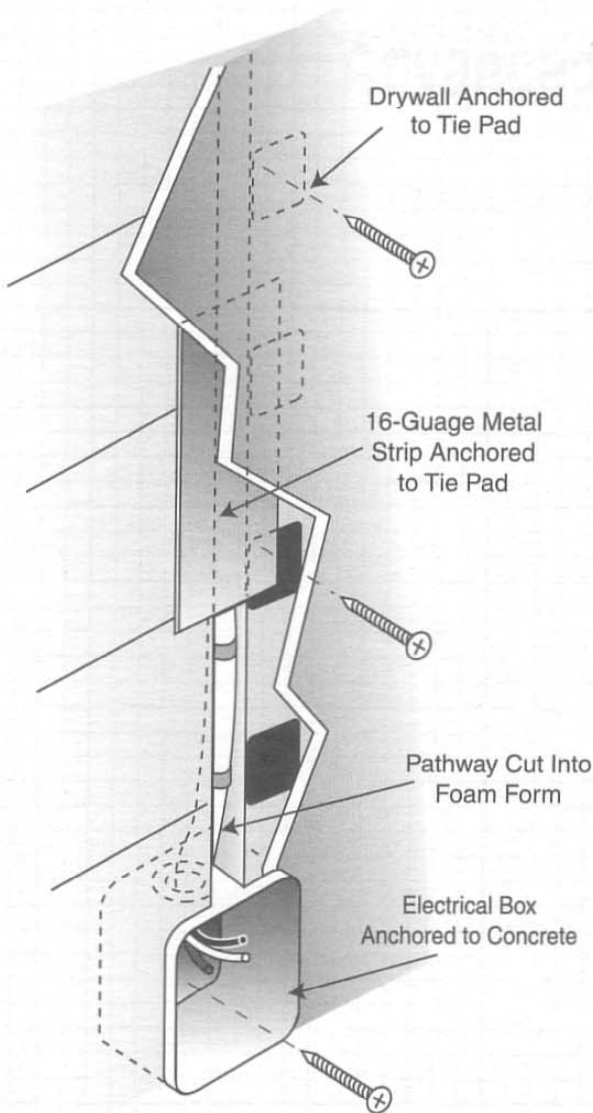


diagram 13-1

Electrical and plumbing lines are concealed in the insulation by cutting or carving a pathway approximately 1½-inches deep with a saw, router, or electric hot knife. For junctions or switch boxes, insulation is completely removed and items are anchored directly into the concrete. Electric lines can be protected by running them inside approved metal or plastic conduit. Damage to lines can also be avoided by covering the pathway with a 16-gauge metal strip, approximately 2-inches wide, anchored to the exposed tie pads with a drywall screw. (diagram 13-1)

Electric lines can be held to the back of the pathway by using approved electrical anchors or expandable insulation placed approximately 2-feet apart.

Drywall

Sheetrock is attached with drywall screws anchored into exposed tie pads, every 16-inches on center. Typically, a vapor barrier is not required, behind sheetrock. (diagram 13-2)

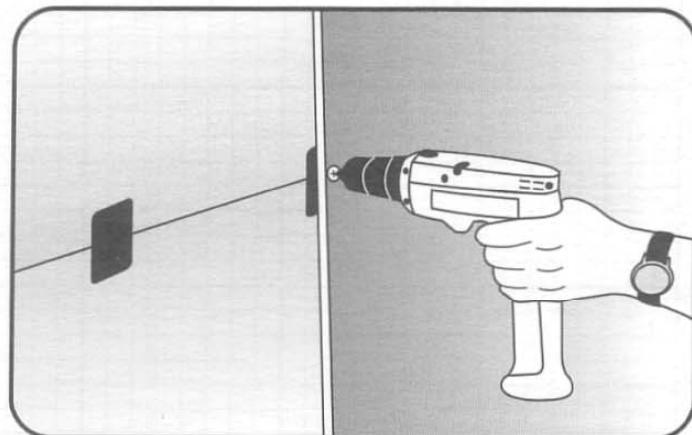


diagram 13-2