

MVP Guide to Measuring

For Shop Layout and Design Services

The quality of any design is heavily dependent upon the quality of the data provided for the existing property and structures. If the measurements provided are inaccurate going into the design process, obviously it will be inaccurate coming back out of the design process. This negatively impacts the practicality or feasibility of any recommended plan. If existing plans of the building(s) are not available, please review this guide as a help to creating usable measurements for your project. In addition, you may need a property site plan, also referred to as a Plot plan. The Plot plan details what is outside of the building whereas the building plans focus on the walls and what is inside of the building. Both items may be necessary. Plot plans are generally available from City or County Planning offices.

Below you will find three sections. First, the tools you will need to complete measuring and drawing are outlined. The second section covers the steps for how to measure and draw the facility. Finally, there is a checklist of things you need to send for a design project.

Tools for Measuring:

- A. 30' tape measure – measuring can be done with a simple 25'-30' measuring tape. This is adequate for small projects and can be ideal for small spaces you need to measure
- B. 100' tape measure – larger areas may be easier to measure with a 100' measuring tape and a helper (someone to hold the other end when needed). The same measurements can be taken with the shorter 25'-30' tape but will take more time and are more susceptible to error.
- C. Laser measure – a laser measure is ideal for indoor measuring in three dimensions (2 horizontal, 1 vertical). These are extremely accurate and easy to use. The downside is they can be a bit pricy if this is the only time you will use it.
- D. Measuring wheel – outdoor or extremely long distances are sometimes best measured with a measuring wheel. These can be purchased inexpensively online if needed.
- E. Graph paper – this can make drawing to some scale easier for many people. As an alternate, a blank piece of copy paper can be used if you have good artistic abilities and an eye for detail/scale.
- F. Clip board – simply provides a surface to write on
- G. Clear 12" ruler – a clear plastic ruler allows you to see through it to the lines already in your drawing. You will get straight lines and hopefully not go too far drawing your new line because you can see through. An optional ruler that is helpful for scale drawings is the architects scale ruler. These odd shaped rulers have multiple scales for quickly measuring distances in a printed to scale drawing.
- H. Pencil – mechanical or traditional pencils work fine and are more forgiving than a pen when you make a mistake.
- I. Eraser – there will be mistakes! Be prepared with a good eraser.
- J. Camera – a picture can explain a lot, as the PPG designer is not there with you, a picture can convey a lot of information and detail to support your measurements. Take pictures and reference them in order on your drawing so we know where you were standing and which way you were looking when you took each photo.

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- K. Time – probably the scarcest resource, but a detailed sketch takes time. The better your sketch and notes, the better the results will be. Not available at Home Depot and not pictured below.

Examples of the measuring tools as detailed on prior page:



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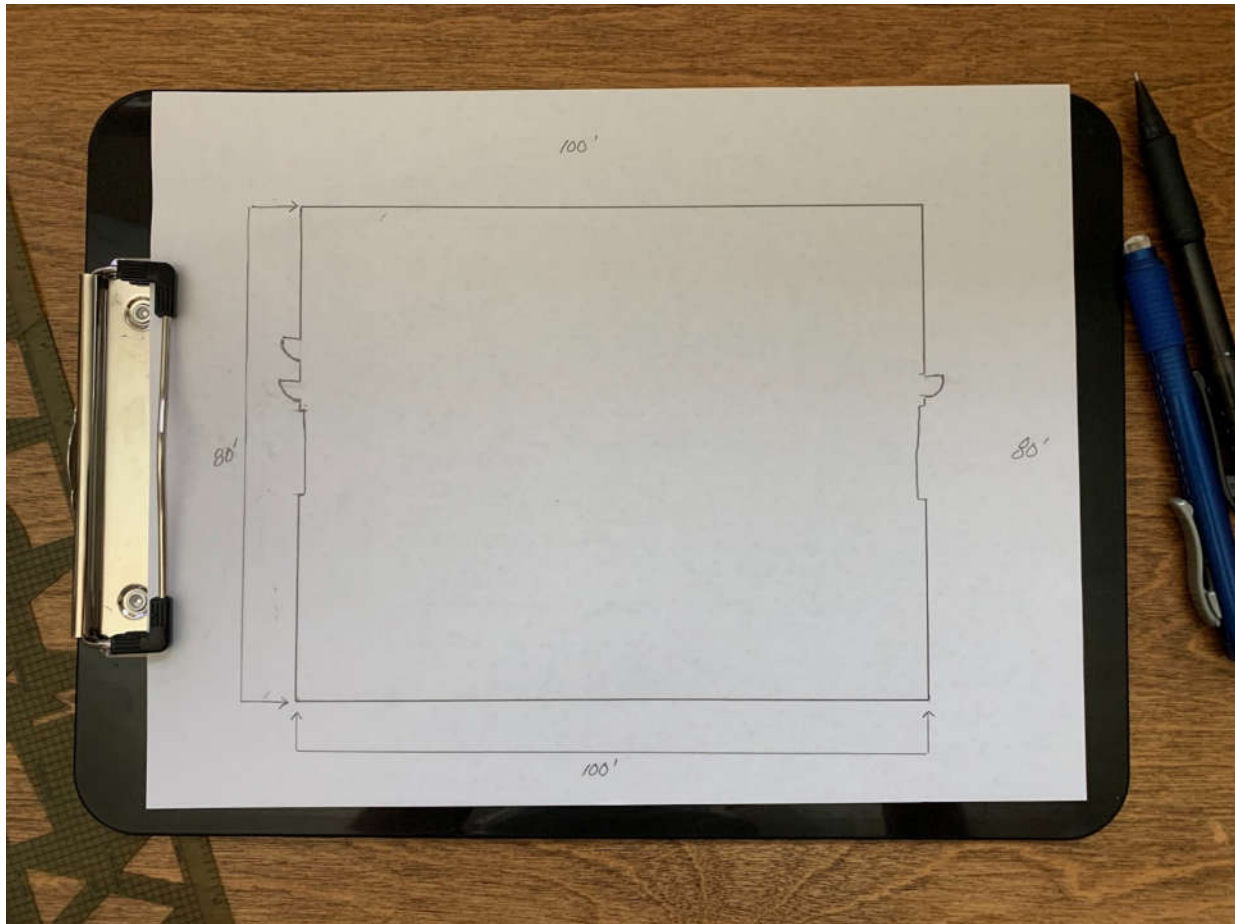
Measuring Steps:

Step 1: Sketch the general building shape

Determine the scale you will use if using graph paper and notate the scale at the top of the drawing. Draw the basic outline shape of the building on a piece of paper. Leave room to make notations for measurements. Including door and window openings at this time will save erasing portions of your drawing to add them in later. Be sure to use a pencil! (See example image below step 2)

Step 2: Measure the overall outer perimeter of the structure.

Go all the way around the building and measure the length of each wall. This is a critical step as it sets the perimeter of the building in its simplest of terms. It is important to note that all dimensions shown here are “outside” dimensions, meaning they were measured outside the building and represent exterior dimensions. As such, they are drawn outside of the building. (See example image below)



Step 3: Measure the details of each wall.

Starting from a corner, measure along each wall to each window, door, column, or other significant item. Get the measurements from the corner to the item, the size of the item, and

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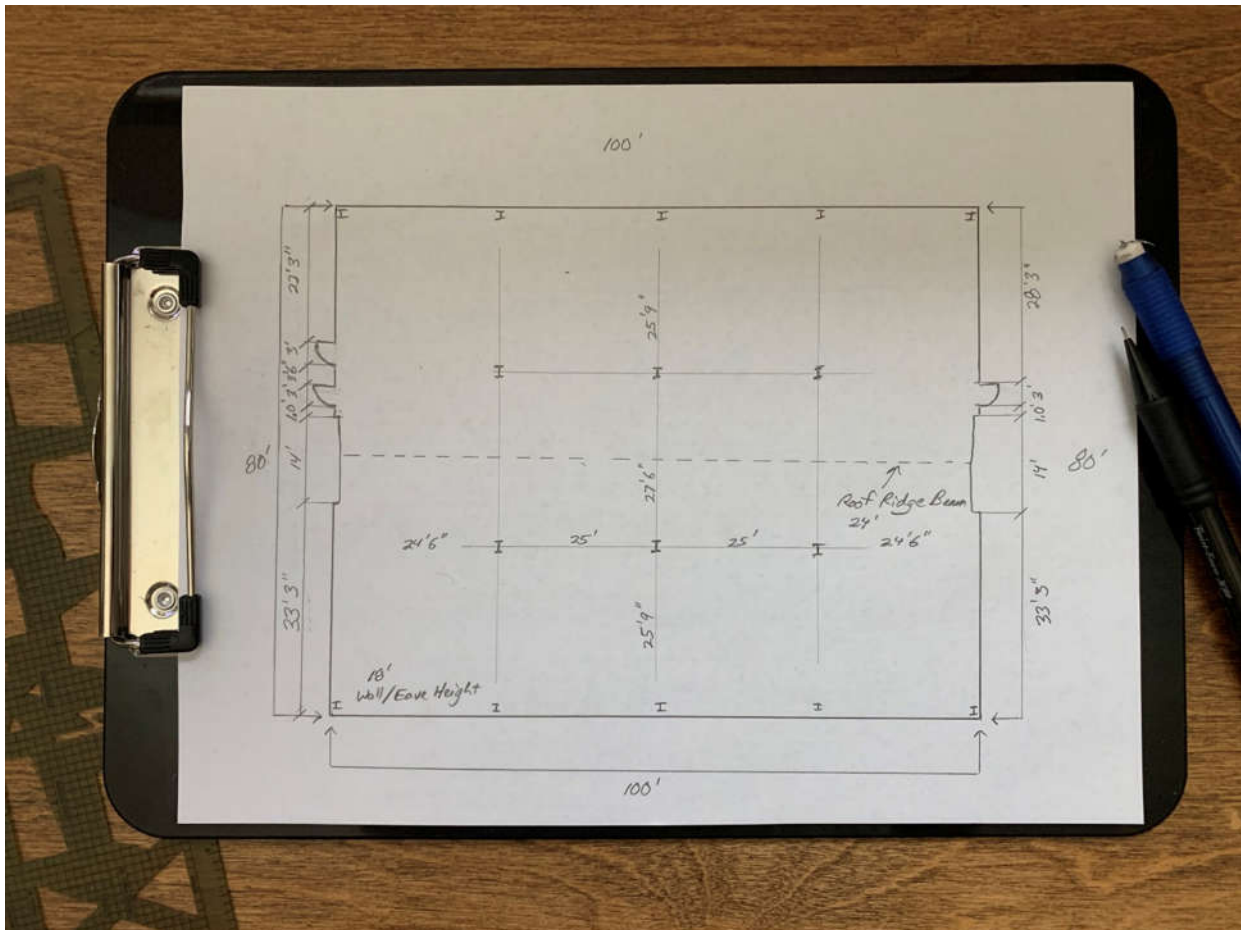
the distance to the next item. Continue until the entire wall has been measured. These dimensions are also exterior dimensions and are outside the building. (See example image below step 5)

Step 4: Measure the columns

Interior columns typically are in a grid pattern, so plotting and drawing a grid can help explain the locations and measurements you have taken. Measure the distances from two intersecting walls to establish your grid and continue measuring X-Y column spacing until all are accounted for. Drawing the building and plotting a grid helps to explain the locations and measurements you have taken. These dimensions are 'inside' dimensions and are noted inside the building. (See example image below step 5)

Step 5: Measure height and clearances

Measure how tall the building is. This includes interior ceiling height, beam clearances, roof eave height/roof peak height. Look for any low clearance areas that could impact booth or lift placements. The laser measure is very useful here as it will shoot straight up--generally these dimensions are taken inside the building. (See example image below)

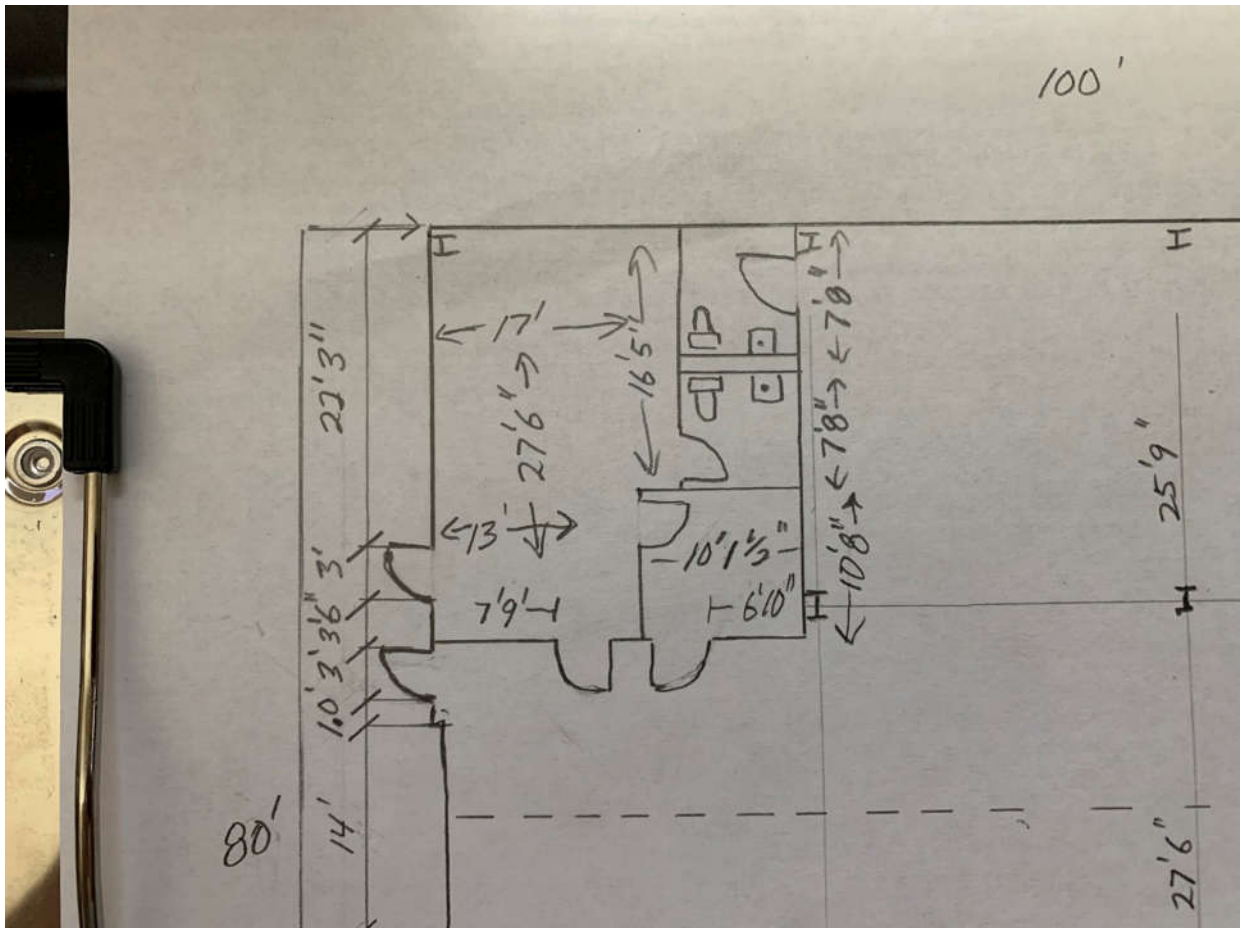


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Step 6: Measure internal walls

Sketch the layout and measure the XY dimensions of internal walls, doors, and windows. Don't be afraid to make a second drawing at this point of just the offices/interior walls. You can make it bigger so that you have room to make notes of dimensions. If you do make a second drawing, roughly sketch the offices on the main drawing so that orientation and location of interior walls are easily understood. It is best if you can show location of plumbing fixtures in one of the drawings. These are all inside dimensions, although for space and readability some dimensions were noted outside the offices. (See example image below)



Step 7: Measure location of fixed shop equipment

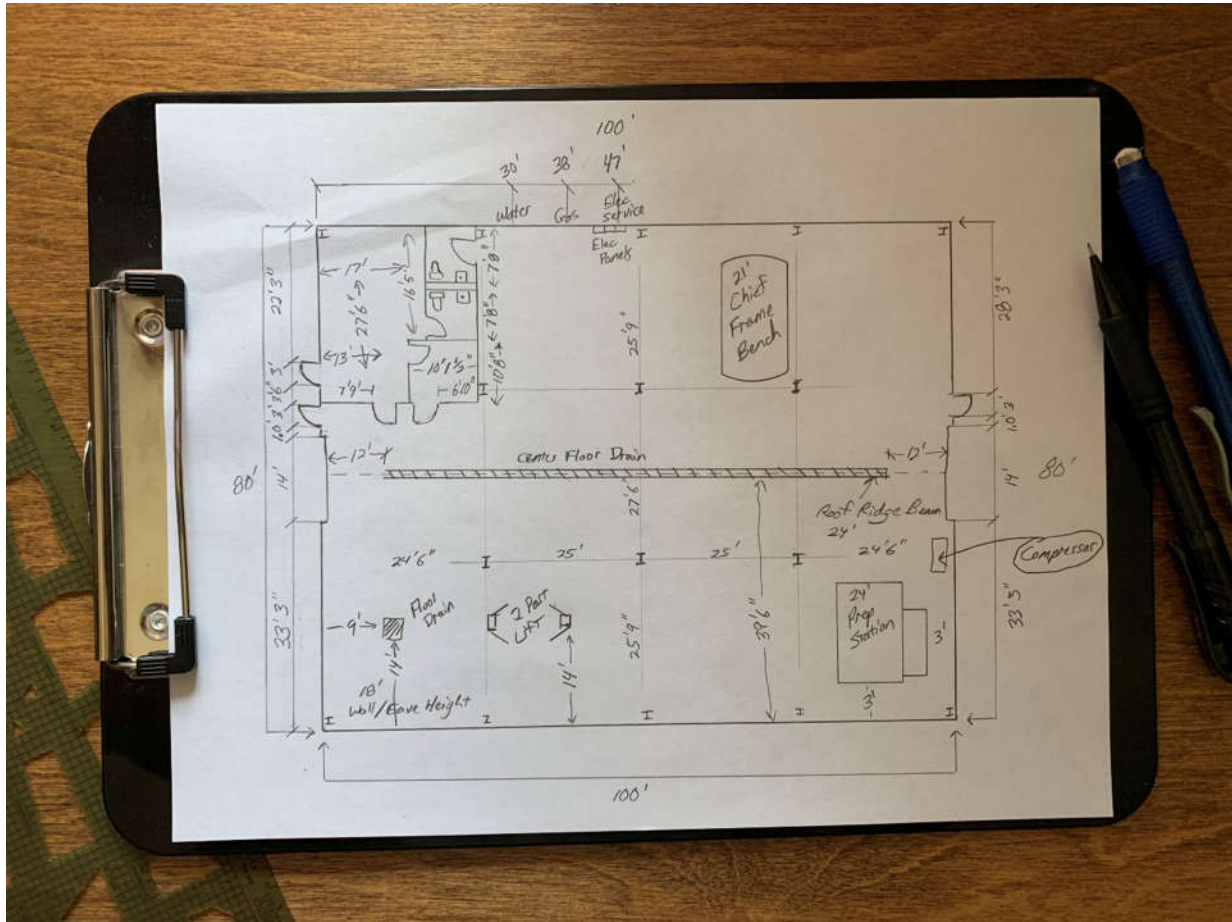
Measure from known fixed points of the building the XY position of any fixed equipment such as a booth, in ground lift, 2 post lift, frame machine, alignment rack or other fixed equipment. Measure the size of the equipment and note the make/model (i.e. booth length). If no equipment exists, skip this step. (See example image below step 8)

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Step 8: Locate and identify on your sketch the locations of building utilities

Measure from known fixed points in the building the XY the locations of electrical panels, floor drains, water main and gas main. (See example image below)

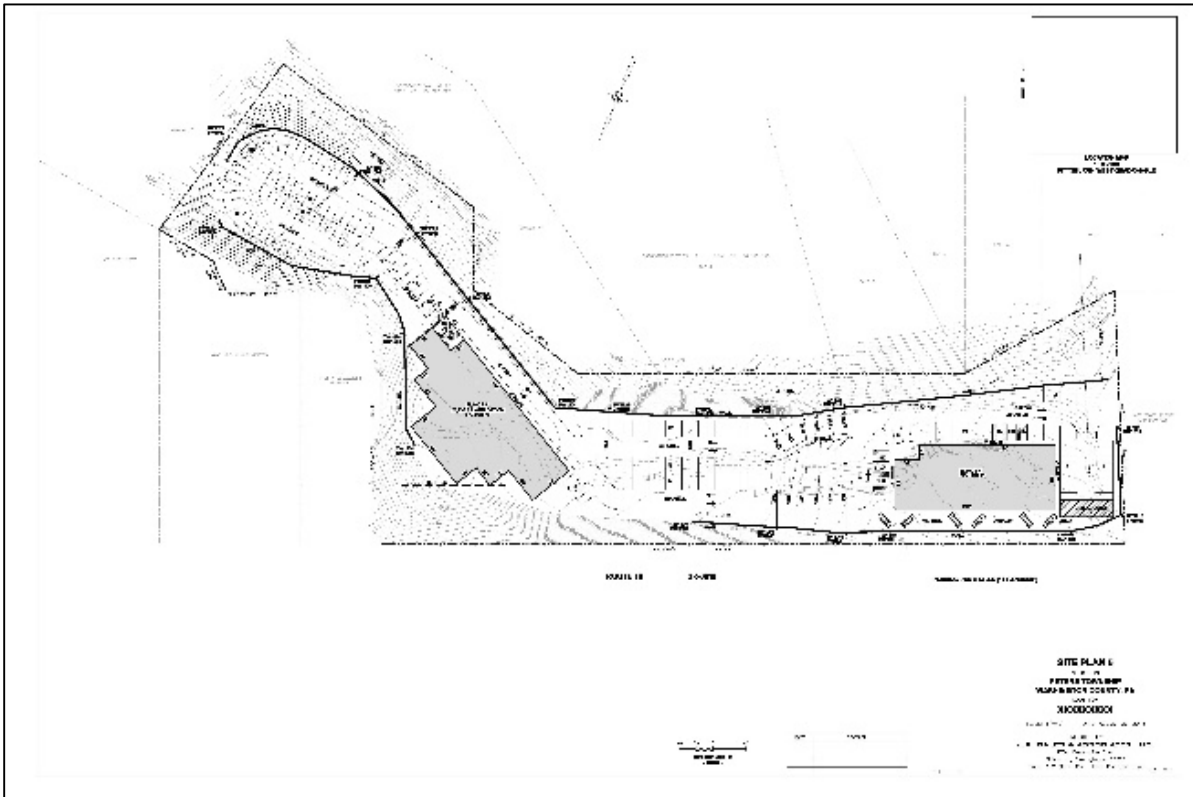


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Step 9: Plot / Site Plan

If adding onto a building or adding new buildings to an existing property—ideally provide an official Plot Plan available from City or County Planning Office. You can draw a plot plan but that does require precisely locating the property lines, measurement of the property, locating buildings on the property, above and below ground utilities and other potential obstacles to completing this project. Provide easement dimensions and property setbacks. Document the location of access roads, driveways, and parking areas. This can be difficult to accomplish, therefore we encourage you to seek an official Plot Plan. (Example Plot Plan below)

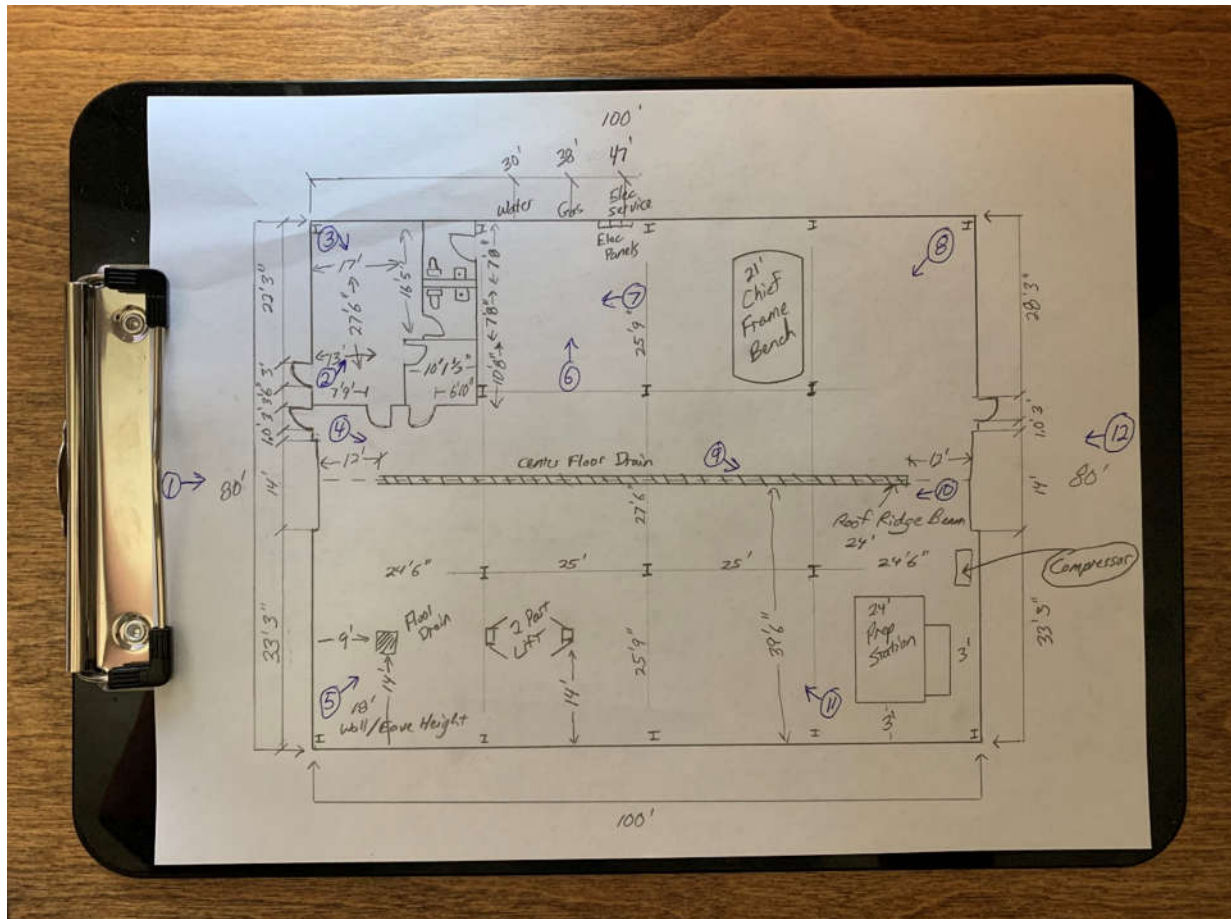


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Step 10: Photos

Take detailed interior and exterior photographs of buildings to be renovated. It is helpful if you note the pictures in the order taken on the plan showing the direction the camera was pointed. This gives reference to what we are looking at in context of the plan. See example image below and notice the photo numbering/arrows in blue ink.



Step 11: Final notes

Please provide notes of any restrictions or limitations: Radiant flooring heating, transformers, underground/overhead cables, drains, floor elevation changes, foundation restrictions (i.e. post tension floors), etc.

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Design Project Submission Checklist:

The following items are necessary to complete your project.

- Completed Layout & Design Questionnaire (download at PPGMVP.com from Layout & Design section)
- Building Drawing (either scaled blueprints or detailed drawing with measurements)
- Layout of internal walls, doors, windows, columns, and other fixed structures.
- Location of gas / water mains and electric panels noted with measurements on drawings/plans.
- Location of all fixed shop equipment noted with measurements on drawings/plans.
- Location of any restrictions or limitations (i.e. Radiant flooring heating, transformers, underground/overhead cables, drains, elevation changes, etc.)
- Site boundaries with dimensions showing easements and setbacks (Plot Plan or detailed drawing with measurements)
- Location of access roads, driveways, and parking areas
- Outline and relative location of any other building on the site.
- Detailed interior and exterior photographs of buildings to be renovated