Nations Drywall

The Drywall Do-It-All Team

How to Install Drywall:

The most detailed eBook about drywall/finishing that you will find...ever!

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Introduction

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The complete drywall manual.

I always tell my customers that drywall is one of the fields that you can't just pick up a book and figure it out (which is true), however anybody with some mechanical skills can learn, and with enough time you can get the drywall looking as good as the professionals do.

To introduce myself, my name is Richard Nation and I am the owner/operator of Nations Drywall Repair. We are a small company based out of the St. Louis, Missouri area. I have been in business since 2007 and I have been working specifically in drywall repair since 2001. The fellow that taught me the trade started working with drywall in the 70's. I was fortunate to learn from a truly experienced guy.

I also enjoy billiards, guns, the outdoors and grilling … just in-case you're interested.

Now that we got that out of the way, I'll let you know what to expect out of this book. We will travel through every aspect of drywall that you will need to know in order to properly calculate your materials, install and tape/finish your drywall. I will insert photos within the book in order to better explain the process. Remember that purchasing this book comes with 30 day support, meaning you can call me with any drywall questions that you have within the 30 days and I will answer them personally. My business phone number will be provided.

Special Note:
It is the author's suggestion that you read each section before physically doing the step. The reason is because special notes are posted at the end of each section and will include important information. The notes are put at the end of sections because you will learn the concept of the step first then the special notes will make more sense.

Getting Started

Determine the type of drywall you need first.

Figuring the drywall type and count for your project, plus getting a materials list for everything else. To begin, you will need to do some figuring. For all the areas that do not need a special drywall, you can use regular ½" drywall. Find the answer to the following questions so you can determine the type of drywall that you will need first.

- **Contact your local building office to check for any drywall specifications or requirements that you should comply with, such as "Fire Rated Walls". This determines the need for "Type X" drywall.**
- **Are you going to hang the drywall vertical or horizontal? This determines the sizes of drywall.**
- **Is there going to be any "wet" rooms (bathroom and/or kitchen)? This determines the need for "mold/moisture" resistant drywall.**
- **Is the ceiling height 96" or less? This determines the need for "stretch board" (54" wide instead of 48" wide).**
- **Do the ceiling rafters span bigger than 16" OC (On Center, meaning- 16" from center of stud to center of next stud)? This determines the thickness of your desired drywall.**

Check with your local building office first

You will want to call them first and ask what drywall specifications they require. Even if you are not pulling a permit (in which case do not give them your address) it is wise to find out what the common building practices are in your local area.

Most municipalities have some sort of fire rating code, this is your main concern. Typically the common wall between the garage and the house will be fire rated and also the ceilings. A 1 hour fire rating requires 1 layer of 5/8" Type X Fire Rated drywall and 1 layer of tape/mud (tape coat). Some places require 2 hours (mostly condos or apartments; multi-family dwellings) which is 2 layers of 5/8" Type X Fire Rated drywall, each one with a layer of tape/mud. Also on 2 layers, none of the seams can match from layer 1 to layer 2.

A secondary question is to ask them if they have any requirements for screw spacing. This isn't as important because we tend to over screw anyways but if you're pulling a permit then you'll want to know this.

Are you hanging vertical or horizontal?

There is a little explaining to do before you decide this but I will make it as simple as possible.

Special note:
*****Flat seams are the seams located on the long dimension of the drywall, where the indented side of the drywall meets up with the indented side of the other drywall. These are easiest to tape/finish.*****
*****The butt joints are the opposite, it is where the end of the drywall butts up against the end of the other piece of drywall. These are the tougher seams to tape/finish and typically require to be floated out in order to appear smooth.*****

Here's what to consider:

- **First, if your framing is metal stud, always hang your drywall vertically.**
- **Second, hanging drywall vertically creates more linear footage worth of seams in most cases. However, they are all "flat" seams so the butt joints are eliminat-**

ed, which makes the taping less difficult. If the framer did not properly frame 16" OC (on center) you cannot hang vertically.

- **You can hang some walls horizontally and some vertically. We do this because we prefer to run our seams horizontally instead of vertically, this is only when no butt joints will be present.**
- **One danger to hanging vertically on wood studs is that if a seam lands on a twisted stud you will have a tough seam to float out.**
- **Another point against hanging horizontally on wooden studs is that it makes the structure stronger by attaching studs "together" over a longer span by way of drywall. This extra strength may or may not be needed.**

From here you will have to decide which hanging direction you choose. There is no "one size fits all" answer here.

Bathrooms/Kitchens

Typically, in bathrooms and kitchens you want to use a mold/moisture resistant drywall. Notice the word "resistant" and not "water proof", some people get these mixed up, it's important that you don't. In full size bathrooms (meaning there will be a shower or bathtub present), we install the whole thing with mold/moisture resistant drywall, including both ceilings and walls. **If your tile guy recommends something else like Durock or Hardiebacker for tile areas then you should follow those instructions instead.**

In half baths (no shower or bathtub) and kitchens we install mold/moisture resistant board only on walls with plumbing.

The same concept should be used anywhere in the house with plumbing. For example: slop sinks, washer/dryer rooms, wet bars. Make sure that you install mold/moisture resistant drywall on the walls with plumbing in them.

Height of walls

Standard Drywall comes in sizes of 4' (48") x 8' (96"), although there are different lengths such as 10', 12', 14' etc. If you have a majority of the walls in your house that are at a height of 98"- 110" then you will want to buy "stretch" board which comes in the dimensions of 54" x 10' (they do not sell this in 8' lengths that I could find) , again there are 12', 14' etc. lengths in this size also.

The reasoning behind using "stretch" board is that you eliminate a "flat" tape seam. Quick math will show us that 4' + 4' = 8' and 4.5' + 4.5' = 9'. So a wall that is 9' tall by 9' wide would require 2 sheets of 4.5' x 10' drywall.

Spacing between rafters

This is a simple concept. Have you ever seen drywall on a ceiling that was actually wavy? It looks horrible. What happens is this; the weight of the drywall pulling down in-between rafters will actually cause the drywall to sag. The time frame will vary depending on rafter spacing being 16" OC or 24" OC, the greater the distance in rafter spacing, the faster the sagging will occur.

In order to prevent that, we hang all of our ceilings with 5/8" Type X Fire Rated drywall whether it is required or not. This is optional because sagging ceilings usually take a long time to occur. The trade-off here is: In 1 hand you have 5/8" heavy drywall that costs more and is tougher to install but will ensure that your ceilings stay flat for a very long time (more than likely throughout your life time), on the other hand you can use regular ½" drywall which is light weight, cheaper and easy to install but you will definitely get sagging ceilings eventually.

Figuring your drywall count

There are 2 popular methods of figuring out your drywall count.

1. One method simply gathers the total square feet of drywall needed then divides by the square foot of the desired size of drywall to be used, ie; 4' x 12' drywall would equal 48 sq. ft. divided by the total square foot needed which equals the total sheets of drywall needed for the job. Make note that most people will deduct roughly 10% for waste, ie; windows and doors.

A simple example would be a room that has a total of 276 sq. ft. of wall and ceiling space and we are hanging 4' x 12' drywall. 276 divided by 48 = 5.75 so I will round up and get 6 sheets of 4' x 12' drywall.

I prefer to be on the safe side and have some extra sheets of drywall on site in case a couple pieces get cut wrong or are damaged.

2. The 2nd method is to measure out each wall individually and get drywall sizes to fit each wall. This is my preferred method because you end of with less tape seams which equals less things to go wrong in the future. This method does create more drywall waste so it will cost a little bit more on the drywall itself, but could be considered a fair trade for time saved in the future. This method will also give you a bunch of stacks of different size drywall laying around. It's not a big deal but can be a little confusing when trying to keep track of what size goes where.

A simple example here would be a wall that is 7' wide and 8' tall. I simply buy two 4' x 8' sheets of drywall. A wall that is 11' wide and 8' tall, I buy two 4' x 12' sheets of drywall.

*****Pro tip for saving money: Save your bigger pieces of scrap, you will more than likely use them and be able to save full sheets in the process.***

Again, I would play it safe and have a few extra sheets of drywall.

Tape, Mud and Corner Bead

Must haves for any draywall projects

Tape

This method may sound a little tricky but it's not. For each sheet of drywall add up the perimeter dimensions to get the linear footage. A 4' x 8' sheet would be 4 + 4 + 8 + 8 which equals 24 linear feet. A 4' x 12' sheet would be 4 + 4 + 12 + 12 which equals 32 linear feet. Add up the total linear footage and then divide the roll size you purchase by the total footage. Tape rolls come in 250' if you're using a banjo, or 500' if you're taping by hand.

Example: I have 21 4' x 8' sheets. **4 + 4 + 8 + 8 = 24**, 24 linear feet per sheet multiplied by 21 sheets = 504 linear feet. So I purchase two 500' rolls of paper tape or three 250' rolls of paper tape.

You will also want to buy fiber-mesh tape for your corner bead. The rolls of fiber-mesh tape are typically around 500', you will have to add up the linear footage of your corner bead to see how many linear feet of mesh tape you will need.

Mud

You will be using 2 types of mud. All-purpose and Light weight.

All-purpose is only used for the tape coat, it has glue mixed in it that helps bond the tape and drywall together. It is noticeably heavier than light weight and is a pain in the rear to sand. Do yourself a favor and set it aside when you're finished so you do not accidently use it on finish coats. Figure on buying 1 bucket per 500' of paper tape.

Light-weight mud is used on the bed coat and finish coat. It is easier to apply, shrinks less, gets less air bubbles and is easy to sand (almost too easy so be careful). Figure on buying 1 bucket per 10 sheets of drywall.

Corner Bead

There are many types of corner bead available but I prefer the good ole' metal corner bead to anything else on the market. It'll take a descent beating and will give you good crisp clean lines.

This is sold in 8' and 10' sticks for the most part. Just add up your corners to see how many pieces you need. Try not to have any seams unless the area is over 10' and 1 stick simply won't be long enough.

Screws, Nails and other Misc.

Must haves for any draywall projects

Screws

The basics here is that you will use approximately 1 screw per square foot of drywall. There is approximately 320 screws in a pound (the stores sell them by the pound), which means that you can cover approximately 320 square feet per pound. To be safe we will say 300 square feet, so divide 300 into your total board footage and you will have the number of pounds you need.

We use screws for 100% of our drywall and I recommend this. This will save you from nail pops later on.

You will use 1 ¼" screws for ½" drywall and smaller. Use 1 5/8" screws for 5/8" drywall. Coarse thread for wooden studs and fine thread for metal studs.

Construction Adhesive

If you want to use the "screw and glue" method you will want to buy construction adhesive also. Using "glue" or construction adhesive on the studs is done in quite a few areas of the USA. The general consensus seems to be split down the middle when it comes to the question "glue vs. no glue". We personally don't use it because we make sure our screws are set the correct depth, in this case they're not too deep so we don't have to worry about screw pops later on.

The method here is 1 quart size tube (big tube) per 144 sq. ft. For example, a 700 board ft. job would require 5 quart sized tubes. This will vary a little bit depending on how thick your beads are.

Nails

If you decide to use nails then figure the poundage into the above equation. The other use for nails is for installing metal corner bead.

Staples

We use 1 ¼" staples for our metal corner bead. It is a lot faster than trying to nail each stick and holds just as well. I would recommend this method. Depending on how much corner bead you have will determine how many staples you will use. Buy a medium size box and you should be fine.

Butt Boards

These are a newer product that has been out for a while. Like gluing the drywall, this method has mixed reviews. The concept is that they eliminate butt joints and create a "fillable seam". Also, since they are not part of the framing structure, if the studs twist the seam will not crack because it is "free floating". This method also saves time and difficulty on finish work.

We use them and love them. You will use 1 piece per

butt joint and they cost roughly $4 each.

Sanding

We use “fine” grit sanding sponges for our sanding. If you use a pole sander or something else make sure you get something like 220 grit. If the grit is too heavy you will mess up your finish work.

What you should have now

At this point in the game you should have a complete list of materials that you can take to your local building store. At the time of this writing 1/20/17 Menards is the cheapest place in my area to purchase the material. I am not endorsing them, just throwing out my source for the time being.

Depending on the size of your job it may be more economical to have the drywall delivered. It is a strenuous job and can take a lot of time/energy.

Time to start hanging

Are you done yet? Haha, that's an inside joke that is only recommended for certain types of people.

Anyhow, you have the materials delivered and your screw guns, Routers and lights hooked up. Time to start.

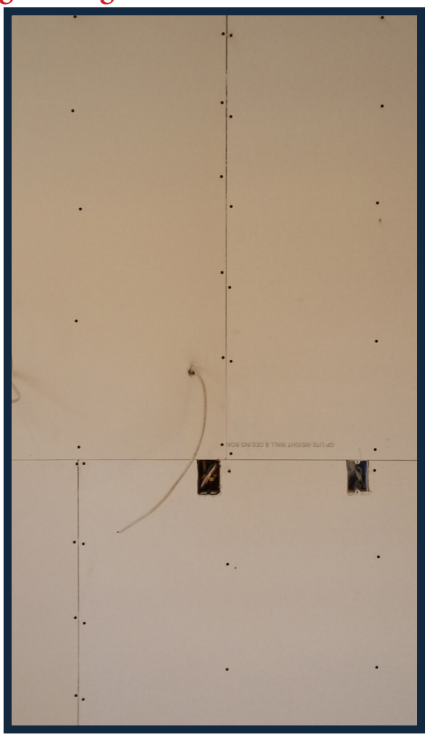
Tools Needed: (Figure 1-1)

- **Drywall T-Square**
- **Drywall saw**
- **Keyhole Saw**
- **Tape Measure**
- **Razor Knife**
- **Pencil**
- **Chalk Box**
- **Drywall Foot Jack**
- **Waffle Hammer**
- **Rasp**
- **Screw Gun**
- **Router (trade out for Circle Cutter)**
- **Circle Cutter (trade out for Router)**
- **Caulking gun (optional if you use construction adhesive or not)**
- **Tin snips**
- **Air Stapler (can be traded out for ring shank nails and waffle hammer)**

(Figure 1-1)

Important Notes:

- **The ceiling always gets hung first and you install drywall perpendicular to the rafter. If the rafters are running North and South then the drywall will run East and West.**
- **When fastening drywall horizontally, on the "butts" apply the screws every 6" - 8". When fastening the rest of the drywall apply screws every 12", this equates to a screw on the top and bottom, then 3 screws in the field (middle). (Figure 1-2)**
- **When hanging the drywall vertically, apply screws every 8" - 12" from floor to ceiling.**
- **The drywall will always get cut to fit between ½" – 1" above the floor. There may be a few exceptions but they are rare.**
- **Always stagger your butt joints from row to row, never let them line up.**
- **Always use the biggest pieces possible, the least amount of seams equates into a lesser amount of things to go wrong in the future.**



(Figure 1-2)

Measuring for your drywall

You begin by measuring for your first sheet of drywall, start on a ceiling in a corner somewhere. I like to do the biggest areas first while I'm still running at 100%, especially on ceilings.

Make a habit of pulling your numbers from the same direction, it will save you time and headache in the long run. I always pull numbers from my left and go to the right, and I also pull from the top and go down. You can do whatever feels more natural to you, **the main point is to find consistency.**

When measuring, I like to get all of my vertical numbers first. These would include things like:

- **The overall length of the drywall**
- **Electrical boxes (vertical measurements only)**
- **Bathtubs (vertical measurements only)**
- **Doors (vertical measurements only)**
- **Etc.**

Once I have those numbers in hand I get my horizontal measurements which would include the same as above, except the horizontal side. The height of the drywall would be included in this.

If you're not using Butt Boards then the length of the drywall will always break on the center of a stud.

If you are using Butt Boards then your length will always break in the center of the stud cavity. (Figure 1-3)

(Figure 1-3)

Marking and Cutting your drywall

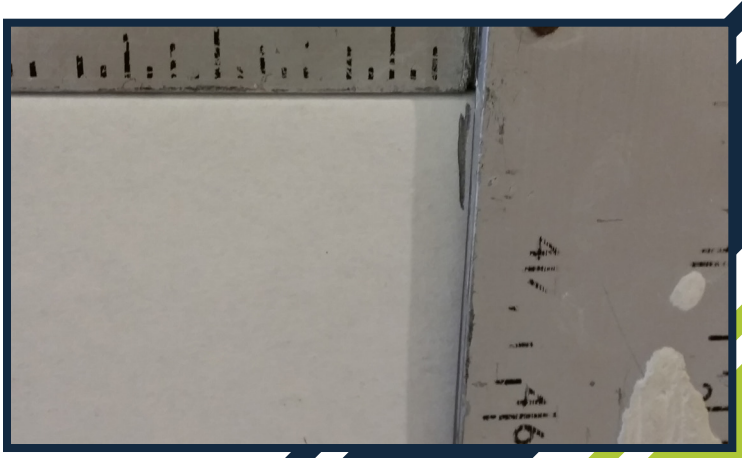
When you mark your measuring points on the drywall make sure that you "pull" from the same side that you originally measured from. Like I mentioned above, this part is critical in projecting your measurements to the drywall consistently.

Mark all of your vertical numbers on the drywall with a line (Figure 1-4), then expand the line with your T-square and a pencil if needed (Figure 1-5).

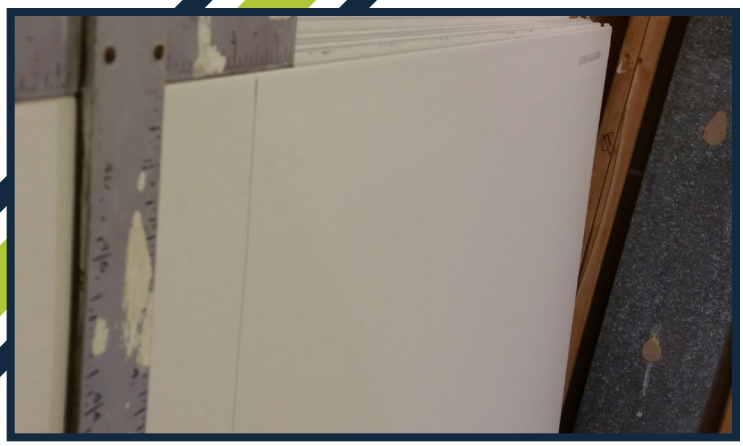
Then mark all of your horizontal numbers with a line, then take your chalk box and snap lines if needed. (Figure 1-6)

Now, with a combination of your keyhole saw, big drywall saw and razor knife, cut the drywall into your desired shape and size.

(Figure 1-4)



(Figure 1-5)



(Figure 1-6)

Hanging your drywall

It's always best to have 2 people when hanging. One person should be a dedicated "screw off guy", that title carries a lot of conversation pieces. The other person is the "lead guy" who measures, cuts and helps tack up the drywall.

Sometimes **it's smart to mark your studs first so that when you hang the drywall you can clearly see where to install your screws**, especially on the ceiling where you don't want to waste time stud searching while holding heavy drywall. This equates into "wasted energy", which you'll want to minimize for endurance purposes. (Figure 1-7)

(Figure 1-7)

If you decide to use glue, squeeze it on the studs in 3/8" beads approximately 40" - 42" long. That will leave a few inches on each side of the drywall with no glue.

Hang the ceilings first and walls second.

Always stagger your butt joints.

Put your screws in straight, if your screw gun is tilted, the corner of the head will protrude outside of the drywall and create more work for you because they will have to be set deeper or removed and replaced.

When fastening drywall horizontally, on the "butts" apply the screws every 6" - 8". When fastening the rest of the drywall apply screws every 12", this equates to a screw on the top and bottom, then 3 screws in the field (middle). (Figure 1-8, not affiliated with any notes)

(Figure 1-8)

When hanging the drywall vertically, apply screws every 8" - 12" from floor to ceiling.

When hanging drywall with another person try to lift and move the drywall in a synchronous manner. This will reduce what I call "wasted energy". In other words try not to fight each other with the drywall.

Make sure your seams and "cut outs" are as tight as possible.

Before you get started taping, you need to go back through and check all of your screws. Make sure that all of the

misses were removed and the dimples are pushed in. If you see areas that need screws, add them. Also check the screws to make sure that they're all set to the correct depth. Sometimes screws that are pushed in at an angle will have a corner protruding outside of the drywall paper, those will need to be set deeper or replaced. (Figure 1-9, not affiliated with any notes)

(Figure 1-9)

Special note:

*****This note pertains to installing drywall on an outside corner where corner bead will be installed. Always drywall the walls first and the returns last (returns are the narrow areas). When installing drywall on the returns, make sure the drywall stops at the end of the stud or no further than 3/8" past the stud, do not have the drywall overlap the other side by too much. Your margin of error is up to 3/8", which is pretty doable. The reason for this is because installing the corner bead is better when you can push it back/tight a little, this cannot be done if the drywall is completely overlapped.*****

(Figure 1-10) ***(Figure 1-10)***

Using the Router for cutting out boxes and other objects

The preferred method for cutting out boxes is with a Router. Make sure that you use the guide-point bits which have a smooth tip on the end to ensure you don't chew up the boxes.

Special notes:

*****Typically you will use a smaller bit for the boxes and finesse cuts and a bigger bit for cutting out doorways and windows. The bigger bits don't break as easy so you can cut faster without concern of it snapping but they are too big to use around electrical boxes. We use the smaller bit for everything to keep it simple and just take our time around windows and doorways.*****

*****Take your time while doing this until you are comfortable. If you mess up this process you can create a considerably large amount of extra work depending on how many cut-outs there are*****

When you run across an electrical box or other type of component that will be cut out with your Router make sure you measure and mark somewhere that will allow you to find the center point of the component when it is covered up by drywall (Figure 1-11). Typically, we mark on the drywall next to the box (if it's already hung) or on the floor, but anywhere will work.

When you have the measurements and are confident that you can cover the box and still find the center point then tack up your sheet of drywall. Do not screw off the entire

sheet, actually refrain from putting screws in the proximity of the box until it is cut out or you run the risk of damaging the drywall.

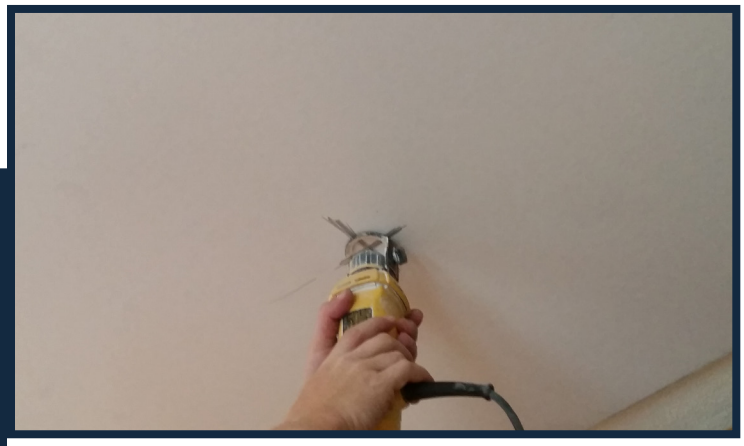
(Figure 1-11)

When the drywall is tacked in place, get your measurements and mark the drywall (Figure 1-12). This

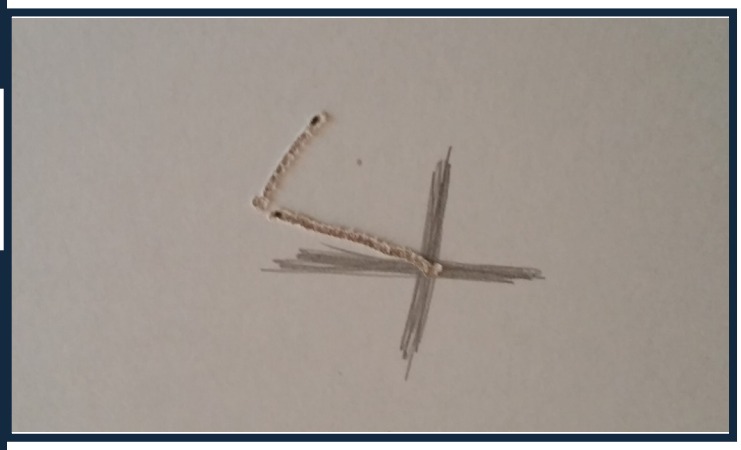
(Figure 1-12)

mark should be close to the middle of the box. It does not have to be exact, in fact when you get more comfortable with this process you can measure closer to the outside of the box to speed things up a little.

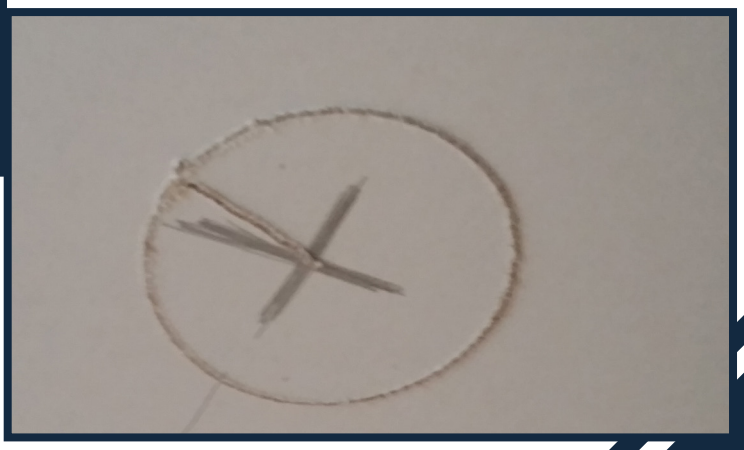
With your drywall marked and your Router in hand, turn it on and insert it onto your mark (Figure 1-13). Move until you hit the perimeter of your box and make sure to not go too far (Figure 1-14). Once you hit the perimeter, remove the Router and place it on the outside of the box.
Take your Router counter clockwise full circle (or square) applying a little pressure towards your component as you move. (Figure 1-15)
When your box is cut out you can finish screwing off that sheet of drywall. (Figure 1-16)



(Figure 1-13)



(Figure 1-14)



(Figure 1-15)

(Figure 1-16)

Installing corner bead

You will install corner bead on every outside corner where drywall butts up to drywall. There are instances where drywall may butt up to paneling, concrete or some other type of material and you will use "L bead" instead, it is installed the same way.

I'm going to cover installing metal corner bead because that is the most widely used type of outside corner system used in America, and I believe it to be the best as of right now. There are too many other types of corner bead out there to go through them all.

(Figure 1-17)

Special Notes:

*****Corner bead should be cut as tightly as possible without warping it.****

*****Be liberal with the staples. Place 1 every 6" - 10". At end points use 2 or 3 staples.** (Figure 1-17)***

*****Always apply fiber-mesh tape over the sides of the corner bead to ensure you do not get hair-line cracks in the future. Do not let the tape protrude past the outside corner.** (Figure 1-18)***

(Figure 1-18)

*****This note pertains to easier finishing (mud work). If the corner bead is installed tightly against the drywall it will require less mud which may mean it only takes 2 coats instead of 3. Make sure you do not go too tight or else the metal sides of the corner bead will protrude past the actual corner of the corner bead (hopefully that's not too confusing) when running your mud and it will look bad. To test your success here, take your 10" knife and place 1 end on the corner of the corner bead, place the other end on the drywall. Look at the gap in-between the knife and the drywall. It should be as close to 1/8" as possible (Figure 1-19), if it is you should be safe with 2 coats of mud. A ¼" gap***

(Figure 1-19)

or more will likely require 3 coats of mud.**

Installation is pretty simple, just measure your areas to the 1/16" and then cut your corner bead with the tin snips. Then set the corner bead onto the outside angle, apply a little pressure in the middle of the corner bead and shoot a staple on both sides of that spot. From this point work your way up or down with the staples. Just make sure the corner bead is fairly plumb and/or square.

In windows and other areas you will run into situations where horizontal corner bead butts into vertical corner bead. In this instance you will staple the middle like before, continue to staple off the corner bead except for about 2' from the end that will meet up with the perpendicular stick of corner bead. Then do the same thing with the other piece and leave about 2' un-stapled. At this point you can line the 2 pieces up and staple them in place one piece at a time ensuring the ends meet up perfectly flush. (Figure 1-20)

You will also run into areas that are longer than the corner bead that you have. In this instance you will find a scrap piece (or cut off a full stick) and cut it to about 1'. Place this scrap piece under your 2 sticks of corner bead at the seam and staple them off. This will allow the seam to sit evenly without one side protruding over the other. (Figure 1-21)

(Figure 1-20)

(Figure 1-21)

Taping and Finishing

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The taping/finishing portion is important. Take your time until you're comfortable and remember sometimes you have to walk away from an area or you'll make it worse. Just re-visit the spot later on after it's dried and has been sanded.

Important Notes:

- **Taping/finishing requires 3 coats. Tape coat, bed coat and finish coat.**
- **Never let your mud freeze before it dries, I recommend the temperature never get below 50 degrees F. The ideal temperature would be between 70-80 degrees in winter and 65-75 degrees in summer.**
- **Mud will dry better in dry atmospheric conditions, do not run humidifier or have open windows with high humidity outside.**
- **Drywall mud does shrink while drying. Keep this mind when checking your work while it's still wet.**
- **The longer mud takes to dry the more it shrinks, in turn makes for more work. Ideally you want your coats to dry over night or faster.**
- **Try not to put wet mud over wet mud unless you have to, it takes longer to dry.**
- **Always check your work with a bright light from the side, not head on. Do this especially on walls that will have high visibility, either from natural lighting or house lighting.**
- **Always keep your mud tray (pan) and knifes clean and free of "drywall boogers", this will save you from headache and extra work. Every now and then find a stopping point and wipe down your tools with clean water and a sponge or paint brush.**

Tools Needed: (Figure 2-1)

- **Mud Pan.**
- **6" knife, 8" knife, 10" and 12" knife. Metal is better.**
- **Banjo (If not hand taping).**
- **Tape Reel or Tape Dispenser (If not taping with banjo).**
- **1/2" Drill for Mixing.**
- **1/2" Mud Beater for mixing.**
- **Drop Lights.**
- **Pencil (for marking imperfections and other problem areas)**
- **Fine Grit Sanding Sponges**
- **Circle, Square or Triangle Pole Sander with 220 Grit Paper (We don't use pole sanders because I believe a lot of imperfections get overlooked, however a lot of guys will disagree with me. If you go this route do not use a rectangle pole sander, they dig gouges and flip over which creates more work).**

(Figure 2-1)

Knowing your material

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First let's go over a few basics of your material. Knowing which type of mud to use and when to use it is important for the longevity of your seams, same thing goes for your tape.

Mud

There is an abundant amount of mud types out there so I will just cover the basic ones that are used most of the time. (Figure 2-2)

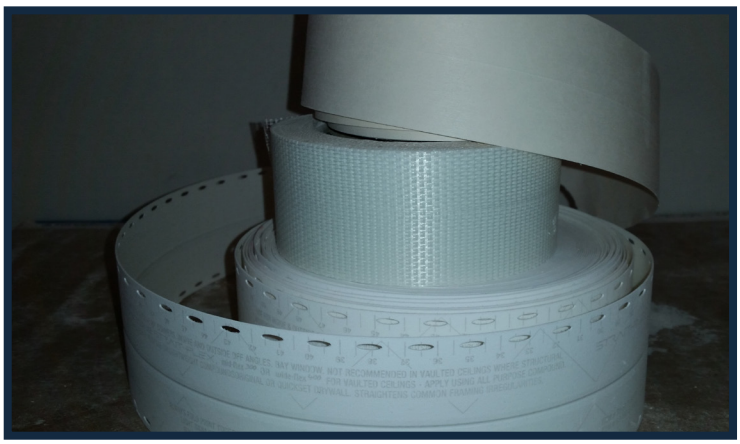
- **All-Purpose is by far used on the most percentage of jobs. All-Purpose is only used for the tape coat because it has extra glue in it that helps bond the tape to the drywall. Because of the glue content these buckets are a lot heavier than your typical lightweight mud. This type of mud also shrinks more and is horrible to sand. Make sure you only use it on the tape coat.**
- **Light-Weight mud is what we use on the remainder of the job. As the name implies it is lighter. It shrinks less and gets less pock marks (air bubbles). This product is used on the bed coat and finish coat of your seams and corner bead.**
- **Quick-set type mud comes in different setting times. 5 min, 20 min, 45 min, 90min and 210min. This type of mud is used mainly on drywall repairs and/or filling gaps in-between drywall. It can be mixed up thick enough to fill in larger gaps if needed but remember if the gap is too big you should try to fill it with drywall first. This mud comes in powder form and has to be mixed on the spot. Make sure you mix up what you can use in the time allotted and nothing more. You mix this up to order, which is to say you can mix it up thin or thick or anywhere in-between. The thicker consistency will set-up quicker and thinner will set-up slower. Warm water will make it set-up faster, sometimes a lot faster so be careful.**

*****Warning: Quick-set mud will set-up under water, do not put it down drains. We always mix it up outside in the grass unless we can't. In that case we use a slop sink or the equivalent and take extra care to keep the mud out of the drain.*****

(Figure 2-2)

Tape

There is an abundance of tape products out there just like different types of mud. Again, I'll just cover the basic types that are widely used. (Figure 2-3)



(Figure 2-3)

- Paper tape is used in all new construction jobs for all seams, butt joints, flat joints and angle seams. It can be run by hand, through a banjo or through an automatic taper (bazooka). Most one-timers will either tape by hand or with a banjo (cost is typically $90). A bazooka will cost you about $1000 on the lowest side, which is hard to justify the cost unless you do this type of work all the time.
- Fiber-mesh tape is used mainly on drywall repairs and corner bead. Do not use it on angle seams. If you do use it on your seams, make sure that the first coat of mud is done with a quick-set type and not regular pre-mixed mud. If drywall repairs are being done, fiber-mesh tape and quick-set mud are the best combination of materials to use. This will ensure the best results when taking longevity into consideration.
- Flex-tape is used on “off angles” which basically applies to any angle seam that is not a 90degree angle. This tape is a bit finicky in that if you “flex” it too much or too little it can be tricky to work with.

Start Taping

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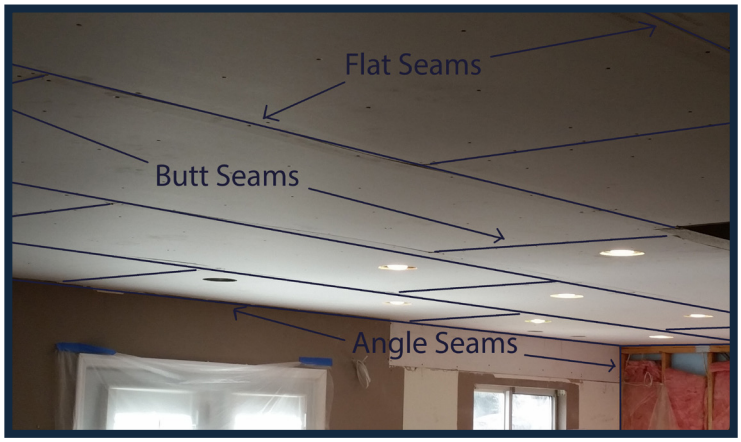
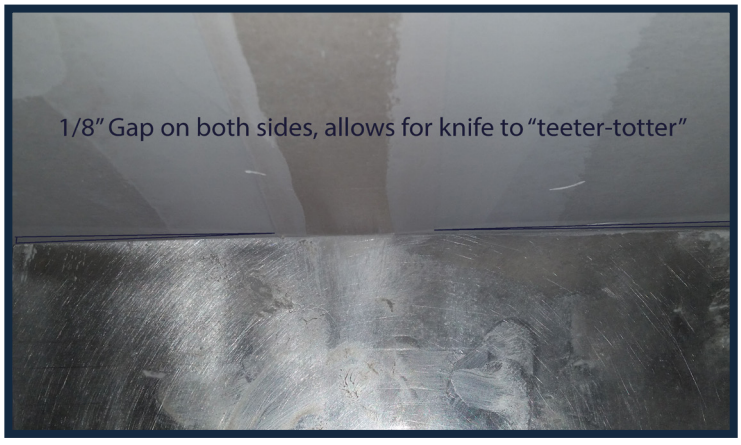
This section will cover hand taping since most non-professionals won't be able to afford the cost of automatic taping tools. (Figure 2-4)



(Figure 2-4)

The term "knife check" will be used often through-out the taping process. A knife check is a coined term that is simply the process of taking the bottom of your knife and centering it on the tape and/or seam. You'll notice that the knife can now "teeter-totter" on the tape and/or seam. Use these gaps as a guide to see which side needs to be floated out more, less or if they're the same. You will use this technique multiple times in multiple areas. (Figure 2-5)



(Figure 2-5)

You will want to backfill all of your gaps before you begin taping. (Figure 2-6) It is better for your tape to have a hard surface to set against versus setting on air. A nice tight seam (or back-filled seam) will last a long time. You can either use All-Purpose mud straight out of the bucket or quick-set type mud. The

(Figure 2-6)

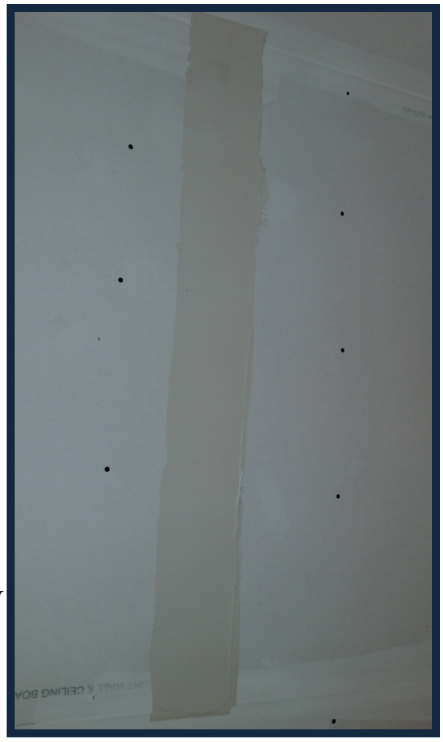
All-Purpose mud will need to completely dry before continuing (Figure 2-7).

(Figure 2-7)

Now you're ready.

Tape Coat by Hand

It helps to have a bucket or two of clean water. One bucket for adding water into your mud and the other bucket for setting your dirty tools in until you're ready to clean up, so get them first.



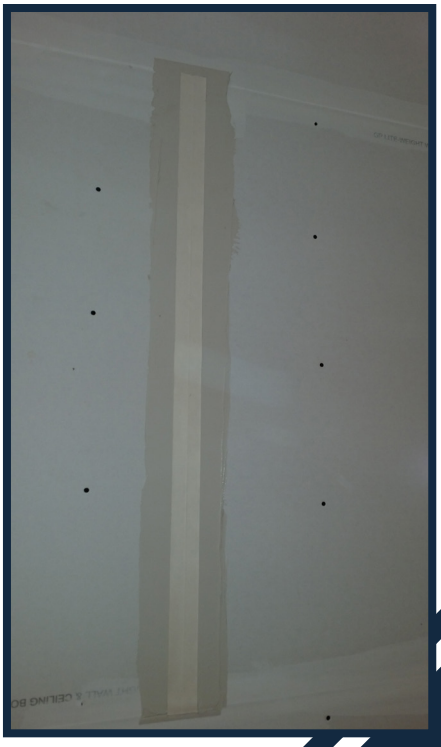
(Figure 2-8)

Let's start by mixing up your mud. Get out your All-Purpose mud and some clean water. The trick here is that you don't want the mud too thin because it'll be a mess and very tough to work with. My recommendation is a ½ cup of water to start and then go from there. If you're taping by hand the mud can be a little thicker. If you're taping with a banjo then it should be a little thinner.

(Figure 2-9)

Always tape your butt joints first, flat joints second and then angle seams last. Tape your bad cut-outs around boxes and other stuff when you spot screws.

When hand taping, apply the mud in 4" - 6" swipes (Figure 2-8 and 2-9), and run them out as long as you feel comfortable with, the longer the better with-in reason. For example don't make a 40' run but at the same time don't do a bunch of 2' runs either. Find your comfort zone and stay there.



(Figure 2-10)

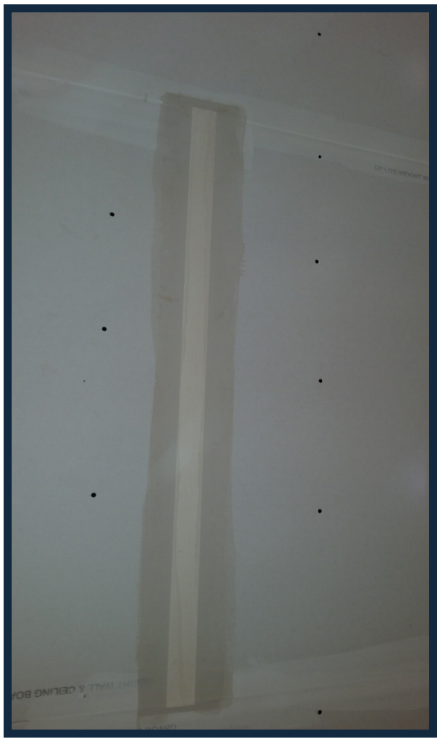
Then apply the paper tape on top of your mud (Figure 2-10 and 2-11), try to keep as much slack as possible out of the tape. If you're applying tape into an-

gle seams, first bend it on the crease and then apply

(Figure 2-11)

the creased part into the inside of the corner. When hand taping angle seams, after the tape is pushed in by hand I come back with my 6" knife and seat it in the corner while making the crease/line straight (straight-ish) all the way down.

At this point you take your 6" knife and pan and wipe down the tape/mud flat (Figure 2-12). **Make sure you do not apply too much pressure because you can actually push out all of the mud and leave little bare pockets that will bubble. At the same time do not leave too much mud on the seam or else you will have a bulge that has to be floated out.** The best way to check for a bulge on a flat seam is to use the "knife check" method. If there is a bulge, either wipe down the mud better or you may need to mix the mud thinner. Butt joints will always have a bulge by nature, it shouldn't exceed 1/8" or so.



(Figure 2-12)

When wiping down angle seams, put your 6" blade into the corner and wipe 1 side down all the way, then come back and do the same on the other side (Figure 2-13). These are tough to mess up. The main thing to do here is make sure the tape is set into the corner really well so that you get a crisp clean line and not a wavy line.

Special Note:
*****When wiping down your seams, try to do the process in one long smooth motion. Being jerky and/or wavy will cause ripples and low spots, you want to avoid those***

(Figure 2-13)

because it creates more work.*

Tape Coat with Banjo

This method gives the same results, except we have a tool that applies the mud to the tape for us. **The mud will need to be a little thinner than hand taping thickness, this same rule applies anytime you run mud through machines.** Thinner mud may require you to mix up the All-Purpose with 1 cup of water to start with instead of the ½ cup of water when running the tape by hand.

Load the banjo with 250' paper tape first, feed it through the small slit on the outside then

snake it up towards the top handle and back down until it goes through the front slit and let a couple inches hang outside. Then load the mud so that the tape is always above the mud (from a side view perspective). You will instantly see the logic behind this tool. Pulling the tape will put pressure on the mud causing it to stick to the tape.

There is typically a "mud flow" adjuster on top of the front slit, tightening will restrict mud flow and loosening will allow for more mud flow. Factory settings will be fine, keep this adjustment in mind in-case you have some troubleshooting to do later on.

Before you start, remove the excess tape without mud on it and toss it.

Next, grab the tape with one hand while the banjo is in the other hand and pull out a 3'-5' section at a time. You can do more or less depending on your comfort. The more you pull out the faster this step will go.

When you want to stop the tape from coming out simply tilt the banjo to put pressure on the tape. Make continuous runs of tape across the drywall seams, try not to have multiple breaks with the tape on the same seam unless you have to. (Figure 2-14) Just like hand taping, make sure the butt joints get taped first, then the flat joints, then the angle seams.

(Figure 2-14)

(Figure 2-15) Try to keep all of the slack out of the tape if you can, this can be done by applying some pressure on the tape while stretching it out. The wiping down process will be easier if the tape is tighter.

Wiping down the tape is exactly the same as hand taping. Take your 6" knife and pan and wipe down the tape/mud flat. (Figure 2-15)

Make sure you do not apply too much pressure because you can actually push out all of the mud and leave little bare pockets that will bubble. At the same time do not leave too much mud on the seam or else you will have a bulge that has to be floated out. Do the "knife check" method to check for a bulge.

Spotting Screws

Screws get 3 coats of mud. You will apply 1 coat of mud to the screws every time you add one coat of mud to the seams. We use Light-Weight mud for this part since it shrinks less. You can just mix up the mud straight without adding water for this. If you feel that it would be easier with thinner mud then add 1/4 cup or so to start.

There is 1 technique for spotting screws that will make it a little easier and faster. However, explaining it will be tricky.

You will use your 6" knife for this step. Scrape mud out of your

mud tray onto your 6" knife, the whole width of the knife should be covered in mud plus about 1" - 1 ½" up the knife (Figure 2-16). For visual effect you will have roughly a 1" by 6" blob of mud on your knife.

(Figure 2-16)

Now take your knife sideways and place the bottom of the knife directly below the lowest screw. Then gently push the knife in (against the wall) and slide the knife up simultaneously, the goal being to run out of mud by the time you pass the top screw (Figure 2-17). It's kind of like learning how to drive a manual vehicle. The clutch to gas pedal ratio is equivalent to the "pushing in" and "moving up" motion.

(Figure 2-17)

Once you get that figured out you'll be fine.

Now take your knife and wipe the mud down tightly (Figure 2-18). Don't leave any "edges" behind, this creates more work. To clarify, an edge can be any amount of mud that does not taper out flat/smooth against the drywall. Edges equate into more sanding or mud floating.

Screw spotting will not be added to further sections so make sure you don't forget about it.

(Figure 2-18)

Corner Bead

It is possible to finish out corner bead in 2 coats, so if you want to save some time this is where it can happen. Although beginners will have a tough time accomplishing this in 2 coats, it is possible.

Special Note:
*****The best case scenario for running corner bead is when the bead is installed "tightly", meaning that it was pushed tight against the drywall. To check this ("Knife method" again), take your 10" knife and set it against the corner bead. You will have one end of the knife***

on the corner of the corner bead (hopefully that wasn't confusing) and the other end on the drywall. You want to notice the biggest gap between the drywall and the knife. This is how much "fill" will be required on the bead. If the bead was installed "tightly" there will only be about 1/8" worth of fill required (Figure 2-19), which is good for only needing 2 coats of mud. If the gap is ¼" or more then you're going to probably going to need 3 coats. Also, if the gap is too big you might consider bedding the bead in with quick-set (90 min or 210 min.) because

(Figure 2-19)

this mud shrinks the least, I would argue that it doesn't shrink at all. This will accomplish 2 things, 1) your next coat will require less mud and 2) this will ensure your mud to completely dry overnight whereas pre-mixed mud very likely wouldn't.**

That was a big "special note" but it is definitely worth the reading.

Now that you have determined whether to use quick-set mud (if your "gap" was too big) or light-weight mud (if your gap was not too big), get that out and ready. If running light-weight mud, we mix up the mud and add no water. We prefer this thickness because it fills nicely. If you want to add water, don't add much, start with a ¼ cup. Believe it or not a little water goes a long way with mud.

The knife size varies but you can almost never go wrong with using a combination of an 8" and a 10" or a 10" and a 12". Beginners should start with an 8" and a 10" because it will be easier. Your 8" knife will be used on the fill coat and your 10" knife will be used on your finish coat. If a 3rd coat is required, use the 10" again or a 12" if needed.

(Figure 2-20)

Now you have your mud and knives ready.
First, scrape your knife into your mud tray with your 8" knife. Put as much mud on it as you can without getting sloppy. Then over-apply the mud onto your corner bead. The goal is to have the mud roughly 8" from the corner of the corner bead to the drywall, and have the thickness roughly 2-3 times that of what you'll actually need (Figure 2-20). Do this in the immediate area to all the corner bead. Make sure that you do not use more than a pan of mud at a time or things will start to get messy.

(Figure 2-21)

Next, with your knife in hand, put the end of it just above the

(Figure 2-22)

outside of the mud swipe (drywall side) and wipe the mud in the same direction as the corner bead (Figure 2-21). This will wipe down the outer side of the mud swipe for you (roughly 2" - 3" out of the approximate 8"). Do this for the whole area, and try keep to one continuous flow/motion as best as possible.

Next take the whole knife, center it just above the whole 8" swipe of mud and pull it in the direction that the corner bead is going (Figure 2-22). The pressure on this step will lay mostly on the corner of the corner bead side, with the middle and opposite side receiving some pressure. You want to make sure the blade runs tight against the metal corner with no gap. The opposite side of the knife should also be flat against the drywall.

When the mud is dry, rinse and repeat for the remainder of the coat(s). Make sure to use the 10" knife from here on out.

Don't leave any "edges" behind, this creates more work. To clarify, an edge can be any amount of mud that does not taper out flat against the drywall.

They equate into more sanding or floating them out with mud.

Running corner bead will not be added to further sections so make sure you don't forget about it.

Special Note:

*****Make sure that you do not put too much pressure on the middle of the knife or else you will squeeze out all of the mud from the middle, thus defeating the purpose of the fill coat. You can test this by using the "knife method".*****

Non 90 Degree Corners

All corners that are not 90 degrees will get flex tape. This includes inside and outside corners. Most of these angles will be 120 degrees but not all of them. I run these with an 8" knife and prefer to use thicker All-Purpose mud for the taping portion. I actually do not add any water to my mud for this part because I've found the stiffer mud will help keep the tape in place.

(Figure 2-23)

Flex tape can be a little tricky to work with because of its stiffness. It comes in a flat roll like paper tape but has a crease down the middle. First, find the length of tape you will need and cut it off of your roll. You can use tin snips or a utility knife.

Next, take the tape and bend it down the crease, make sure you bend it a little more than the angle that will be required.

At this point you can apply the mud with your 8" knife like you would on a regular angle. (Figure 2-23)

(Figure 2-24)

Now apply your tape and push it into place with your fingers. Make sure it's pushed in tight and not bulging out. Then take your knife and wipe down the outsides, and come back and wipe down the whole thing. (Figure 2-24)

(Figure 2-25)

If your tape coat doesn't fill that well, go ahead and apply more mud with your 8" knife and then wipe it down like you would with corner bead. (Figure 2-25)

Special Note:
Because of the tape's original stiffness, it will try to pull back to its original mold after being bent. This is why it's important to bend the tape a little further then necessary. That will allow room for the tape to flex back while still keeping the desired angle.

Bed Coat

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This is your second coat of mud and will be done with a 10" knife and light-weight mud. The mud can be mixed up without water like the corner bead. If you would like thinner mud, start with a ¼ cup of water.

Typically on the bed coat you will want to run the flat joints 1st, the butt joints 2nd, angle seams 3rd, corner bead 4th and screw spots 5th. It is best practice not to run wet mud across other wet mud (at seam intersections) although it is not always possible to avoid. In these areas, do your best. More than likely they will just require more sanding and touching-up.

This step will include an explanation for butt joints, flat joints and angle seams.

(Figure 2-26)

Butt Joints

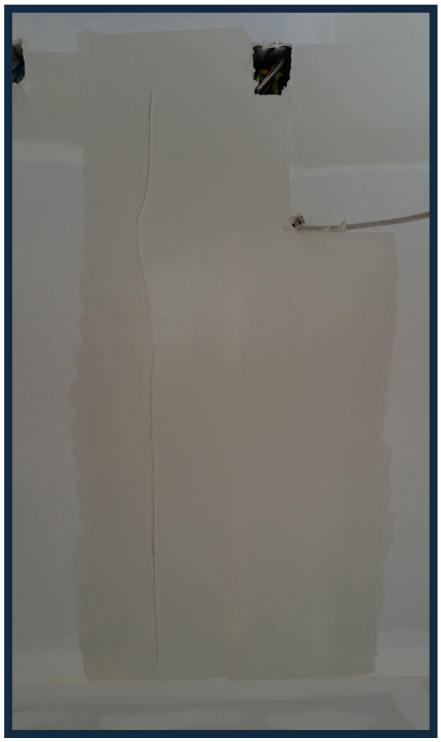
These are by far the trickiest seams to properly run. Before you start running your butt joints take your 10" knife and do the "knife check". This will indicate to you how far the butt join will need to be floated out and/or the need to float out the butt joint more so on one side or the other.

If the tape only protrudes on top of the drywall roughly 1/8" on both sides (which it should) then you can float out the butt joint evenly with a 10" knife on both sides. If it's more than that or if one side is more than that, then you will need to use 3 swipes.

With a knife full of mud, set the left side of the knife on the center of the tape. Push the knife in and move it down simultaneously to apply the mud. Once you have this side covered in mud do the other side the same way.

You want the thickness to be roughly 2 - 3 times that of what you'll actually need. It may take multiple knives full of mud and passes to fill these areas properly.

At this point you should have a span of mud roughly 19" - 20" wide and as long/tall as the seam itself. The span of the mud should be centered on the tape seam. (Figure 2-26)



(Figure 2-27)

Next, take the right side of your knife and place it just above the right side of your mud. Pull the knife down to the bottom of your seam, smoothing out roughly 5" - 7" of the outer part. Repeat this process for the left side. (Figure 2-27)

Now, this is where taping gets serious, take your knife and center it just above the center of where your tape is. Pull the knife down with even pressure across the blade. The trick is to get the whole knife blade to pull evenly downward through the whole seam, mimicking a straight edge.

(Figure 2-28)

You will notice 2 ridges, one towards the left side of the seam and one on the right side of the seam.

Special Note:
Sometimes, you may need to utilize these ridges for floating out your seams. In which case you will actually leave them. Then on your next coat, you would use them as a "guide" for one side of your knife.

Center the knife on the left ridge, and pull the knife downward with even pressure across the blade until you reach the bottom. Do this again on the right side ridge. (Figure 2-28)

At this point if everything looks fine, go to the next one. If you see quite a few deep gouges, trenches or low spots then run the seam again. If the seam just doesn't look right, run it again. If there are just a few imperfections then you can move on but remember them later, mark the side of the butt joint with your pencil.

The thickness of this coat should be just a tad more than 1/8" just to cover the tape, unless it requires major floating. In which case the depth above the tape would be the same but the "floated out" areas may be deeper.

Flat Joints

These joints will be fairly easy as long as the drywall seams are sitting flat. Again, do your "knife check" every so often to see what you're working with.

The tape should not be touching the bottom of the blade, this will indicate a seam that only needs to be filled, not floated. However, if the tape does protrude out past the drywall causing the knife to rock back and forth, you will have to run this seam like a butt joint.

(Figure 2-29)

If the tape did not touch the bottom of the knife, then run this seam with one 10" swipe (Figure 2-29). It is better to apply and wipe the mud in longer runs for this coat. This reduces

(Figure 2-30)

the disturbance marks from the knife being set onto and lifted away from the mud.

The mud is wiped down the same way as before. Wipe down 2" - 3" on one side of the swipe with the outside of the knife, then do the other (Figure 2-30). Now wipe down the middle with even pressure on the blade. If there are ridges present, wipe them down with

(Figure 2-31)

two more knife passes, and make sure your knife is centered on the ridges. (Figure 2-31)Also, make sure not to apply too much pressure or you will wipe out all of your mud. Do the "knife check" to verify. If the knife "rocked" on the tape then go back to the Butt Joint section.

Angle Seams

Typically, angle seams only need 2 coats of mud per side. One from the tape coat and then one more coat. As long as you got a good fill on your tape coat this will hold true. If there are a lot of bare spots and ridges then you may need an extra coat or extra touching-up.

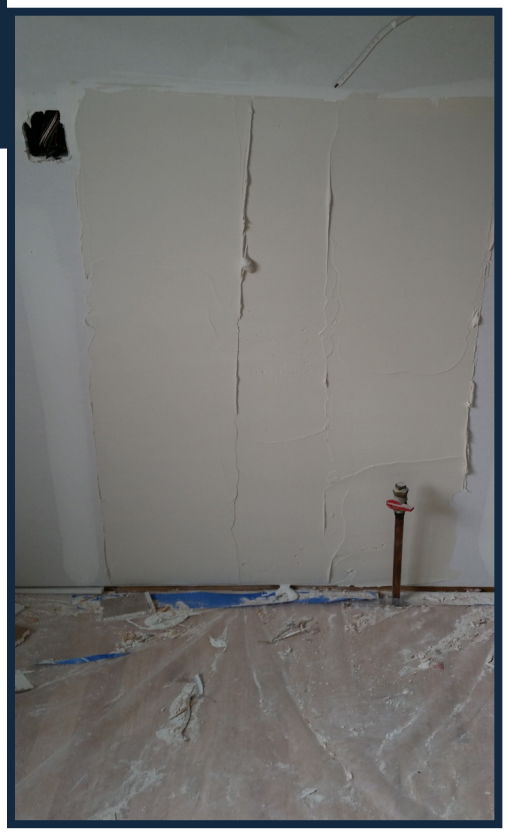
You will run your angle seams 1 side per coat. So, for the bed coat you will run one side, for the finish coat you will run the other side.

No "knife check" will be needed for these seams. Get out your 6" knife again and apply the mud semi-evenly down the seam. Stick to the same rules of applying mud as we discussed before. In this case it will be roughly 6" wide and about 2 - 3 times the thickness you actually need. (Figure 2-32)

(Figure 2-32)

Take the outside of your knife and wipe down the outside 2" - 3" of your swipe.

Then take the corner of your knife and set it into the corner of the seam and smoothly pull it as far as you can. If you have a ridge, put the corner of the knife in the corner of the seam and pull it through one more time. (Figure 2-33)



(Figure 2-33)

Make sure the areas where the angles run into each other get special care. They are the hardest part to running angles.

Finish Coat

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Before you start your finish coat, use your pole sander to knock down all your high spots. I recommend the 9" disk sander for this rough sanding because it's quick and does not flip over unlike older styles of pole sanders. This rough sanding will include all lap marks, edges and any other spots that would interfere with a smooth finish on the next coat. **This is not a finish sanding so we're not aiming for perfection at this point.**

This will be the final coat (hopefully) of mud. Be a bit more aware and consciences of your seams on this step to save from more sanding and touching-up. You will use a 12" knife and light-weight mud on this coat. The mud should be thinned out a little bit, start with a ½ cup of water per bucket.

Typically on the finish coat, like the bed coat, you will want to run the flat joints 1st, the butt joints 2nd, angle seams 3rd, corner bead 4th and screw spots 5th.

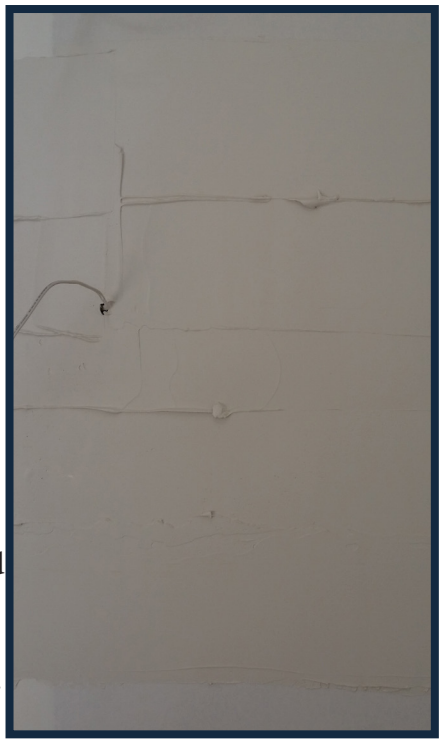
It is best practice not to run wet mud across other wet mud (at seam intersections) although it is not always possible to avoid. In these areas, do your best. More than likely they will just require more sanding and touching-up.

Trouble Areas

This coat is completed exactly the same as the bed coat so I will not go in-depth about it. However, there are a few things that you can run into that would be different.

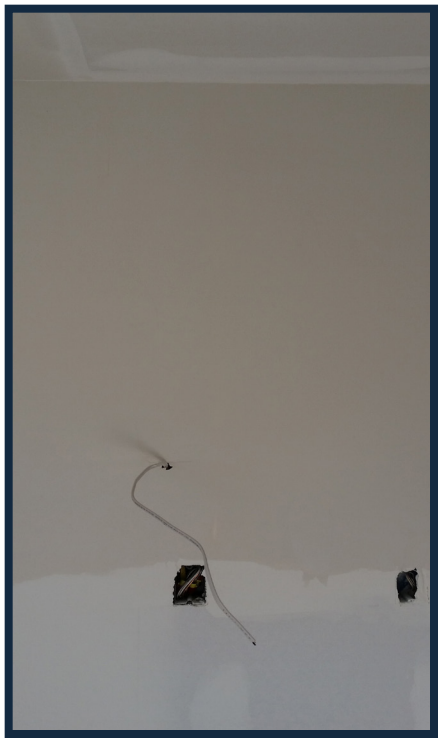
There could be some trouble areas that should be floated out further, this includes butt joints if needed. Look for them by doing the "knife check" and also do what I call the "blind check". The "blind check" is done by closing your eyes and running your hand over the seam, back and forth. You will feel humps or low spots if there is any.

Mark each trouble spot with your pencil as you go. This way you can check everything and not have to remember which seams needed extra work.



(Figure 2-34)

For trouble areas, basically they just need to be floated out further. As described before, we ran the bed coat on the butt joint with our 10" knife and made two swipes. This totaled the mud width to be roughly 20" on our butt joint. This time you will make 3 swipes with your 12" knife, totaling 36" (Figure 2-34). The first swipe is to be centered on the tape or in the middle of the trouble area. You will wipe the mud down the same exact way as before.



(Figure 2-35)

Some trouble areas and/or seams will require more or less floating (Figure 2-35). You will have to check this by using the "knife check" method, the "blind check" method or by using some sort of straight edge (like a level). You will have to determine how much "floating" is required after doing the checks.

I have floated out seams to about 6' before, it's not ideal but it can be done. Just take your time. **The biggest trick to floating is to try and picture the trouble area on a microscopic level, then have your arm pull the mud in a way that mimics what you're picturing.**

Sanding

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This is by far the toughest part of drywall finish work. Throw on your mask, grab your light and sanding block, and get ready to rock'n roll.

I mentioned previously in this manual that we do our finish sanding with a sanding sponge. I also mentioned that most fellas would call me crazy in regards to this so you will have to decide for yourself. Either way use a fine grit sanding block or 220 grit sanding paper. (Figure 3-1)

(Figure 3-1)

The tradeoff is:

Sanding sponge cons

- **Tougher to sand with.**
- **Takes longer**
- **Doesn't sand down high spots very well**

Sanding sponge pros

- **More detail oriented**
- **Very thorough**

Pole sander cons

- **Further away so more things get over looked**
- **Not as detailed**
- **Arms get tired fast**

Pole sander pros

- **Faster sanding**

There are also electric disc sander options out there, some come with vacuums for "dustless" sanding. These systems are expensive and not worth the cost unless you are going to be doing this all day every day. It is also my opinion that imperfections in the mud get overlooked by this method.

The decision is yours. You don't have to stick with one method for the whole thing. For example, if the ceiling will have a heavy texture, you could pole sand it since the imperfections will be covered up. Next, use the sanding block on the wall where the finish will be smooth.

Once you have decided on your strategy, set your bright light to shine down the wall (not at the wall), and start sanding. Look out for scuff marks from your sander. If you start to see scuff marks, change sanders or go to a finer grit.

While sanding, if you see air bubbles, scratch marks, lines or other imperfections (Figure 3-2), mark them with your pencil, these will later be touched-up with mud. Some of them you might be able to "sand out" as long as you're not sanding trenches into the mud.

(Figure 3-2)

Some touch-ups will require floating while other may just require to be filled then "pulled tight". You will have to decide this based on what you see.

If you see a touch-up area with sharp edges, sand them down to be rounded. This will fill with mud much easier and may save you from a second layer of touch-up.

When you're finished sanding and touching-up, take a dust mop and give everything a "once over" to knock off the big lumps of dust. The dust lumps can be problematic for the paint to bond well with the drywall/mud.

Special Note:
It is best practice to use the sanding sponge in circular motions. This will reduce lines and gouges caused by the sponge.

You're finished

At this point, you're done. The toughest part of the cosmetic application is over and you can move on in your project.

I commend you for taking on such a complicated task and having the confidence to do it.

If you have any questions or comments feel free to contact me and let me know. I'm always looking for ways to improve my service in order to offer folks like you a better product.

Until next time my friends!

Nations Drywall
The Drywall Do-It-All Team