



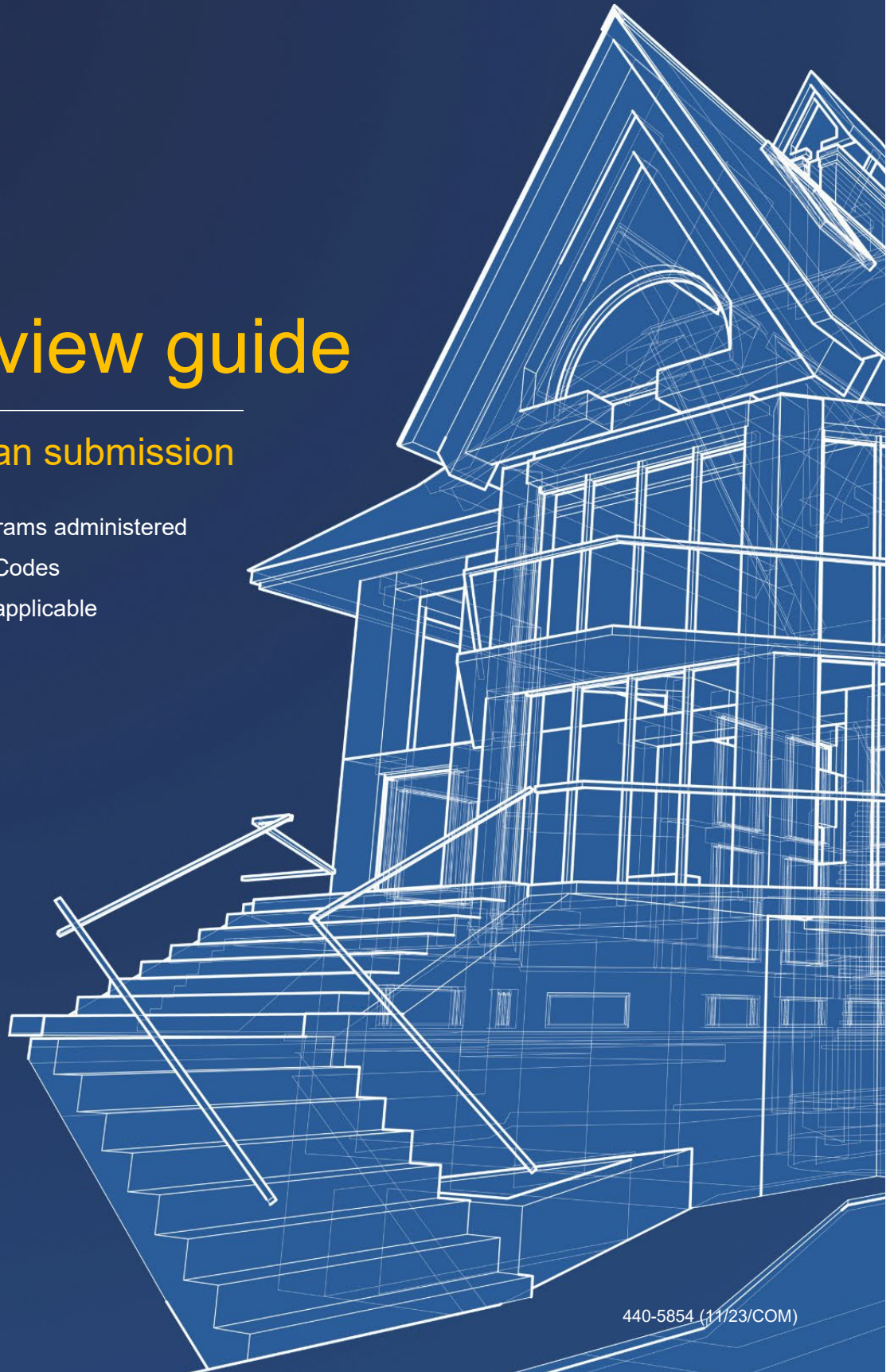
Building  
Codes  
Division

Department of Consumer  
and Business Services

# Plan review guide

## Nailing your plan submission

Only applicable for programs administered  
by the Oregon Building Codes  
Division (BCD) and not applicable  
to other municipalities



440-5854 (11/23/COM)

## Contents

Introduction .....	4
Adopted code acronyms .....	4
When are plans required? .....	4
Who can prepare plans? .....	4
Submitting plans for review .....	5
Common submission issues .....	5
What happens next .....	6
Responding to a hold notice .....	7
Revisions after permit issuance .....	7
Project completion .....	7
Frequently asked questions .....	8
Navigating ePermitting .....	11
Structural plans .....	11
General requirements .....	11
Documents and supporting materials .....	11
Title block .....	11
Code analysis and information sheet .....	11
Hazardous materials .....	12
High-piled combustible storage .....	13
Energy code compliance .....	13
Design calculations .....	13
Design criteria – snow loads and wind speeds .....	13
Snow loads .....	14
Flood plain .....	14
Geotechnical/hazards .....	15
North arrow and scale .....	15
Plot plan .....	15
Sample plot plan .....	15
Foundation plan .....	16
Floor and roof plans .....	17
Separation of occupancies .....	17
Accessibility plan .....	17
Floor and roof framing plans .....	18
Truss information .....	18
Wall bracing .....	18

Cross sections.....	19
Elevations .....	20
Door and window schedules.....	21
Prefabricated buildings.....	22
Special inspections .....	22
Life safety systems ( <i>hoods, alarms and sprinklers</i> ).....	23
Fire alarm review.....	23
Type 1 hood submittals .....	24
Fire suppression system review .....	25
Residential fire sprinkler systems .....	26
Solar photovoltaic (PV) installations .....	26
Prescriptive path .....	27
Nonprescriptive (engineered) path .....	27
Mechanical, electrical, plumbing .....	28
Manufactured homes, RVS, and parks.....	29
Building inspections .....	30
Inspection Quick Reference .....	31
Manufactured home setup inspections .....	31
Typical inspections for most projects.....	32
Commercial or more complex residential projects may require:.....	34
Who can do the work .....	37
Commercial construction .....	37
Residential construction .....	38
Tips for electronic plans .....	39
Submitting plans.....	39
Vector based PDFs .....	39
File sizes .....	39
PDF portfolios .....	40
Scale and page orientation.....	40
Bookmarks and combining files.....	40
Flatten layers.....	41
How to tell when your PDF has layers.....	41
Document security and digital signatures .....	41
Glossary: construction terms.....	43

# Introduction

This guide is a tool provided to help applicants navigate the plan submittal process. The availability of contractors, supplies, and weather concerns are among many factors that affect the success of your project. A smooth plan review is critical so permits can be issued and work can begin.

We encourage you to review information thoroughly before submitting your project. Incomplete plan submittal packages will result in delays. All documents required for your project must be received before the application can be routed for review. Not everything in this guide will apply to your project. Alternatively, the plan reviewer may request additional information.

## Adopted code acronyms

Oregon Building Codes Division (BCD) uses the following acronyms when referencing adopted building codes:

<b>OARDSC</b>	<a href="#">Oregon Amusement Ride and Device Specialty Code</a>	<b>OMDP</b>	<a href="#">Oregon Manufactured Dwelling and Parks Specialty Code</a>
<b>OBPVSC</b>	<a href="#">Oregon Boiler and Pressure Vessel Specialty Code</a>	<b>OMSC</b>	<a href="#">Oregon Mechanical Specialty Code</a>
<b>OEESC</b>	<a href="#">Oregon Energy Efficiency Specialty Code</a>	<b>OPSC</b>	<a href="#">Oregon Plumbing Specialty Code</a>
<b>OELEVSC</b>	<a href="#">Oregon Elevator Specialty Code</a>	<b>ORSC</b>	<a href="#">Oregon Residential Specialty Code</a>
<b>OESC</b>	<a href="#">Oregon Electrical Specialty Code</a>	<b>OSSC</b>	<a href="#">Oregon Structural Specialty Code</a>
<b>OMDISC</b>	<a href="#">Oregon Manufactured Dwelling Installation Specialty Code</a>		

BCD will periodically issue technical bulletins to provide help clarify code provisions. Information on technical bulletins can be found by visiting the [BCD website News and Updates page](#).

## When are plans required?

A well-prepared set of plans is a requirement for most construction projects. Not all items listed in this guide will apply to every proposal; however, all plans must include information sufficient to demonstrate compliance with the code requirements specific to each project. Contact us if you have questions about whether a particular item is required. Visit the BCD website at [oregon.gov/bcd](http://oregon.gov/bcd) for information on the current adopted codes.

## Who can prepare plans?

The permitting process can be complex – even for those experienced in it. Our plan examiners and inspectors cannot design your project. If design assistance is needed or required, we encourage you to work with a properly licensed design professional before you start. This can save both time and money in the long run.

In general, a licensed professional, such as an architect or engineer, is required for commercial projects with a first floor greater than 4,000 square feet and projects over 20 feet in height. This includes alterations and additions to such buildings. Apartment buildings and hotels are considered commercial

projects for this requirement. Be sure they are licensed in Oregon and their stamp is current at the time of submittal. Information on Oregon licensed professionals can be found:

<b>Oregon Construction Contractors Board (CCB)</b>	<a href="http://www.oregon.gov/ccb">www.oregon.gov/ccb</a>
<b>Oregon Building Codes Division (BCD)</b>	<a href="http://www.oregon.gov/bcd/licensing">www.oregon.gov/bcd/licensing</a>
<b>Oregon State Board Of Examiners For Engineering And Land Surveying (OSBEELS)</b>	<a href="http://www.oregon.gov/osbeels">www.oregon.gov/osbeels</a>
<b>Oregon State Board Of Architect Examiners (OSBAE)</b>	<a href="http://www.osbae.com">www.osbae.com</a>

## Submitting plans for review

Once you have collected all relevant information, plans can be submitted for review. Our office prefers electronic plans. Please use one of the following methods for plan submittal.

### Online

Using the E-permitting system:  
[buildingpermits.oregon.gov](http://buildingpermits.oregon.gov)

### In person or by mail

Building Codes Division  
Pendleton Field Office  
800 SE Emigrant Ave. Ste. 360  
Pendleton OR 97801

### By email

Send your plans to this email:  
[building.department@dcbs.oregon.gov](mailto:building.department@dcbs.oregon.gov)

## Common submission issues

Every project is unique; however, in our experience, there are recurring things that delay approval of your plans. Please consider the following as you prepare your project:

- We recommend reaching out to all authorities having jurisdiction (AHJ) to discuss potential requirements (i.e., planning, zoning, DEQ, road department, health department, fire marshal, etc.).
- For projects requiring land-use approval, a copy of the approval must be included with your submission. This can be obtained from your local planning office.
- For properties on a septic system, approval by the on-site (septic) program is needed before building permits can be issued. This isn't the site evaluation report, which only confirms the type of septic system required and the location where the system can be installed; it's not approval to get started. Confirm with the on-site program what steps are needed to secure the sanitation sign-off required for issuance of building permits.
- If there are questions or issues with processing your building application, our office will contact the individual listed as the applicant. This should be someone we can easily get in touch with by phone and email.
- Electronic plans must be submitted as a PDF. Our firewalls block emails with unsupported file types. Work with your permit tech for alternative options if file sizes are too large.
- To avoid delays, construction documents must be legible and drawn to scale.
- Plans labeled not for construction, preliminary, or similar are not acceptable for plan review. The submittal package must be the final drawings and ready to be reviewed. An exception to this is when the drawings are by building manufacturers and marked "for plan review."
- A completed application form is required for each discipline. Without an application form, plan review will not begin for elements requiring separate permits, even when included with the structural plan submittal. The applications should clearly document the scope of work (completed description of work, valuation, fee schedules, and square footage breakdown).

Discipline	Comments	Required documentation
<b>Structural</b>	Fees for new construction are based on a combination of square footage, occupancy type (e.g., M, S1), and construction type (e.g., IIB, VB), which should be noted on your application form. Alterations must include the proposed job valuation because new square footage is not being created.	<ul style="list-style-type: none"> <li>• Description of work</li> <li>• Valuation</li> <li>• Fee schedule</li> <li>• Square footage breakdown</li> </ul>
<b>Mechanical, Fire Alarm, Fire Suppression</b>	Fees are based on proposed job valuation for this scope of work. Plan review is required for fire alarm or fire suppression systems. Plan review may be required for the mechanical system. Note: Residential mechanical fees are based on the fee schedule included on the application form.	<ul style="list-style-type: none"> <li>• Description of work</li> <li>• Valuation</li> <li>• Fee schedule</li> <li>• Square footage breakdown</li> </ul>
<b>Electrical and Plumbing</b>	Fees are based on the fee schedule included on the application form. Plan review may be required.	<ul style="list-style-type: none"> <li>• Description of work</li> <li>• Valuation</li> <li>• Fee schedule</li> </ul>
<b>New Single-Family Home</b>	The division offers a “residential combination” permitting path. This allows for all inspections to be included under one permit number. If going this route, information on the mechanical, plumbing, and electrical installations are needed when you submit for the structural component. If hiring sub-contractors, license information is required before the permit can be issued.	<ul style="list-style-type: none"> <li>• Description of work</li> <li>• Valuation</li> <li>• Fee schedule</li> <li>• Square footage breakdown</li> </ul>

## What happens next

Your plans have been accepted and routed for plan review. Depending on the nature of your project, they may need to be reviewed by multiple plans examiners. After the initial review, you will either receive notice that your permit is ready to be issued or a reviewer will be in touch requesting additional information. Turnaround time varies throughout the year based on the volume and complexity of other projects already in our queue. Refer to the anticipated time lines on the next page.

Type of project	Estimated plan review time	Examples
<b>Minor commercial/residential project</b>	2 to 4 weeks	Nonstructural tenant improvements, new single-family homes, residential accessory buildings, remodels, and additions
<b>Moderate project</b>	4 to 6 weeks	Structural tenant improvements and changes of occupancy
<b>Major project</b>	6 to 8 weeks	New commercial buildings

We encourage you to check your email regularly for updates. It’s good practice to check your junk folder just in case communications get caught in the filter.

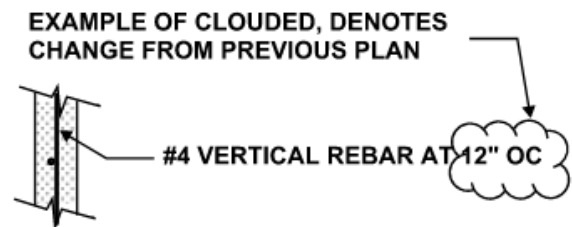
### Responding to a hold notice

After each cycle of plan review, the plans examiner for each discipline (e.g., electrical or life-safety) will either approve the submitted plans in their current form or issue a hold notice. Minor corrections can sometimes be resolved by communicating with your plans examiner; however, if significant changes are necessary, you will be required to update the drawings and resubmit the plans.

The notice will detail missing information or areas of the plans that may not comply with current adopted codes. This is common particularly with commercial projects. Resubmitted plans will generally require less processing time than the original review.

When responding to a hold notice, plans should include a plan review response letter addressing each area of concern:

- Submit a written reply to the plan reviewer detailing the resubmittal documents and indicating where the requested information can be found, such as a detail or page number. If only certain pages or documents have changed, please indicate which pages contain changes.
- Follow the suggested naming format when submitting documents for a new review cycle (ex: plans\_mm-dd-yy.pdf).
- The title block should be updated with the date of the revision.
- Changes to engineered plans must be prepared by the original engineer of record. If the changes are prepared by another party, a letter of release from the original engineer is required. This includes “as-built” changes.
- Proposed changes should be clouded and in the same format and scale as the original submission. (See example on the right)



### Revisions after permit issuance

As each project can have unique characteristics, you will need to reach out to your permit tech for guidance. Making modifications to approved building plans is possible; however, the process will depend on the scope of the changes. Minor revisions can be reviewed on the jobsite by one of our inspectors. More in-depth revisions require a new plan review to make sure the changes don't have unexpected consequences on other design elements.

Some alterations – which include an increase to the footprint of the building or changes that result in an increase to the number of bedrooms or kitchens – require updated land-use approval. If your property is on a septic system, you will also need updated sanitation approval.

### Project completion

Inspections are required as the work progresses. The permit does not list all required inspections, as they will vary depending on the scope of work. As a general rule, you will need to call for inspections before you cover and begin the next phase. Details on inspections can be found in Chapter 1 of the [ORSC](#) and the [OSSC](#), Sections 109 and 110, respectively.

ORSC 109.4 and OSSC 110.6 state that work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official.

It is essential that you complete the inspection process in a timely manner. You have 180 days from the date your permit is issued to begin work. Once construction begins, long delays can result in your permit expiring. This can be for a number of factors, including your land-use approval validity. If delays occur, we encourage you to reach out to the respective agencies that have jurisdiction for guidance. This is typically the planning department, on-site (septic authorization), and the building department.

To close out your project, a final inspection is needed. For some projects, a certificate of occupancy is issued, while other projects may require a certificate of satisfactory completion.

It's advisable to keep records of inspections and close out documents. If you go to sell or refinance your property in the future, the lender may ask for proof any work was permitted and finalized. Our records are not archived for an indefinite period of time.

## Frequently asked questions

### Why should I get a building permit?

Obtaining a building permit is required by law. Going through the permitting process ensures your plans have been approved by a plans examiner who will be looking to see if the plans meet current code standards. This lowers hazards and risks by applying reliable construction practices. Inspections act as a system of checks and balances, resulting in a safer project.

Without a permit, you may run into some issues down the road. When selling property, owners are required to disclose any improvements or repairs made, and if permits and inspections were obtained. Many financial institutions will not finance without proof that construction work was approved. They may require you to tear down and redo the work (this time with a permit), which can lead to increased costs.

Unpermitted work can cause damage to your house. Should you have a flood or fire due to poor plumbing or electrical work, your homeowner's insurance may decline to cover the damage. It is in your best interest to obtain a permit at the start of your project.

### Why are setbacks required between buildings on my own property?

Property and building setbacks refer to the space around a structure left untouched to act as a safety buffer between buildings. Adequate space prevents fire from jumping between buildings and provides space for emergency workers and their equipment.

### What are easements?

Easements dictate areas that have a special function and usually cannot be built on. Utility easements are where the utility company may need to dig up the area to make repairs to lines or services other than those serving exclusively your property. Easement information is recorded as part of the deed to your property.



### Why do I need a septic approval to build when I'm not installing any new plumbing?

If your property is on a septic system, an approval from the on-site program is needed for most construction projects. An approval is required to be sure you are meeting setbacks to your septic and drain fields, even if you will not have plumbing fixtures. You do not want to build on top of them and cause damage to the system. Visit the Oregon Department of Environmental Quality (DEQ's) website at [oregon.gov/deg](http://oregon.gov/deg) for additional information on septic systems.

### What if I built something or altered my building without realizing I needed permits?

It is best to reach out to our office for guidance. The steps involved to remedy the situation will depend on what work was done. Sometimes you need to secure land-use approval as well as approval from the on-site program before you can start the remediation process with building codes.

### I have exclusive farm use (EFU) property. Does this mean all accessory buildings are "AG Exempt"?

No. Ag exemption refers to agricultural buildings and equine (horse) facilities that are exempt from a structural building permit ([ORS 455.315](http://ORS455.315)). The process starts with the zoning approval to determine if your property meets the zoning criteria and the use of the building meets the structural exemption requirements. Once you have land-use approval, the paperwork will need to be submitted to building codes for final structural exemption review and approval. Even if your structure is "ag exempt," permits for electrical, plumbing, or mechanical work must be obtained.

### If I want to remodel my home, which was built 50 years ago, can I build to the code that was in effect then?

The portion of your home involved in the remodel will need to meet current regulations. When feasible, upgrading some elements of your home to comply with current building codes is a good idea. This is especially true of areas related to safety and energy efficiency. Updates can make your home more comfortable to live in, keep you safer, and even save you some money on your utility costs.

### Does this vintage wood stove I found online meet code requirements?

Before purchasing a wood stove or fireplace insert, we recommend doing some research. The [DEQ website](#) is a great source of information for questions related to wood stove emission requirements for Oregon.

### Can I get a refund if I don't complete the work?

No. Fees related to building permits are nonrefundable.

### What can I build without a permit?

There are some accessory structures that don't require a structural permit. To be safe, it is always best to contact both your local planning office and building department to discuss your project. A structure may be exempt from a structural building permit, but still require land-use approval and permits for electrical, plumbing, and mechanical.

### Who is responsible for obtaining permits?

If the property owner is doing the work, they are responsible for acquiring all the permits. If you are hiring a contractor to complete the work, you must confirm they are obtaining the appropriate permits. A contractor is allowed to obtain permits with the approval of the property owner.

### I purchased building plans online. Why do they need to be reviewed?

Building plans purchased online are typically designed for universal conditions and may not be Oregon building code compliant. Plans must be reviewed for site-specific code requirements such as wind speeds, snow loads, or seismic considerations. You may need to hire an Oregon licensed design professional to analyze the design and provide additional drawings and calculations to meet current Oregon building codes.

### Can I construct just the shell of my building for now and finish up the inside later?

In some instances, yes; however, **be aware the building cannot be occupied or used without further guidance from the building official.** A plan review for a shell structure does not contain sufficient information to determine the occupancy classification. Once the shell is complete, work must stop. You will not receive a certificate of occupancy; therefore, the building cannot be legally occupied.

Before the building can be occupied, you will need to apply for the interior build out. Plans need to be submitted identifying the proposed occupancy and showing how the building meets code requirements for the proposed use. Once plans have been approved and inspections completed, a certificate of occupancy can be issued and the building can be occupied.

### How do I schedule inspections? Why am I not getting my inspection reports?

Our inspection process is now electronic. The Oregon ePermitting website and app are great resources for scheduling and tracking your inspections, as well as viewing results. Auto notifications are emailed with your inspection results to the email address provided on your application.

### Why doesn't my permit list the required sequence of inspections?

Each permit has unique characteristics that can affect the order of inspection. We recommend you thoroughly review your approved plan package before you begin. Generally, you will need to call for inspections prior to covering the work and moving to the next stage. You can always contact our office if you have any questions about the flow of the inspection process.

# Navigating ePermitting

For your convenience, access to permit information can be found on the [Oregon ePermitting website](#). From there, you can check the status of your application, make payments, and schedule inspections 24/7 by phone, computer, or smartphone. You can also print reports, such as inspection results, invoices, and certificates of occupancy.

Additional information and tutorials can be found by visiting our website:  
<https://www.oregon.gov/bcd/epermitting/howto/pages/index.aspx>

## Structural plans

### General requirements

Plans must be complete, accurate, legible, and to scale. Include information on all lots, buildings, uses, and tenant spaces involved in the project. Each drawing on the plans must be labeled with the specific building address, unit number, floor level, and if it is showing existing, “as-built,” or proposed new work.

### Documents and supporting materials

- Appropriate application forms
- Zoning approval
- DEQ/sanitation approval
- Truss detail sheets and calculations
- Project manuals
- Technical specifications
- Energy measures (residential)
- ComCheck (commercial)
- Engineers calculations (per discipline)
- Geotech report (if applicable)
- Joist calculations and layout

### Title block

Plans should contain a title block that includes the project address, assessor’s parcel number, the property owner’s name, plan preparer’s name, and the preparer’s contact information (email and phone number). Include the date the plans were prepared, the drawing scale, the sheet number, and a sheet index. If the plan preparer is licensed, the plans must be stamped and signed. Provide a 3-by-3-inch space for BCD reviewer stamps on each plan sheet.

### Code analysis and information sheet

Establishing the applicable codes early in your design process is critical. Buildings are classified as different occupancies that describe how they are used, which drives which code requirements apply. The code analysis section guides jurisdictions having authority in their review process. Examples are planning, building codes, DEQ, and the fire marshal’s office. These agencies will compare the proposed design documents against the requirements of the applicable codes. This section serves as a vital reference for all parties during your project. Information on occupancy classification can be found in Chapter 3 of the [OSSC](#).

In some instances, providing a written narrative of how spaces will be used can be helpful to the reviewer. This can be an important communication tool to explain goals, design priorities, and methods used to address any unique characteristics or challenges with your project. Include a summary of information and area calculations necessary to demonstrate compliance with building codes.

- Land uses, include if the site is in a fire or special flood hazard area
- Occupancy group classification and occupant load calculations (include exiting and plumbing fixture count)
- Construction type (e.g., IIA, VA, or VB)
- List the applicable building codes for the project
- If code violations exist, identify the nature and extent of the violation and the proposed correction
- Indicate the building height, number of stories, and date of original construction, if known
- An opening protection calculation (for all openings on exterior walls where fire-rated construction is required)
- Diagram of fire separation distances that apply
- Statement of fire sprinklers. Note, if any fire sprinkler or utility upgrades are required, including undergrounding
- Additions and demolition, separate line items for all new and demolition floor area
- Parking, automobile, and bicycle, include number of spaces and the required ratio
- Means of egress for all portions of the building
- Floors, provide each floor separately (e.g., 1st, 2nd, basement, or cellar)
- Accessory buildings, each building separately and cumulative on site
- Architectural features, such as porches, landings, decks, patio covers, towers, or gazebos
- Conversions, any floor area to be converted from one use to another (e.g., garage to living space)
- Impervious areas, new, replaced, or removed (sidewalks, parking lots, etc.)
- Residential uses, each unit separately and the number of bedrooms in each unit
- Mixed uses, indicate percentage of total floor area devoted to residential use
- Nonresidential uses, provide each land use (warehouse, retail, office) separately
- Unpermitted areas, any as-built or unpermitted floor area to be permitted or demolished

## Hazardous materials

Flammable, toxic, and other hazardous materials can create dangerous conditions that must be considered in the building design. Small quantities of these materials are allowed in buildings, and larger amounts can be included with additional safety features. One of the first steps in a building design is to identify what hazardous materials will be stored and in what quantities.

Customers are often surprised to learn that many chemicals they routinely use and store are hazardous. Some are even the same materials you have in your home. Examples of building use that can have significant amounts of hazardous materials are listed below.

- Pool houses with chemical storage
- Water treatment plants
- Industrial fabrication
- Hemp processing facilities
- Commercial auto repair or supplies
- Commercial paint booths
- Veterinary clinic with embalming chemicals
- Farm supply stores

The above is only a sampling of situations where hazardous materials may be present. Be sure to discuss with your design professional all processes, procedures, or storage that may be present on your site so they can include this information in their code analysis.

### High-piled combustible storage

Even nonhazardous materials can burn and create challenges for firefighters when stored. Most combustible materials can be stored up to 12 feet above the floor without special consideration. Above this height, combustible storage will require special building design and is considered high-piled storage. For projects that will have significant storage, include a storage plan that shows where storage will occur and full details at each location.

Some materials can be dangerous when stored at less than 12 feet above the floor. These materials have lower height limits before special building design is required. Examples of these types of materials, which are considered to be high-piled storage at less than 12 feet, include:

- Aerosol cans
- Tires
- Flammable liquids
- Idle pallets
- Materials that are mostly (Group A) plastic

The above are only a sample of materials that burn easily or extra hot that trigger a lower high-piled combustible storage height. Be sure to discuss with your design professional all material storage that may be present on your site, so they can include this information in their code analysis.

### Energy code compliance

The purpose of the energy code is to help reduce energy consumption and emissions by setting minimum efficiency requirements. These can be elements that heat, cool, light, ventilate, and provide hot water to buildings.

For residential projects, show compliance with [ORSC Chapter 11 Energy Efficiency](#) by identifying the additional measure chosen from table N1101.1(2) (when applicable). Where Measure 6 is chosen, provide supporting calculations. A calculator to assist in these calculations can be found on the BCD website under [compliance tools](#).

For commercial projects, provide [ComCheck](#) information or energy modeling. Additional information can be found in the OEESC and on the BCD website at [commercial energy code compliance, training, and resources](#).

### Design calculations

Design calculations are the math used by your engineer. Engineers use them to determine the loads a building must withstand and the properties of members that comprise its structure. These include piers, piles, footings, columns, joists, beams, slabs, trusses, and rafters, as well as the various connection mechanisms that hold the structure together.

For plan review, you will need to provide calculations for all structural load carrying members that are not based on prescriptive span tables in the code.

### Design criteria – snow loads and wind speeds

The design criteria will be different for each building based on building risk category, site location, and the surrounding environment. Wind speeds and exposure, snow load, and seismic data are among the environmental and climatic considerations factored into structural design. The structure must be able to carry loads safely. A single snowfall may not weigh much, but accumulating snowfalls can produce enough load on the roof to cause it to collapse if not properly designed.

The term “prescriptive path” may come up often. The prescriptive path requires that each element meet a minimum acceptable standard as outlined in the applicable codes. Think of this as a recipe where you must have all the necessary ingredients and follow the steps. If you are missing an ingredient or want to deviate from the instructions, then you are no longer following the recipe. In these instances, a design professional is needed.

A design professional will look at the geometry of the building and complete a load assessment. Live loads are typical forces such as the weight of people and furniture. Buildings are also affected by environmental forces such as wind, snow, and seismic activity, which can change over time. Dead loads are those that are static, such as the weight of material used to construct the building, HVAC equipment, and similar elements.

Residential design criteria	Commercial design criteria
<b>Basic design wind speed</b> ( <a href="#">ORSC</a> Table R301.2(1), Figure R301.2.1)	<b>Basic design wind speed</b> ( <a href="#">OSSC</a> Table 1609.3 and Figure 1609.3)
<b>Seismic design category</b> ( <a href="#">ORSC</a> Figure R301.2.2.1)	<b>Seismic design category</b> ( <a href="#">OSSC</a> 1613.2.5 with <a href="http://hazards.atcouncil.org">hazards.atcouncil.org</a> )
<b>Soils load-bearing pressure</b> ( <a href="#">ORSC</a> Table R401.4.1))	<b>Soils allowable bearing pressure</b> Geotechnical investigations shall be conducted in accordance with <a href="#">OSSC</a> Section 1803.2 and reported in accordance with <a href="#">OSSC</a> Section 1803.6. Presumptive load-bearing pressure in accordance with <a href="#">OSSC</a> Table 1806.2
<b>Frost line depth</b> ( <a href="#">ORSC</a> Table R301.2(1))	<b>Frost line depth</b> ( <a href="#">ORSC</a> Table R301.2(1))
<b>Snow load</b> ( <a href="#">ORSC</a> Table R301.2(1))	<b>Rain load data</b> ( <a href="#">OPSC</a> Table D 101.1)

It is the design professional’s responsibility to show how the project meets applicable codes when they are designing a nonprescriptive building.

## Snow loads

In accordance with OSSC 1608.2.2, the ground snow load is based on the snow load analysis published by the Structural Engineer Association of Oregon (SEAO) at <http://snowload.seao.org/>. To find the ground snow load used to determine the design snow loads for buildings and other structures, refer [to the online lookup tool](#) or the [online map](#) published by SEAO.

## Flood plain

Design flood elevation is determined by the flood plain administrator using flood hazard area maps or by an alternate method when maps are not available. Flood hazard areas are established by the

Federal Emergency Management Agency (FEMA) and available for reference at <https://msc.fema.gov/portal/home>.

## Geotechnical/hazards

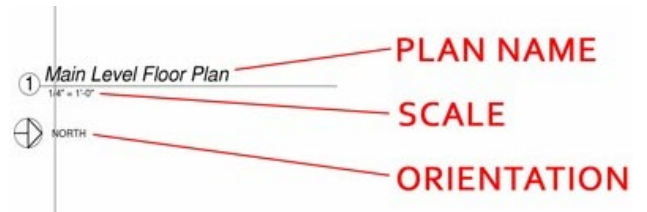
Geohazards include 100-year flooding, Cascadia subduction zone earthquake shaking and tsunami, coastal erosion, volcano, active faults, earthquake soft soil, landslide, and more. The Oregon HazVu map provides a way to view many different geohazards across the state.

For information about the risks of landslides, liquefaction, and faults, visit the statewide geohazards viewer at [oregongeology.org/hazvu](http://oregongeology.org/hazvu).

## North arrow and scale

Provide both a true north arrow and a “project north” arrow (if different), and apply consistently across all sheets. Both a graphic scale and a fractional scale are needed. Scales must be conventional standards typically found on an architect or engineer’s ruler.

- Site plans, grading plans. Can be architectural (example 1/8-inch = 1-foot scale); or engineering (example, 1-inch = 10-feet) scale
- Floor plans, details, elevations, sections: architectural only, recommend 1/4-inch = 1-foot scale

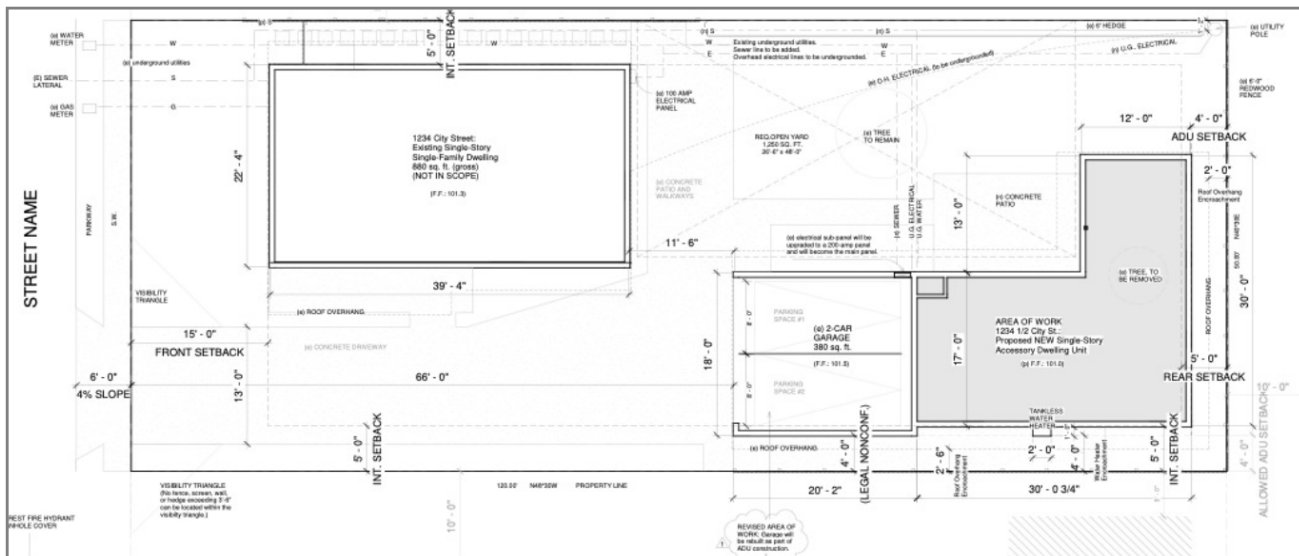


## Plot plan

A basic site plan may be submitted for minor projects, such as accessory buildings and interior remodels.

- Label the area of work
- Provide complete property lines with dimensions and bearings
- Zoning information such as setbacks and open yard
- Show all buildings and label the use of each
- Show distance to property lines
- Street or right-of-way improvements, parking, and driveways
- Distances from the proposed structure to the nearest other buildings on the site

## Sample plot plan



A detailed plot plan is required for more complex projects, such as additions or construction of a new building. It includes everything required for a basic site plan, but with added details. Plan must also include (as applicable):

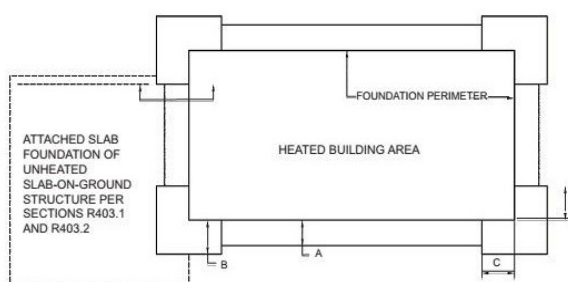
- **Roof overhangs** and other architectural features; superimpose an outline of the upper story over the lower story
- **Separate site plans** showing the existing and proposed plans should be provided
- **A demolition plan** or “as-built” site plan may be required
- **Mechanical equipment** location, dimensions, distance to property; include other items such as trash enclosures
- **Distance between adjacent buildings** and from all structures, all floors, and to all property lines
- **Ingress/egress** show primary entrance to each building, path of travel, pedestrian walkways, and emergency vehicle access
- **Accessibility standards**, including accessible parking and loading areas
- **Utility connections and meters**, include type, location, clearances, if overhead or underground; include fire hydrants and manholes
- **Parking lot** entrance/exit points, and dimensions of landscape planters
- **Significant site features**, including abandoned oil wells, creeks, wetlands, landslides, septic tanks, leach fields, water wells, earthquake faults, and steep slopes
- **Encroachments** into setbacks and open yard dimension, label, and show distance to property lines; label exceptions, waivers, or modifications
- **Drainage and erosion control**, indicate where storm water from all impervious areas will flow
- **Fences and hedges** over 42-inches in height, location, height, and materials; include planter walls and guardrails; indicate any exceptions, waivers, or modifications
- **Roadway dimensions and right-of-way limits** in addition to widths of adjacent streets (by name), alleys, or other adjacent property
- **Public and private easements**, include location, dimensions, and purpose
- **Dimensioned setbacks** front, interior, and rear; indicate if upper stories have a different setback than lower stories, or if different buildings and uses have different setbacks
- **Parking spaces**, number each space, show dimensions and angle of parking stalls, drive aisles, bay widths, and maneuvering areas

Electric vehicle (EV) charging infrastructure requirements were changed in July 2022 with House Bill 2180. Please review ORS 455.417 for additional information.

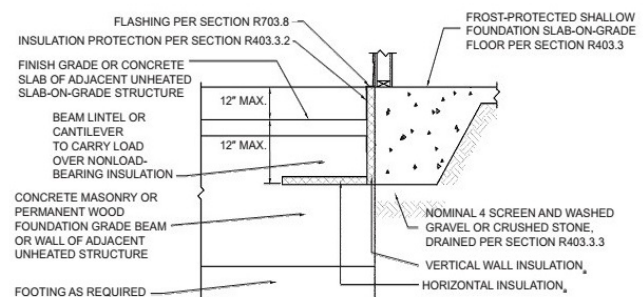
## Foundation plan

Include details of plan dimensions, depth and size of footings, placement of reinforcing steel, anchor bolt size and location, hold-downs, and associated details, including reinforcement requirements and foundation vent locations. Where provided, geotechnical (soil) report recommendations must be incorporated into the plan set. Include a copy of the report with the engineer’s contact information.

HORIZONTAL INSULATION PLAN



INSULATION DETAIL



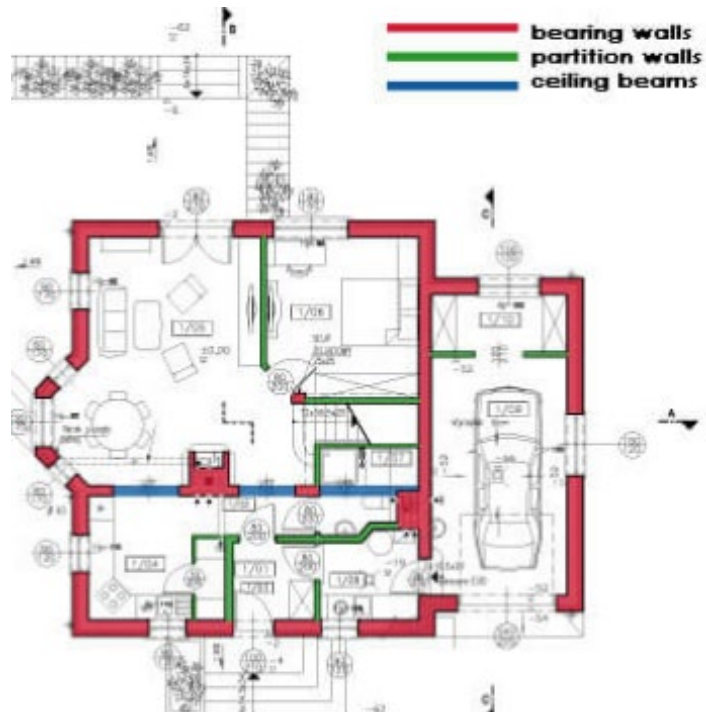


We encourage you to read the new requirements for whole-house ventilation (WHV) per section M1505.4 of the 2021 ORSC. Sections N1104.7 (slab-on-grade-floors), N1105.2 (insulation of ducts), and N1105.3 (installation of ducts) also pertain to this new requirement.

## Floor and roof plans

Existing and proposed complete (not partial) floor and roof plans are required. All plans must be dimensioned to show significant measurements, label the area of work, and show the following information:

- Property lines and setbacks should be shown on floor plans if a building or structure is on, or near, the setbacks
- All building walls, those to remain and those to be removed or added, along with a wall legend
- Interior dimensions of covered parking areas
- Floor plans of each level where the use of each room is identified
- Identify the existing and intended use of all rooms; indicate if the room is livable
- All doors and windows, existing and proposed
- Stairs and landings
- Walls and legend
- Smoke detectors and appliances



## Separation of occupancies

The floor plan must show demising walls, partitions, corridors, fire, and sound transmission separation with applicable detailing as required between occupancies, tenants, or residential units. Show the accessible path of travel through the building.

[Refer to OSSC Chapters 3 and 5 to learn more.](#)

## Accessibility plan

Commercial projects are required to address the accessibility obligations of the Americans with Disabilities Act (ADA) of 1990 and be readily accessible to, and usable by, individuals with disabilities. Document the path of travel from the public sidewalk and parking to the area of the proposed work. Upgrades can include parking, walks, entry, restroom, signage, and other elements.

[Refer to Chapter 11 of the OSSC for additional information.](#)

## Floor and roof framing plans

Provide a plan for each roof, and floor framing assembly that shows all structural elements of framing members and supports:

- Sizes
- Spacing
- Lumber species and grade
- Bearing locations
- Method of attachment (e.g., hardware)
- Roof pitch
- Attic ventilation requirements
- Engineered truss information

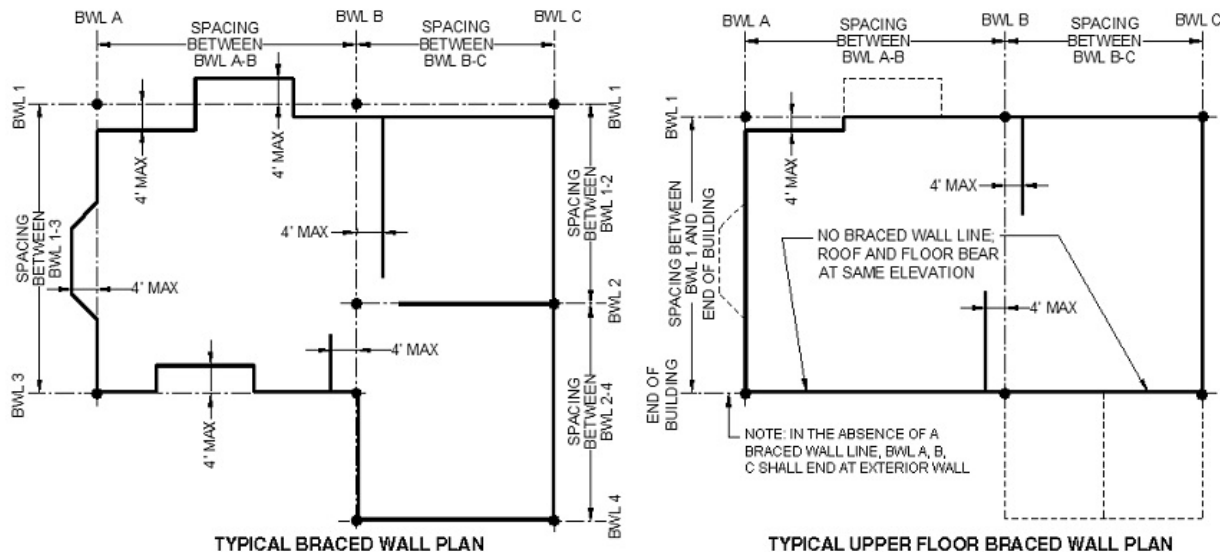
## Truss information

- For trusses: Provide truss layout and truss calculation sheets for review.
- For “stick-framed” roofs: Plans are required to show rafter size, span, ceiling joist size, span, direction, and spacing, as well as rafter-to-joist connections, collar ties, rafter ties, purlins, braces, and bearing points, as applicable.

We understand getting the truss information may be difficult. This information is required because the truss companies often change the framing layout. If this occurs, it will require the plans to be re-evaluated based on the new layout, which can result in additional plan review costs. Truss sheets may be preliminary at the time of plan review without the engineer’s stamp. Stamped plans will be required on site prior to framing for the inspector’s review.

## Wall bracing

Provide engineered or prescriptive lateral calculations and plans showing the following information:



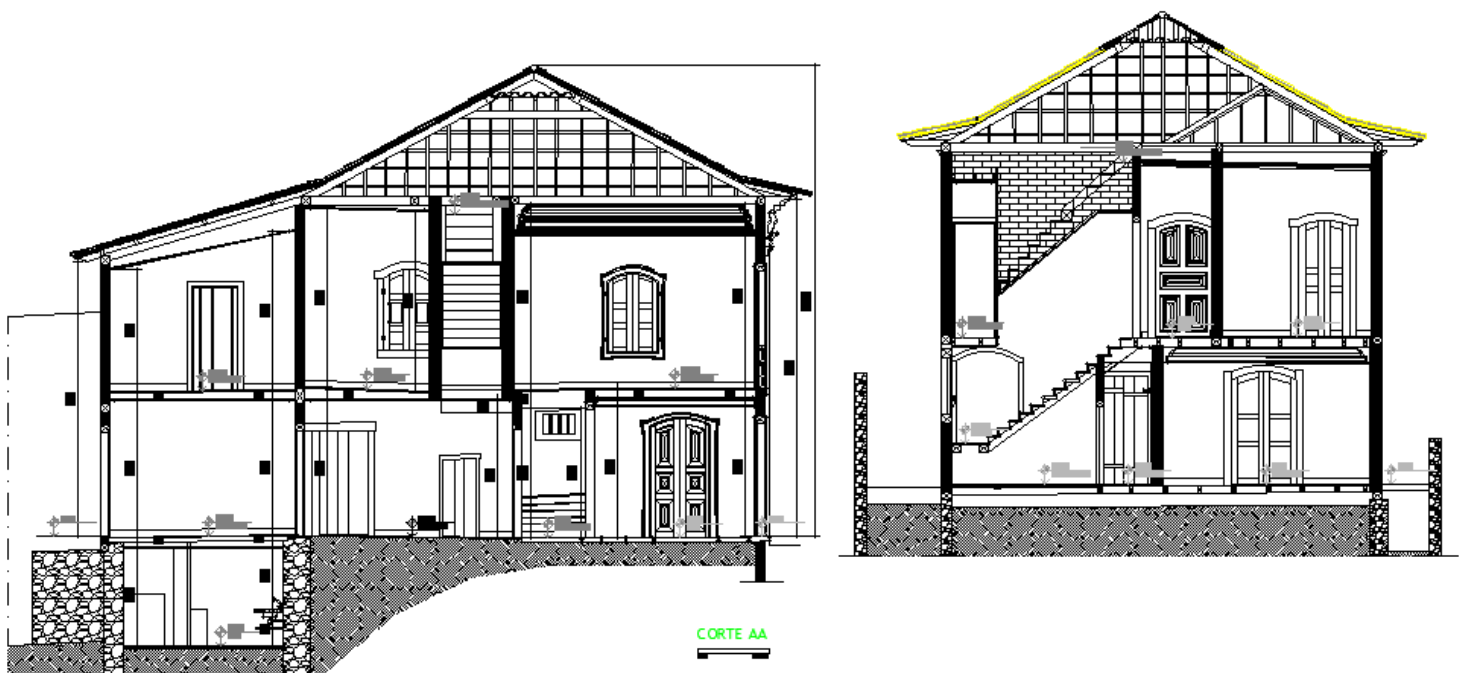
- Associated connections to roof, floor, and foundation
- Braced wall lines
- Bracing method
- Engineered truss information
- Header, beam, post location, and sizes
- Location and length of braced wall panels
- Method of attachment (e.g., hardware/hold-downs)
- Portal frame type (e.g., single-span or multiple headers)
- Portal frames
- Shearwalls

For commercial buildings, review the [OSSC](#) for additional information. For residential projects, refer to [Chapter 6 of the ORSC](#).

Walls can be defined as either “load bearing” or “non-load bearing.” A load-bearing wall is a wall that supports the weight of a structure. It is important prior to modifying walls to identify which structural members are supported by them.

## Cross sections

Sections through critical points of the proposed building should be provided. At least two sections (longitudinal and lateral) are required. Additional sections may be necessary where character, height, or detail of the building and cross slope changes. Additional information should be provided on each section as applicable: existing and proposed grade, building height, and floor-to-ceiling height.



### Framing members including:

- Floor beams
- Headers
- Joists
- Sub-floor
- Wall construction
- Roof construction

### Wall and roof information including:

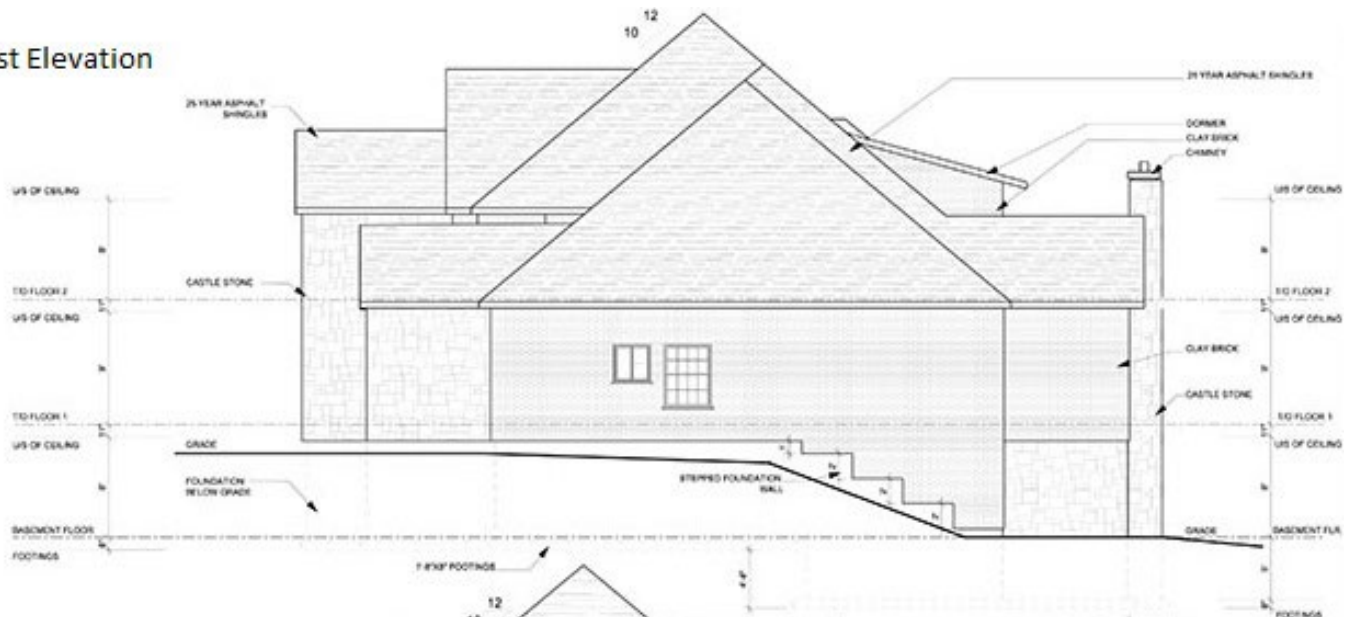
- Sheathing
- Thermal insulation
- Roofing materials
- Roof slope
- Floor-to-ceiling height
- Siding material
- Footings and foundation
- Stairs
- Fireplace construction
- Interior finishes

## Elevations

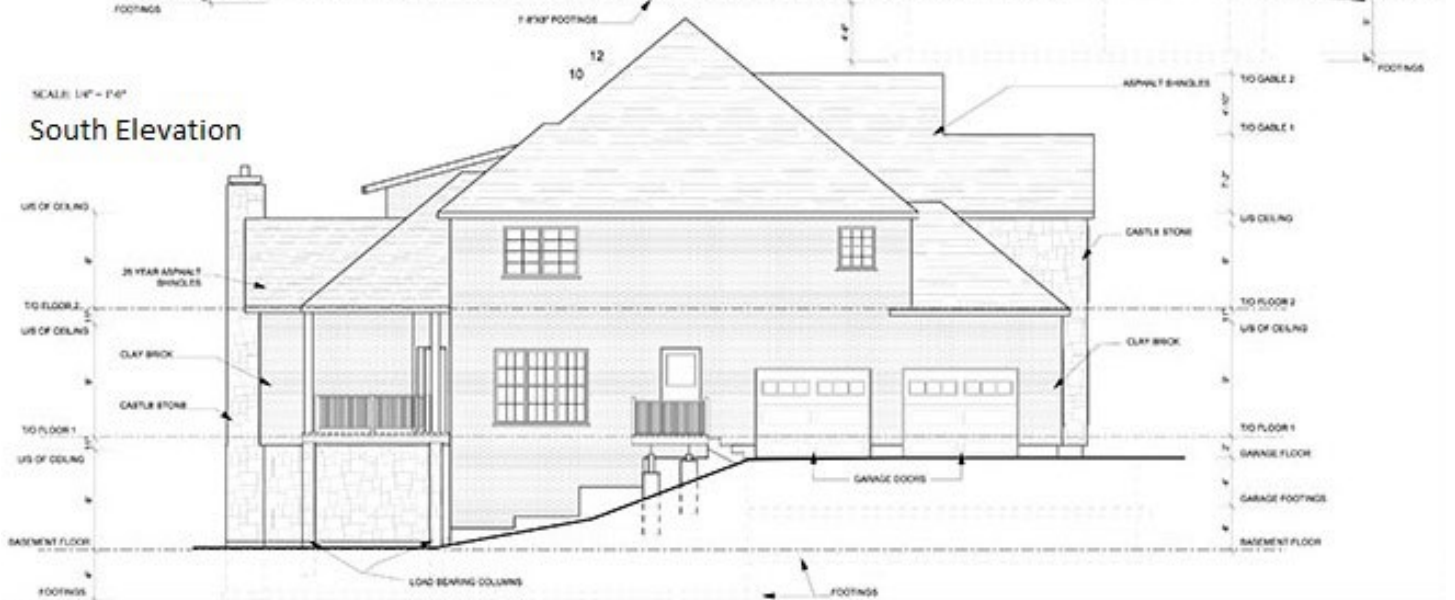
Elevations are required for each building face related to the scope of work. The type of building materials on wall surfaces, roofs, windows, and doors must be indicated, including building materials for homes located in wildfire hazard areas. Show the existing and proposed grade planes and heights of all buildings. Label the area of work and show the following information:

- Property lines and setbacks should be shown if a building or structure is on, or near, the setbacks
- Height of building or other architectural features; note exceptions to height limitations
- Width and vertical clearance of garage door, all exterior landings, and height of planter walls
- Relative property elevations and finished floor elevations
- Base flood elevation and design flood elevation
- Existing and proposed grade
- Building materials
- Plate heights and roof pitch

West Elevation



SCALE: 1/4" = 1'-0"  
South Elevation



## Door and window schedules

A door window and door schedule is required for each project. Door and window schedules provide additional information that a contractor or installer will typically need for installation, such as the different types of windows and doors to be used in a building, their locations, and the hardware and finishes to be used with each of them.

Show fire ratings, egress windows, and safety glazing where applicable on the appropriate schedule.

Code requirements are driven by the proposed use of the building and the type of construction. Some projects will require additional life safety provisions such as panic hardware on doors.

### DOOR SCHEDULE

DOOR #	DOOR SIZE	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	HARDWARE GROUP	FIRE RATING	DOOR REMARKS
100	3' X 7'	C	AL	FF	1		1, 3, 5
101	3' X 7'	A	WD	ST	2		
103	3' X 7'	B	HM	FF	3	20 MIN	2, 4
104A	6' X 7'	D	HM	FF	3	20 MIN	2, 4
104B	3' X 6'-8"	A	HM	ST	4		

#### GENERAL NOTES

1. HARDWARE TO BE ACCESSIBLE IN COMPLIANCE WITH ANSI A117.1.
2. DOORS SHALL BE OPERABLE FROM THE INTERIOR WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
3. GLAZING IN DOORS SHALL BE SAFETY GLAZING.

#### DOOR SCHEDULE LEGEND

FF= FACTORY FINISH  
 ST= STAIN  
 HM= HOLLOW METAL  
 AL= ALUMINUM STOREFRONT

#### DOOR SCHEDULE REMARKS

1. PROVIDE SIGN "THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED"
2. PROVIDE MAGNETIC HOLD OPENS TIED TO FIRE ALARM SYSTEM
3. COMMERCIAL GRADE EXTERIOR DOOR
4. PROVIDE SMOKE SEAL AND CLOSER
5. EXTERIOR DOOR WITH U=0.45 MAXIMUM, SHGC=0.33 MAXIMUM

#### DOOR HARDWARE GROUPS

GROUP 1	GROUP 2	GROUP 3	GROUP 4
3 HINGES	2 HINGES	2 HINGES	2 HINGES
PUSH BAR	LEVER	LEVER	LEVER
EXTERIOR KEY	CLASSROOM LOCK	CLASSROOM LOCK	PASSAGE
CLOSER	CLOSER	CLOSER	
WEATHERSTRIPPING	KICKPLATE		

Sample door schedule

### WINDOW SCHEDULE

WINDOW MARK	WINDOW TYPE	WINDOW SIZE	WINDOW MATERIAL	SAFETY GLAZING	HEADER HEIGHT	WINDOW REMARKS
1	SLIDER	5' X 4'	VINYL		7'	1, 3
2	FIXED	4' X 1'-6"	VINYL	X	5'	2
3	FIXED	3' X 7'	VINYL	X	7'-6"	2
4	SLIDER	3' X 3'	VINYL		7'	1

#### DOOR SCHEDULE REMARKS

1. WINDOWS DOUBLE PANED WITH U=0.45 MAX, SHGC=0.33 MAX
2. WINDOWS DOUBLE PANED WITH U=0.36 MAX, SHGC=0.38 MAX
3. EGRESS WINDOW, CONFIRM EGRESS HARDWARE

Sample window schedule

## Prefabricated buildings

The Building Codes Division administrates a statewide prefabricated structures program (ORS 455.705 and OAR 918-674). Prefabricated structures are also known as modular buildings in other states. Prefabricated structures are as defined in ORS 455.010 and are not manufactured dwellings. Like a site-built structure, prefabricated buildings are required to meet applicable [Oregon adopted specialty code requirements](#) (for structural, mechanical, electrical, plumbing, and energy). For more details on this program, visit the [Prefabricated Structures Program webpage](#).

Permits by the local building jurisdiction are needed before a prefabricated building can be set. Along with copies of the land and sanitation approvals, you will need to submit a structural application form and complete set of approved plans from the statewide Prefabricated Structures Program. This includes the notice-of-plan-review document. Most on-site work includes the foundation and connections to utilities and will require building permits and possibly plan review, as applicable.

For manufactured homes, review the [Manufactured Homes, RVs, and Parks](#) section of this guide.

A manufacturer, designee, or owner is responsible for notifying the local jurisdiction that an Oregon-approved prefabricated structure being installed has additional items that were not inspected at the manufacturer’s facility, as well as provide a copy of the notice to local enforcement agency (NLEA). Additional permits may be needed for the scope of work indicated by the NLEA.

## Special inspections

With larger residential and commercial projects, the design professional will determine if special inspections are required. If required, your design professional will prepare a statement of special inspections [OSSC](#) (1704.1.1). There are many types of special inspections related to structural components, life-safety items, fire proofing, and seismic considerations. Often this is based on the need for specialized knowledge, training, or testing equipment required to complete these inspections.

CONCRETE CONSTRUCTION (IBC 1705.3)			
Areas requiring special Inspection	Continuous	Periodic	Comments
Reinforcing Steel Placement		✓	Verify size, clearances, splices and proper ties.
Verify required design mix		✓	Verify mix design meets strength and exposure requirements listed on approved plans.
Concrete placement/ sampling	✓		Includes sampling for air, slump, strength and temperature tests

EXAMPLE OF AN ACCEPTABLE STATEMENT OF SPECIAL INSPECTIONS

Noting “concrete special inspections per [OSSC](#), Chapter 1705.3” is not an an acceptable statement of special inspections. Confusion on special inspections can cause delays on the jobsite. Refer to special inspections in [Chapter 17 of the OSSC](#) for additional information.

## Life safety systems *(hoods, alarms and sprinklers)*

The following are general guidelines for submitting plans relating to fire alarm and suppression systems. Applicants should reach out to the fire marshal for their requirements. Plans must contain complete and accurate information, including contractor name, address, and license information. The plans should note the building occupancy type, construction type, and square footage.

Refer to Chapter 9 of the [Oregon Structural Specialty Code \(OSSC\)](#) or the appropriate [National Fire Protection Association \(NFPA\) codes and standards](#). These sections are provided to give you a starting point and are not a complete list of requirements.

### Fire alarm review

Fire alarm plans must be prepared by a general supervising electrician, general journeyman electrician, or Class A limited energy technician licensee who is employed by a licensed electrical contractor and acting both within the scope of the licensee's license and as a signing supervisor. Plans must include the preparer's name and contact information. Plans must be intended for the employing licensed electrical contractor's customers or for an electrical contractor who purchases the design and parts.

The following items are needed as part of a fire alarm submittal (standard NFPA 72 Section 7.2.1):

1. Written narrative providing intent and system description
2. Riser diagram
3. Floorplan layout showing locations of all devices, control equipment, supervising station, and shared communications equipment with each sheet showing the following:
  - a. Point of compass (north arrow)
  - b. A graphic representation of the scale used
  - c. Legend of symbols used
  - d. Room use identification
  - e. Building features that will affect the placement of initiating devices and notification appliances
4. Sequence of operation in either an input/output matrix or narrative form
5. Equipment technical data sheets
6. Battery capacity and de-rating calculations
7. Voltage drop calculations for notifications appliance circuits
8. Mounting height elevations for wall-mounted devices and appliances
9. Where occupant notification is required, minimum sound pressure levels that must be produced by the audible notification appliances in applicable covered areas
10. Pathway diagrams between the control unit and the supervising station and shared communications equipment
11. System design documents shall identify the name and contact information of the system designer
12. Indicate on the plans the year of the standard used for design

Alternatively, the plans may be prepared under the supervision of an electrical engineer licensed in Oregon who shall stamp the plans. ([OAR 918-261-0015](#))

### Type 1 hood submittals

Commercial kitchens can be a fire hazard. Hoods always require plan review prior to installation. We strongly encourage you to hire a professional mechanical contractor that specializes in hood installations. To help avoid costly mistakes have approved plans prior to ordering the hood and associated equipment.

Hood design needs to occur early in the project so structural changes can be incorporated into the plans. Where hoods are being installed in existing construction, a separate structural permit is required for changes to construction for the hood:

- Name and type of hood suppression system for Type 1 hood; system must be UL-300 compliant
- Hood drawings from the manufacturer required; drawings show where reduced clearances to combustibles have been built into the hood
- Floor plan of the kitchen including equipment layout
- Plans showing locations for the nozzles in the plenums, hood, and over all cooking equipment
- Calculations for nozzles and show tank size
- Suppression pipe isometrics with pipe length, location for tank, and main shutoff
- Building cross section near the hood, exhaust ducting, or exhaust fan showing distances to ceilings, walls, roofs, and other buildings
- Information on wall construction and ceiling construction where located within 18 inches of the hood
- Information on any fire-rated construction between the kitchen and the exhaust termination; Type 1 hoods can drive changes to structural elements in the building; noncombustible or fire-rated construction may be required nearby; ducts and associated clearances from combustibles may not fit between standard trusses or rafters at 24 inches on center; the weight of the hood must be supported
- If using stainless steel or other clean, noncombustible material on the walls or ceiling, note the gauge/material information on the plans; this material is often required by the health authority, so check with them prior to submitting plans
- Location and amount of air from HVAC system supply and returns can affect the hood operation. Some hood manufacturers prohibit return air vents within a certain distance of the hood. Show HVAC supply and return vents on the drawings in the room with the hood and in adjacent rooms that are open to the room with the hood.
- The amount of makeup air supplied to the building from all sources shall be approximately equal to the amount of exhaust air for all exhaust systems for the building. The temperature differential between makeup air and the air in the conditioned space shall not exceed 10 degrees Fahrenheit, except where the added heating and cooling loads of the makeup air do not exceed the capacity of the HVAC system.



### Fire suppression system review

Working plans shall be drawn to an indicated scale, on sheets of uniform size, with a plan of each floor, and shall show those items from the following list that pertain to the design of the system (for a full list, refer to Standard NFPA 13, Section 27.1.3):

1. Drawings including the licensed professional information, creation date, and NFPA year to which the system is designed
2. Clear and definitive scope of work, including type of system (e.g., wet, dry, preaction, or deluge)
3. Site/plot drawings with paved roads, fire lanes, parking, building orientation, and locations of fire hydrants
4. Site/plot drawings indicating location, weight/class, size, and length of underground piping and materials from water source to riser; include any valves, meters, valve pit (include pit details), depth to bury pipe, thrust blocks, etc.
5. Floor plan to scale with point of compass and scale noted; include locations of wall partitions, fire walls, floor openings, concealed spaces, etc.; clearly label each area/room as to its use or title; any area without sprinklers shall be clearly indicated and the appropriate NFPA 13 exception number shall be included; please note if the following applies:
  - a. Hazardous rooms/areas
  - b. Types of commodities
  - c. High-pile storage. If racks are used, show aisle widths and elevations with storage height dimensions. Indicate how the product is stored (e.g., wood or plastic pallets or shelves) and how the product is packaged (e.g., containers, boxes, or shrink wrap)
6. Include full height cross section and elevations of the facility, include ceiling construction; provide the type of construction (per NFPA 13)
7. If room design method is used, provide information of room rating, including self-closing doors and indicate all unprotected wall openings throughout that floor
8. Indicate location and type of inspector test; show all control valves, switches, and alarm/flow devices
9. Indicate all duct work, ceiling layouts, lighting, diffusers, etc. that may affect the system coverage
10. Hydraulic calculation or pipe schedule and list of components with specification sheets
11. Provide system design data at each design area; hydraulic reference points shown on the plan shall correspond with a comparable reference on the hydraulic calculations

### Underground fire line

Per **NFPA 13, 24, and 25** required inspections include underground visual of pipe and connections, hydrostatic pressure, and the flushing of the line until water runs clear. The underground piping flush test includes all hydrants and lead-ins to riser room.

### Aboveground sprinkler system

Required inspections include aboveground visual of piping and connections, hangers, heads, and other components. Hydrostatic pressure test, as per **NFPA 13**, and flow and tamper switch operation.

Copies of the contractor's **material and test certificates** for both the underground and aboveground piping must be provided to the authority having jurisdiction upon completion of the hydrostatic tests. These must be received before the final inspection can be approved.

### Residential fire sprinkler systems

Smoke alarms are essential and will alert your family in the event of a fire. While fire sprinklers are not typically required in one- or two-family dwellings there are some reasons you may want to invest in this added layer of protection. Perhaps your home is located in a high-risk fire area or where either fire department access or firefighting water (hydrants) is limited. Maybe someone in your household has difficulty hearing smoke alarms, or difficulty reacting quickly enough for safe escape (i.e., infants and small children, older adults, persons with disabilities, and other high-risk population groups).

When residential fire sprinkler systems are voluntarily installed they must comply with a recognized industry standard to ensure proper design, installation, and inspection. Permits are required for all installations: standalone, multipurpose, partial or complete. Plan review will require much of the same submittal information as a commercial system.

### Solar photovoltaic (PV) installations

The increase in demand for photovoltaic (PV) systems on rooftops created an awareness of the need for firefighter safety. Designated pathways on roofs with PV systems are necessary to provide safe unobstructed access for firefighting operations and to also provide escape routes.

Solar photovoltaic (PV) systems use cells, typically in the form of panels, to convert energy from sunlight into electricity:

- Roof-top solar PV systems are used to supplement energy use in residential and commercial structures.
- Utility-scale solar PV systems are built to supply power to a utility's electrical grid. These systems are often referred to as solar parks, farms, or ranches.

A structural permit is always required for roof-top solar installations; however, there are two permitting pathways – **prescriptive** and **nonprescriptive (engineered)**. To know which path is right for your project, an assessment of the roof construction is needed.

## Prescriptive path

Prescriptive installations are defined in [OSSC 3111](#) as roof installations on conventional light-frame construction (such as a wood-framed house) that comply with specific criteria and do not require an engineered design. This path requires that the application adequately demonstrates the installation qualifies with the checklist criteria and is therefore eligible for the prescriptive path option.

Permit requirements	Submission checklist
<p>If eligible for the prescriptive path, a flat-rate residential structural permit is required, and there are no other permits or plan review fees applicable. Electrical work requires a separate electrical permit.</p> <p><a href="#">(OAR 918-050-0180 (1)(a))</a></p>	<ul style="list-style-type: none"> <li>• <a href="#">Structural application (Form 2546pen)</a></li> <li>• <a href="#">Prescriptive checklist (Form 4910)</a></li> <li>• Site plan: Show the location of the PV system in relation to buildings, structures, property lines, and, as applicable, flood hazard areas.</li> <li>• Plans, including information regarding roof framing (truss/rafter size, type and spacing), array, and roof areas, required fire access pathways and PV module system racking attachment.</li> </ul>

## Nonprescriptive (engineered) path

Unless the project meets all the requirements of the prescriptive path, the installation is nonprescriptive. This can include ground-mounted systems, systems installed on roofs that are not conventional light-frame construction, installations in high wind or ground snow load areas or flood hazard areas, or installations where the combined weight of the equipment and racking exceeds 4.5 pounds per square foot.

Permit requirements	Submission checklist
<p>Nonprescriptive installations require a structural permit and a plan review. Fees are calculated based on the valuation of the structural elements including racking, mounting elements, rails, and labor. The valuation does not include the cost of the solar panels and inverters. A renewable energy permit based on the size (KVA) of the photovoltaic system and related fees are also applicable.</p> <p>Note: Ground-mount installations also require proof of land-use approval from your local planning office.</p> <p><a href="#">(OAR 918-050-0180 (1)(b)(a))</a></p>	<ul style="list-style-type: none"> <li>• <a href="#">Structural application (Form 2546pen)</a></li> <li>• <a href="#">Renewable energy application (Form 2933pen)</a></li> <li>• Site plan: Show the location of the PV system in relation to buildings, structures, property lines, and, as applicable, flood hazard areas.</li> <li>• Plans, including information regarding roof framing (truss or rafter size, type and spacing), array and roof areas, required fire access pathways, and PV module system racking attachment.</li> <li>• Construction drawings must be designed by a licensed design professional and include calculations demonstrating that wind, snow, and seismic design meet code. It should include a plan identifying where on the building the array will be located.</li> <li>• Manufacturer’s specifications for the solar panels indicating the weight and recommended attachments to the racking need to be included or an engineered design detail.</li> </ul>

# Mechanical, electrical, plumbing

## Mechanical

Choosing the correct mechanical system for your project is important. These systems assist with maintaining a safe and healthy environment within a building. Proper application of mechanical systems also aids with energy conservation and pollution limitation.

In general, a mechanical plan review is required for a commercial mechanical permit ([OMSC 106.3.1](#)). However, the building official may make exceptions for particular situations. If you are requesting a plan review exemption for this project, submit in writing enough information about the project to show why an exemption applies. If your project does not meet any of the possible exemptions, a plan review is required.

Consider the following when preparing your plans:

- Roof layout – location of roof top units and setbacks from edges
- Venting, piping, and layout with location of units
- Ventilation calculations, include make up air calculations for hoods, if applicable
- Gas piping schematics – calculations, size of meter, size, type, and length of pipe;
- demand on system in BTUs; show pressures at regulators
- Product cut sheets for any equipment being installed
- Site and floor plans drawn to scale
- Fire wrap or chase for hoods, if applicable
- Engineering, if required, based on unit weight and location

It is important that special conditions related to the use of the building be understood early in the design process. Some uses require particular attention to humidity control or dust collection capabilities as examples. Thoughtful planning during the early design process is critical and will save both time and money in the long run.

## Electrical

If plan review is required for your project a completed electrical permit application indicating the number of services, feeders, branch circuits, etc., is required. At a minimum, the following shall be included on the plans. Review the current [Oregon Electrical Specialty Code \(OESC\)](#) for additional information.

Additional information on when electrical plan review is required can be found in [OAR 918-311-0040](#).

- The job address; the location of the proposed electrical work; and the name, address and phone number of the property or business owner
- Identification of the employer; identification and signature of person who prepared the plan; license number, if the person is an electrical supervisor; and professional registration number, if the person is an architect or registered professional electrical engineer
- All grounding details
- A feeder diagram showing conduit sizes and type, and wire type and wire insulation rating
- The location of panel boards or load centers with their ratings (ampere, AIC, and enclosure types)
- The type of occupancies

- Load calculations as per the electrical code. If adding load to an existing service or sub-distribution, show the existing load and the new load to be added
- Panel schedules
- Fixture schedule showing type, location, and layout of the fixtures
- Available fault current on the line side of the disconnect
- Commonly overlooked work requiring electrical plan review:
  - Addition of a new motor load of 100 hp or more
  - Occupancies, including “A” (assembly), “E” (educational), recreational vehicle parks
  - Hazardous locations, including fuel pumps

## Plumbing

Commercial projects considered complex structures, as defined by [OAR 918-780-0040](#), must provide an isometric or schematic diagram with pipe size, type, and calculations for medical gas, water, drain waste, and vent piping. Show location of all plumbing fixtures and:

- Restroom details, showing layout and measurements of stall partitions, plumbing fixtures, grab bars, mirrors, paper dispensers, and other accessories
- Specification sheets for all materials, piping, fixtures, plumbing appliances, and appurtenances
- Size and location of roof drains and overflows; rain drain piping drawings and calculations
- Water heater detail, showing T&P termination, seismic bracing, expansion tank, hot water circulation pump, water heater pan, and drain termination location
- Information and drawings on all plumbing utilities being installed, include the linear feet of water, sanitary sewer, and storm sewer
- Backflow prevention devices, backwater valves, grease traps, and chemical interceptors

# Manufactured homes, RVs, and parks

## Manufactured homes

To start the manufactured home permitting process, an application form, proof of land-use approval, sanitation approval, and a plot plan are required. Any site-built elements such as ramadas, carports, garages, and daylight basements require separate permits. Decks or other landing areas may also require permitting depending on their size and above grade height. In most instances, plan review is required, so we encourage you to plan ahead to avoid jobsite delays.

Before purchasing a manufactured home, we recommend you speak with your dealer on long-term plans for items such as a garage. They might be able to incorporate some modifications in the factory to make the process smoother once your home is set. For homes sited in heavier snow load areas, research your options to protect the dwelling from excessive snow loads. All manufactured dwellings must be anchored against the wind. If your property is in a flood hazard area, the home may also need to be elevated.

If your project calls for an addition to a manufactured home please contact our office for guidance. Typically, manufactured homes are not designed to support additions that share a wall, roof, or other components with the house itself. Alterations or additions that add lateral loads or vertical weight to a manufactured home will require engineering to ensure support and safety of the addition.

# Recreational vehicle (RV) and manufactured home parks

If you will have more than one manufactured home or recreational vehicle (RV) on your property, it is important to research the applicable laws and statutes. RV and manufactured home parks fall under categories similar to building occupancy classifications. There are differences in requirements based on how the park is used and the number of spaces per acre. An example of the difference in code application is a state park with transient users staying a few days in travel trailers versus a manufactured home park with numerous spaces where tenants live year-round.

In most cases the plans for park development are required to be drafted by a licensed professional who is familiar with the specific code requirements for the proposed use. If the applicant decides to draft the plans themselves, we recommend reading all applicable requirements thoroughly. Before submitting your application to building codes, the process must start with local government approvals, including planning, sanitation, and the fire marshal's office.

The park permit process starts with an area development permit application to the building department. The development permit is to ensure the park has a plan for the required amenities, and life safety concerns have been addressed. Once the development permit has been approved, you can apply for other permits such as infrastructure elements and site-built structures. All aspects of the park require plan review including any plumbing, electrical, and possibly mechanical systems.

Separate permits will be required for each building, as well as plumbing, electrical, and mechanical work. RV and manufactured home parks are considered commercial uses. Be sure to carefully review license requirements related to commercial work. Additional information can be found here:

- [ORS 446](#) and [OAR 918-600](#): manufactured dwelling parks
- [OAR 918-650](#): recreational vehicles, camping vehicles, tents
- [Building Codes Division parks webpage](#)

## Building inspections

Inspections are an integral part of the overall permit process, and under no circumstance should you or your contractor ignore this step. Inspections verify that the work meets minimum standards and safety requirements. The number of inspections that are needed during the construction process largely depends on the complexity of the project.

You have several options available to schedule inspections:

- Online using the Oregon ePermitting system; an app is also available: [Buildingpermits.oregon.gov](http://Buildingpermits.oregon.gov)
- Calling our office at 541-276-7814; inspection requests can be left on extension 28
- Faxing inspection requests to 541-276-9244

To provide the best overall service, inspector routing is based on inspection volume and geographical areas. Inspections should be scheduled at least one day in advance. Inspection times can be requested; however, they cannot be guaranteed. Contact our staff to inquire which days of the week we provide service to your location.

Once an inspection has been scheduled, a BCD team member will review the inspection request to determine whether a physical site inspection or a virtual inspection is appropriate.

## Physical site inspections

A staff member physically goes to the site to perform the inspection.

## Virtual inspections

When feasible, an inspector will set up an appointment with the applicant to complete the inspection virtually.

## General inspection information

- For occupied structures, someone at least 18 years of age must be present at the time of inspection
- Be sure your pets are secured
- Ladders shall be on-site and secure per OSHA regulations for the building inspector
- To cancel an inspection, call the office no later than 8 a.m. on the day of the inspection
- Approved plans shall be on-site at the time of inspection
- Work shall remain open and accessible for inspection. If you are not sure if an inspection is required, call the office to verify before covering up the work
- Your permit expires 180 days from the issue date, or 180 days from your last passing (approved or approved with conditions) inspection

To discuss any questions or concerns, or to coordinate a project accommodation, contact our office at 541-276-7814 or email [building.department@dcbs.oregon.gov](mailto:building.department@dcbs.oregon.gov).

## Inspection Quick Reference

While no one list can cover all inspections the following information is provided to assist you with knowing when to call for inspections. Generally you will want to call for inspections prior to covering the work and moving to the next stage.

### Manufactured home setup inspections

Inspection type:	Work to be inspected:
Site Inspection	The site must be graded and leveled; the manufactured home location staked; vapor barrier installed (if under footings); and, if continuous runners are being placed, the forms and rebar are set and ready to pour concrete. Location should match plot plan. If the vapor barrier is installed above the runners, this will be looked at during the setup inspection.
Installation Inspection (Setup)	The manufactured home must be set up with all blocking complete. Tie-down anchors and marriage line connections will be inspected. Your electrical feeder and plumbing connections should be complete. The electrical crossover is frequently buried by the setup inspection, so be sure to take photos. Also, have frame/chassis bonding crossover complete and visible at setup. <b>Skirting is not to be installed at this stage.</b>
Final Inspection	Set up completed, including skirting, permanent steps, landings, fire separation between adjacent structures (such as site-built garages), smoke detectors are in working order, house numbers affixed to the home, and ground fault circuit interrupters (GFCIs) should be functioning. Final site grading must be completed.

## Typical inspections for most projects

Inspection type:	Work to be inspected:
Special inspections	Before starting, be sure to read your plan approval package carefully. More complex projects may require special inspections related structural components, life-safety items, fire proofing, and seismic considerations. Special inspections are typically performed by a third party hired by the owner and are not done by BCD staff.
Site utilities – rain drains, water service, sanitary sewer, electrical underground (outside of building footprint)	Call for inspection before covering trenches for underground water service, sewer laterals or electrical service. Your inspector will want to look at the installations while the work is still exposed.
Footing, “ufer” ground, foundation wall/rebar inspection	<p>Takes place before concrete is poured. Review your approved plans to determine the type of foundation needed for your building (stem wall, slab on grade, monopour, etc.). Heated buildings will require the slab to be insulated as an example. Any issues that arise during this inspection must be corrected before the foundation is poured, and the building’s framing is added.</p> <p>If applicable footings and anchors are checked to make sure that they are properly spaced.</p> <p>Call for inspection after forms are set up, all rebar, vents, and hold-downs are installed.</p>
Electrical and plumbing under slab	Will need to be inspected before concrete is poured.
Slab	Some plans call for a reinforced slab or slab edge insulation, where required. Be sure to double-check.
Mechanical underfloor	Most new construction will have little to no mechanical underfloor. We encourage you to familiarize yourself with the new requirements for whole-house ventilation (WHV) per Section M1505.4 of the 2021 Oregon Residential Specialty Code (ORSC). Section N1105.3 states all new duct systems, air handling equipment, and appliances shall be located fully within the building thermal envelope (conditioned space).
Underfloor framing post and beam (including plumbing)	Call for inspection after the floor system is framed in; plumbing and mechanical is installed and before the subfloor. Joists and all underfloor plumbing, and mechanical ducts (such as dryer ducts) must be inspected prior to installation of the floor sheathing. The inspector will look closely at joists to confirm that the material and layout match the approved structural plan details and confirm all are properly secured with the required hardware installed.
Lateral/hold-downs/sheathing/shear nailing/ wall bracing	Call for inspection before any house wrap, or siding is installed. The inspector will look at hold-downs or straps, check that exterior sheathing is installed and nailed properly, and see if the roof sheathing is installed and nailed to any required blocking.
Electrical service	Meter base, service entrance conductors, service panel, and grounding and bonding are installed. Frequently requested at the same time as the electrical rough inspection.



Inspection type:	Work to be inspected:
Rough electrical (cover)	All branch circuit wiring and outlet boxes are installed, before the wiring is hidden by insulation, vapor barrier, drywall, etc. Grounding wires are bonded, the raceways and boxes are installed, and any necessary coverings are put on.
Rough plumbing (top out/cover)	Water and sewer piping are connected. Drains, vents, tub and showers installed and all piping are under test.
Rough mechanical (cover)	All ductwork is installed including exhaust. Supply and return ducts are insulated.
Gas pressure test	Gas piping and air pressure gauge are installed and the line has been pressurized to 10 pound per square inch for 15 minutes. (frequently requested at the same time as the mechanical rough inspection).
Framing	This is a pre-drywall inspection that occurs after the building's frame has been fully constructed. At this stage of the construction process, all windows have been installed, and the roof has been built. The inspector will check to make sure that the studs, beams, posts, and similar structural components have been properly installed. The structure should be weather tight, all backing, fire blocking, stairs, soffits in place; plumbing, electrical, and mechanical work complete and approved for cover; truss details posted on the job; and flood elevation certificate submitted, if applicable.
Wall insulation	Walls are insulated; ceilings that will not be blown-in are insulated.
Interior shearwall	Call before tape is applied.
Mechanical, plumbing, and electrical finals	Installation instructions for mechanical equipment (furnace, water heater, gas fireplace, etc.). Must be on site for the inspector. If applicable: Septic permit, installation, and final septic inspection have been completed and approved. For electrical, all receptacles, switches, cover plates, light fixtures, and permanently connected appliances are in place, and the panel directory is complete.
Structural final	Call after all work has been completed, including any underfloor or attic insulation, and prior to occupying the structure. A ladder may need to be provided for access to attic.

## Commercial or more complex residential projects may require:

Inspection type	Work to be inspected	Inspections		Inspection approval required for
		BCD	Others	
Soils inspection and testing, if required	All placed engineered fill and backfill material. Foundation excavations tests where soil-bearing capacity must be determined or verified. Note: Certification by the inspection agency indicating adequate soil bearing capacity to support the design loads must be submitted to the building inspector at the time of the footing/reinforcing steel inspection and prior to placing any concrete.	No	Professional engineer	Beginning site work
Footings, if required	<ol style="list-style-type: none"> <li>Excavation for wall footings, column/pier footings, or thickened slabs completed</li> <li>Grade stakes, reinforcing steel</li> </ol>	Yes	Licensed design professional (1)	Pouring concrete
Caissons/piles	---	No	Licensed design professional (1)	---
Targeting, backfill, waterproofing	<ol style="list-style-type: none"> <li>Walls waterproofed</li> <li>Exterior foundation drainage system installed</li> <li>If interior drain tiles are to be used, weep holes (2 inches minimum diameter, 6 feet on center) installed</li> <li>Walls strong enough or braced</li> </ol>	Yes	Licensed design professional (1)	Backfilling
Concrete slab-on ground floor	<ol style="list-style-type: none"> <li>Sewer and water pipes installed</li> <li>Installation of slab base, vapor retarder, slab edge insulation, reinforcing installed</li> </ol>	Yes	Licensed design professional (1)	Pouring concrete
Sprinkler hydro, if required	Sprinkler system and all related components installed	Yes	---	---
Wall check certification	A professional engineer may provide such certification. Must be sent to and approved by a BCD inspector prior to construction of any framing elements above grade.	No	Professional engineer	---
Wall close-in	All firestopping and all electrical and plumbing rough-in must be in place prior to inspection. Note: If structural steel is involved, all certification as to steel assembly and connections are due at this time, prior to inspection.	Yes	---	---

Inspection type	Work to be inspected	Inspections		Inspection approval required for
		BCD	Others	
Ceiling close-in	All plumbing and electrical rough-ins are to be completed at this inspection. If plenum, all items need to be set in place in the plenum area at the time the suspended ceiling inspection is used; all grid work is to be completed and secured. Sprinkler system hydro test to be completed.	Yes	---	---
Grade beam, walls concealment/rebar, walls masonry/rebar	All reinforcing in place at time of inspection and in compliance with the approved plans.	Yes	Professional engineer	---
Steel assembly	This special inspection includes the determination that members are properly located, sized, and in accordance with approved plans; checking the settings of anchor bolts and base plates; and determining that members are plumb.	No	Professional engineer	---
Steel connections (weld, bolt)	This special inspection includes the determination of proper member connections.	No	Professional engineer	---
Fire sprinkler final	An inspection of the sprinkler system once the installation is complete. This includes ensuring all piping, valves, gauges, signs, escutcheon plates, etc., are installed and the system is tied into the fire alarm.	Yes	Fire marshal	---
Fire alarm final	Notification to the local fire department is recommended to ensure awareness of any tests that may provoke a false alarm. Specific items to be inspected: smoke and heat detectors, annunciators and zones; batteries/backups, output relays, and activations; flow switches, tamper switches and low pressure alarms, and supervised control valves and switches.	Yes	Fire marshal	---

Inspection type	Work to be inspected	Inspections		Inspection approval required for
		BCD	Others	
Final (3)	<ol style="list-style-type: none"> <li>1. Hold open device at fire doors</li> <li>2. Fire penetrations sealed</li> <li>3. Panic hardware per plan</li> <li>4. Smoke detector HVAC supply side</li> <li>5. All smoke detectors in working order</li> <li>6. "door to remain unlocked" sign</li> <li>7. Restrooms accessible per plan</li> <li>8. Accessible path provided</li> <li>9. Stairs/handrails accessible</li> <li>10. Stair striping</li> <li>11. Counters/check stands accessible</li> <li>12. Assisted listening device and signage where required</li> <li>13. Special inspection reports</li> <li>14. Roof access ladder</li> <li>15. Assessable parking spaces and egress path to building</li> <li>16. Parking lot striping</li> <li>17. Street address attached to building</li> <li>18. Duct pressure test (2) results, if performed postconstruction</li> </ol>	Yes	Third party (2)	Occupying the building

(1) Special Inspectors: Oregon registered professional engineers and architects approved for this type of inspection. (2) A duct pressure test is required when any part of newly installed ductwork or air handlers are located outside of the building's thermal envelope. Provide test results to inspector during the framing/close-in inspection, or at the insulation inspection if the test is performed during the rough-in phase, or at the final inspection if the test is performed in the post construction phase. (3) The final mechanical inspection must be requested with the final building inspection after approved final sprinkler and/or fire alarm inspection.

# Who can do the work

## Commercial construction

Applicant	Structural	Mechanical	Plumbing	Electrical
Applicant is the owner and the structure will not be for rent, lease, sale or exchange		YES	LIMITED Owner cannot construct plumbing (new installations) but may repair or make some alterations	
Applicant is the owner and the structure is/will be for sale	NO			
Applicant is the owner and the structure is/will be for rent or lease		YES		
Applicant is the renter	YES Work must not be done for compensation and structure is not intended to be for sale		YES Except for repairs to existing plumbing that do not include changes to the plumbing inside a wall, floor, crawl space or ceiling and do not change the configuration of the plumbing system	NO
Applicant is the owner's regular employee	YES As long as it is not intended to be for sale before, upon, or after completion			
Applicant has a general contractor license only and is not the owner or renter		YES	NO	
Reference	ORS 701.010		ORS 447.040, 693.020 OAR 918-695-0020	ORS 479.540 TO .560

**Plumbing notes:** **Repair** means the act of replacing or putting together plumbing parts that restore the existing plumbing systems to a safe and sanitary operating condition [ORS 693.020(e)(a)]. **Regular employee** means a person who is subject to the provisions of ORS 316.162 to 316.221 (withholding taxes from paycheck) and who has completed a withholding exceptions certificate required by the provisions of ORS 316.162 to 316.221 [ORS 693.020(e)(b)].

**Electrical notes:** **Immediate family of an owner** is the owner's parent, step-parent, step-parent's domestic partner; sibling and sibling's spouse or domestic partner, child and child's spouse or domestic partner; spouse or domestic partner; spouse's or domestic partner's child, and the child's spouse or domestic partner; grandchild or grandparent [OAR 918-261-0040(3)]. **Maintenance** means alterations to, or replacement of, parts of electrical installations as necessary for maintenance of existing electrical installations on that property, but does not include new electrical installations or substantial alterations to existing electrical installations on that property. Maintenance specifically includes replacement of an existing garbage disposal, dishwasher, electric water heater with a similar appliance of 30 amps or less, single phase by a landlord, landlord's agent or the employee of the landlord or landlord's agent [ORS 479.540(1)(b)]. **Housing authorities** have special exemptions, refer to ORS 479.540(4)(a) and ORS 479.540(6)(a).

## Residential construction

Applicant	Structural	Mechanical	Plumbing	Electrical
Applicant is the owner and the structure will not be for rent, sale, lease, or exchange	YES			YES Owner must be a natural person, not a corporation, LLC or trust
Applicant is the owner and the intent is to offer the structure for sale	NO			NO Except some maintenance by the owner, owner's immediate family, landlord, landlord's agent, or the employee of the landlord or landlord's agent.
Applicant is the owner and is a licensed general contractor and the intent is to offer the structure for sale	YES		YES Owner must do the work (not employees)	
Applicant is the owner and is a licensed general contractor and the structure is/will be for rent or lease	YES			
Applicant is the renter	YES Work must not be done for compensation and structure is not intended to be for sale		NO Except for repairs to existing plumbing (which does not usually require a permit)	
Applicant is the owner's regular employee	YES As long as it is not intended to be for sale before, upon, or after completion		NO Except for repairs to existing plumbing (which do not usually require a permit)	NO Except some maintenance
Applicant has a general contractor license only and is not the owner or renter	YES		NO	
Reference	ORS 701.010		ORS 447.040, 693.020 OAR 918-695-0020	ORS 479.540 TO .560 OAR 918-261-0040

**Plumbing notes:** **Repair** means the act of replacing or putting together plumbing parts that restore the existing plumbing systems to a safe and sanitary operating condition [ORS 693.020(e)(a)]. **Regular employee** means a person who is subject to the provisions of ORS 316.162 to 316.221 (withholding taxes from paycheck) and who has completed a withholding exceptions certificate required by the provisions of ORS 316.162 to 316.221 [ORS 693.020(e)(b)].

**Electrical notes:** **Immediate family of an owner** is the owner's parent, step-parent, step-parent's domestic partner; sibling and sibling's spouse or domestic partner, child and child's spouse or domestic partner; spouse or domestic partner; spouse's or domestic partner's child, and the child's spouse or domestic partner; grandchild or grandparent [OAR 918-261-0040(3)]. **Maintenance** means alterations to, or replacement of, parts of electrical installations as necessary for maintenance of existing electrical installations on that property, but does not include new electrical installations or substantial alterations to existing electrical installations on that property. Maintenance specifically includes replacement of an existing garbage disposal, dishwasher, electric water heater with a similar appliance of 30 amps or less, single phase by a landlord, landlord's agent or the employee of the landlord or landlord's agent [ORS 479.540(1)(b)]. **Housing authorities** have special exemptions, refer to ORS 479.540(4)(a) and ORS 479.540(6)(a).

# Tips for electronic plans

## Submitting plans

Portable document format (PDF) files are the industry standard. Plans are submitted electronically as a PDF file and remain electronic throughout the submittal process. We may convert paper copies to electronic files unless directed otherwise.

- File format: PDF
- Minimum font size: 10 points
- Format: vector preferred
- Resolution: 300 ppi
- Layers: files must be flattened and full size
- Sheet size: 18" x 24" or 36" x 48" preferred
- Grouping: multiple sheets within a single PDF
- Security: unlocked and unrestricted

▮ Our office will not accept messages that require a third-party software to view.

## Vector based PDFs

It is best that documents are exported or saved to PDF from computer aided drafting (CAD) applications. Plans that have been scanned from a printed copy can be difficult to read.

It is recommended that standard TrueType fonts are used as the settings allow them to be embedded. When a font cannot be embedded and someone who does not have access to the original font attempts to open the PDF, the software makes a substitution. This often results in distorted or missing text. Examples of TrueType fonts include Courier, Helvetica, Times, and Symbol.

## File sizes

Ideally, each PDF file will not exceed 80 MB in size. The system can handle larger files; however, upload and download of documents may take significantly longer. Zip files, PDF packages, and PDF portfolios can result in files too large to transmit electronically and are often not compatible with review software such as Bluebeam.

Our firewalls block links to download documents or Zip files. PDFs should be an email attachment. We suggest using the optimizer tool to reduce the size of your PDF file. PDF optimization reduces the file size by compressing images and removing unused objects. Instructions on optimizing documents can be found on the Adobe website: [optimizing PDFs](#).

Other software will have similar capabilities, but may use different names ([Bluebeam: reduce file size](#)). You can also use the [combine file option](#) when combining multiple PDFs to maintain smaller file sizes.

If your files exceed 80 MB each, work with your permit tech for alternative electronic submittal options.

## PDF portfolios

Adobe Acrobat portfolios enable multiple PDF files to be organized into a “portfolio.” **This is not an acceptable form of submittal.** One of the reasons why applicants will often submit PDF files packaged in a portfolio is because they have been supplied an electronically signed PDF file from one of their design professionals. Electronically signed PDFs are locked in a manner that makes it impossible to insert the file into another PDF file. An example of a PDF portfolio is shown on the right for reference.

## Scale and page orientation

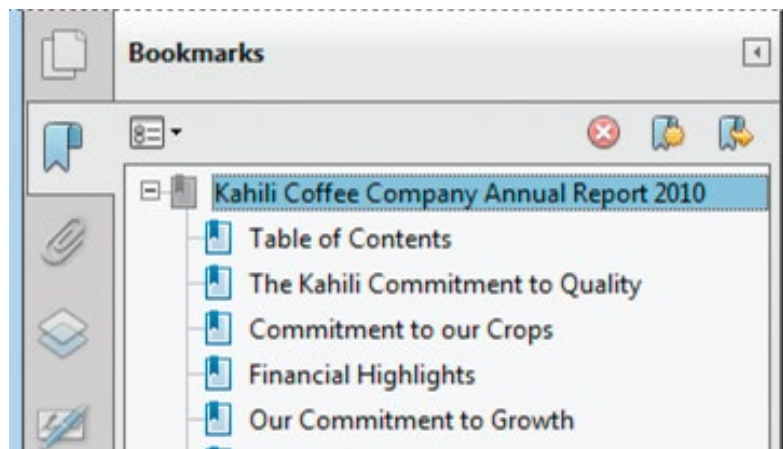
Please set pages to standard sheet sizes (such as 11" x 17" or 24" x 36") drawn and plotted to scale. Once approved, the plans need to be printed for use in the field. Pick a size and scale that can be easily read once printed for construction. It is helpful for plan sheets to all be in the same orientation (portrait or landscape).



## Bookmarks and combining files

Individual plan sheets should be contained within one single PDF file or be separated by discipline (e.g., architectural or electrical). For larger plans, it is helpful for each sheet to be bookmarked for easy reference. The bookmark titles should include the sheet number and subject matter (i.e., floor plan, site plan, erosion plan, etc.).

Ideally, your pages are set to “fit on full page to window view” prior to bookmark creation.



Most CAD programs already have a built-in feature to create bookmarks based on sheet naming (e.g., A0.01 floor plan or A0.02 demolition plan). When you receive your various bookmarked PDF files, you can simply combine them using Adobe Acrobat Pro.

Instructions for combining multiple PDFs into a single document and bookmarks can be found on the Adobe website: [combine or merge files into single PDF or page thumbnails and bookmarks in PDFs](#).



## Flatten layers

You are strongly encouraged to flatten the documents prior to submittal so the stamp cannot be copied and nothing is accidentally modified. Another option is to print the final document to PDF. When printing to PDF, choose the document size to match the intended paper size.

- For instructions on how to flatten documents using Adobe Acrobat:  
[Merge or flatten layers](#)
- For instructions on how to flatten documents using Bluebeam Revu:  
[Flatten markups](#)

## How to tell when your PDF has layers

Most PDF compliant software, such as Adobe Reader or Acrobat Pro will display a layers icon when layers are detected. The layers icon is not displayed if the file contains no layers recognized by the PDF tool.

Other editable content includes active form fields, stamps, comments, test boxes, signatures, and other markups that can be deleted. Editable fields will have a blue background within the PDF. To tell if you have any of these objects open the “comment” window. If any of these are found, flatten the PDF or remove them.

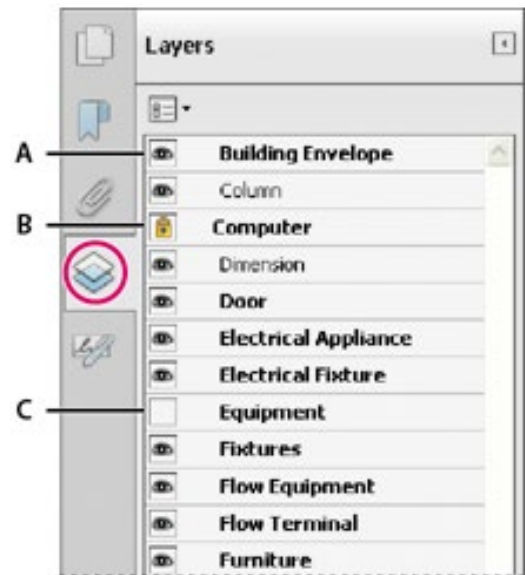
## Document security and digital signatures

PDF document security settings must allow BCD staff members to mark up the PDF file and create comments. Documents for plan review must not be certified, locked, or otherwise restricted. If the files are certified, we will not be able to apply our approved stamps, which may cause delays in processing your application. Any submittal containing a file that is locked will be considered incomplete and must be resubmitted.

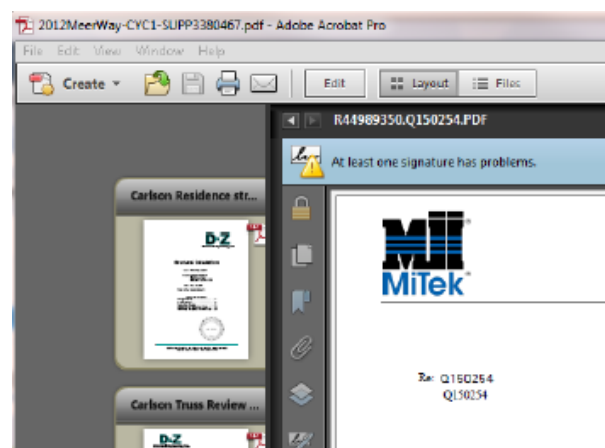
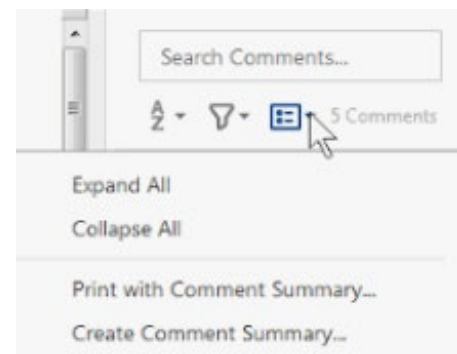
The gold padlock icon to the right indicates the PDF document contains an electronic signature that has locked the file from further alteration. This will prevent us from stamping your plans approved, encrypting the final approved files, or merging the file with other approved documents.

As with paper plans, apply a picture of your seal to each sheet. Then compile all sheets into a single file. Finally apply your digital signature to the cover sheet.

**Any compiling done after sheets are signed will invalidate the signature.**



- A – Eye icon indicates a displayed layer
- B – Locked layer
- C – Hidden Layer



Some documents, such as specification books, will require signatures from multiple signers. In this case, use one of the following suggested options:

## Option 1:

Have the lead applicant sign and seal the full document. Divide the document into separate documents for each discipline/design professional and have each design professional seal and sign their section. Send as multiple documents.

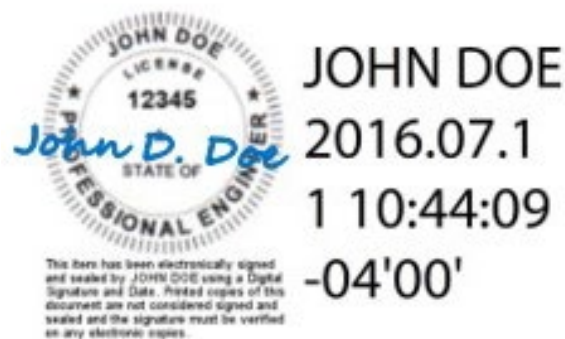
## Option 2:

Compile the document with the seals for each design professional on the cover page. Then have each design professional add their digital signature one at a time on that cover page, being careful not to make changes to the document that would invalidate previous signatures.

The **stamp and signature images** for each design professional should also be on the cover, title, and first sheet of their respective discipline.



Example of an electronic stamp with signature image



Example of an electronic stamp and signature image with the digital signature added next to the image of the stamp

A common error that many applicants make is certifying instead of signing. When a document is digitally certified, its page content is locked, which prevents plan reviewers from performing critical functions needed to complete a review.

**Most importantly: Flatten all mark-ups prior to applying your digital signatures and electronically submitting.**

Design professionals should consult their respective boards or rules regarding what constitutes a legal stamp.

# Glossary: construction terms

Term	Definition
<b>ADA compliance</b>	When a building is accessible for all according to the Americans with Disabilities Act.
<b>AHJ</b>	Authority having jurisdiction
<b>allowable floor area</b>	Allowable floor area is the maximum amount of square footage permitted by the building code.
<b>as-built drawings</b>	Contract drawings marked up to reflect changes made during the construction process. Alternatively, drawings created for the purpose of obtaining a permit after construction is complete to show code compliance.
<b>ASI</b>	Architect's supplemental instruction (ASI) is a form used by an architect to specify additional instructions and interpretations relating to a set of architectural plans. An ASI is also issued to order minor changes in the architectural work to be accomplished, changes that may vary from the original plans.
<b>ASTM</b>	The American Society of Testing Materials (ASTM) is an international standards organization that offers technical standards for products, materials, systems, and services in a range of industries, including construction.
<b>AutoCAD</b>	Computer-aided design (CAD) is architecture software used to create detailed building models. AutoCAD is a commercial software application for 2D and 3D CAD and drafting.
<b>BIM</b>	Building information modeling (e.g., a 3D model of a building)
<b>blocking</b>	A construction technique to join, fill, or reinforce the building structure.
<b>blueprints</b>	A two-dimensional technical drawing that shows construction.
<b>building codes</b>	A building code is a set of adopted regulations to define the design, construction, and materials that may be used to construct buildings and facilities with the goal of protecting the health, safety, and welfare of the public
<b>building envelope</b>	1) The waterproof elements of a building that enclose conditioned spaces through which thermal energy may be transferred to or from the exterior. 2) The outer structure of the building that keeps out the weather.
<b>building permit</b>	Building permit is the written permission from the government for the construction or alteration of an improvement, in compliance with building codes and zoning ordinances.
<b>cant</b>	An angled surface or line that cuts a corner off.
<b>certificate of occupancy (C of O)</b>	A certificate of occupancy is a document issued by a local government agency or building department certifying a building's compliance with applicable code requirements.
<b>certificate of satisfactory completion</b>	A certificate of satisfactory completion is issued to show the scope of work that was listed on the plans has been completed and inspected for code compliance. This is used for projects where a new or revised certificate of occupancy is not needed. An example is the installation of roof top solar panels.
<b>code analysis</b>	A code analysis is a summary of the building characteristics. It includes a compilation of specific provisions of the locally adopted building code that will affect the design and construction of your building.

Term	Definition
<b>ComCheck</b>	1) ComCheck is free software available to the public that shows how proposed construction compares to the energy code requirements. 2) Forms from the ComCheck software submitted as a construction document to obtain a permit.
<b>concrete cover</b>	Thickness of concrete separating the rebar in reinforced concrete from the outer concrete surface. Cover helps prevent rusting of the rebar from exposure to soil or weather.
<b>concrete slab</b>	A horizontal platform used to construct the ceiling or the floor of the building.
<b>construction documents</b>	Written, graphic, and pictorial documents prepared or assembled for describing the design, location, and physical characteristics of the elements of a project necessary for obtaining a building permit.
<b>construction plans</b>	Architectural drawings, floor plans, elevations, and detail specifications used to assemble, erect, or build a structure.
<b>construction type</b>	Buildings are classified into different types of construction based on if primary building materials are combustible or noncombustibles. There are five building types denoted by Roman numerals I-V.
<b>course</b>	Concrete blocks, stones, or bricks in a continuous masonry row.
<b>cover inspection (rough-in)</b>	A construction stage where all mechanical, plumbing, electrical, and framing is installed. This is where most of the work is initially reviewed by the building inspector before it is covered by insulation and drywall.
<b>cross bracing</b>	Reinforcements in an X-shape that provides enhanced strength to a structure.
<b>damp proofing</b>	A procedure used to keep the drywall interior dry and to prevent moisture absorption.
<b>deferred submittal</b>	The portion of a design not submitted for review at the time of the initial permit application. Common deferred submittals include solar photovoltaic systems, prefabricated roof trusses, prefabricated stairs, and mechanical duct layouts.
<b>design criteria</b>	Information about a particular site that sets which code requirements apply to that site or strength levels that a structure must meet. Examples: basic wind speed, wind exposure, ground snow, seismic design category, or frost depth.
<b>disciplines</b>	Construction trade discipline means a discipline related to the construction of a building, including – but not limited to – building, electrical, gas, plumbing, mechanical, or energy services.
<b>egress</b>	A series of building components that allow for occupants to safely exit a building in the event of an emergency.
<b>elevation drawing</b>	A drawing of a structure that shows the front or side of the building's facades; it is a first-angle projection.
<b>encasement</b>	The encasing of underground pipes in concrete or when encasing hazardous materials that have been installed.
<b>energy calculations</b>	Energy calculations ensure that these structures meet a minimum standard of energy efficiency, adequate thermal resistance, and low-air leakage. Manual J calculations are used to properly size and design the HVAC system.

Term	Definition
<b>equipment cut-sheets</b>	A cut sheet – also known as a data sheet, technical data sheet, or specification sheet – is a document that summarizes the information and characteristics of a product, material, or piece of equipment.
<b>finished</b>	All inspections have been completed and finalized.
<b>flatwork</b>	Common word for concrete floors, driveways, basements, and sidewalks.
<b>floor plan</b>	Drawing of the building's layout as it provides details of each room space from an above view
<b>foundation</b>	The supporting portion of a structure below the first-floor construction, or below grade, including the footings.
<b>framing</b>	Lumber used for the structural members of a building, such as studs, joists, and rafters.
<b>gable</b>	The end, upper, triangular area of a home, beneath the roof.
<b>gas-piping schematic</b>	A diagram consisting of the size and length of each section of gas pipe starting at the meter, to each take-off. This includes the size and length of all branches coming off the main gas line that supply each appliance. The British thermal units of each appliance tied to the gas line is also included.
<b>general contractor</b>	The main contractor for the building construction. Their main responsibility is the oversight of the project as they manage subcontractors, handle scheduling, and monitor the budget.
<b>geographic information system (GIS)</b>	A computer system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data.
<b>GFCI</b>	A GFCI or GFI – ground fault circuit interrupter – is an ultra-sensitive plug designed to shut off all electric current. It is used in bathrooms, kitchens, exterior waterproof outlets, garage outlets, and “wet areas.” It has a small reset button on the plug.
<b>grade</b>	Ground level or the elevation at any given point; the work of leveling dirt; also, the designated quality of a manufactured piece of wood.
<b>green tag</b>	A tag placed by your electrical inspector once the service has been approved. This is completed before your local power company can energize your service.
<b>grounding rod</b>	A ground electrode installed into the earth and connected to the grounded neutral of the electrical system, which in turns grounds the entire home or business. Its purpose is to dissipate static electricity and external high voltages such as lightning strikes.
<b>hardware</b>	All of the “metal” fittings that go into the home when it is near completion. For example, door knobs, towel bars, handrail brackets, closet rods, house numbers, door closers, etc. The interior trim carpenter installs the “hardware.”
<b>hold-notice</b>	Communication from your plan reviewer detailing missing information or areas on your plans that may not comply with current adopted codes.
<b>HVAC</b>	An abbreviation used to signify the heating, ventilation, and cooling structures and systems of the building.
<b>insulation</b>	Any material high in resistance to heat transmission that – when placed in the walls, ceiling, or floors of a structure – will reduce the rate of heat flow.

Term	Definition
<b>in-take</b>	The process in which a permit application and associated documents are submitted to the building department. An initial review is completed to determine the next step.
<b>interior build out/remodel</b>	Changing or modifying the existing commercial space to make it usable for business functions.
<b>job valuation</b>	Price proposal typically based on the design specification and documents. It is the overall estimated cost of the proposed construction. This value is required to be written on the building permit application.
<b>joint</b>	A construction interface between two separate building elements that do not have a physical connection to each other, but may overlap or align to the other element.
<b>joists</b>	1) Horizontal elements that are connected to beams perpendicularly to provide load transfer functions. 2) One of a series of parallel framing members used to support floor or ceiling loads and supported in turn by larger beams, girders or bearing walls.
<b>land-use approval</b>	1) Sometimes referred to as your zoning approval, this approval is obtained from your local planning office and ensures that your project is consistent with zoning laws. This tells you how you can use the building, how big it can be, and what your setbacks are. 2) Government regulations that dictate how property areas can be used.
<b>LEED</b>	Leadership in Energy and Environmental Design, sustainable design through use of materials, construction practices, efficient building design, etc.
<b>load-bearing wall</b>	A wall that supports any vertical load in addition to its own weight.
<b>manufactured and modular home</b>	The main difference between manufactured and modular homes is that manufactured homes are built to the national HUD code, while modular homes are built to all applicable state and local building codes. This is similar to the way traditional site-built homes are constructed.
<b>MEP</b>	Mechanical, electrical and plumbing (MEP) drawings are part of the standard drawings within the construction set of blueprints.
<b>occupancy classification</b>	What will the building be used for? Buildings are classified as different occupancies that describe how they are used. Each classification has different building code requirements that relate to the type of hazard or uses in the structure.
<b>on center (OC)</b>	The measurement of spacing for studs, rafters, and joists in a building from the center of one member to the center of the next.
<b>overhang</b>	Outward projecting eave-soffit area of a roof; the part of the roof that hangs out or over the outside wall.
<b>permit issuance</b>	An official approval issued by building codes that allows you or your contractor to proceed with a construction or remodeling project.
<b>pier and beam foundation</b>	A building method that uses wood beams and posts set on intermittent concrete footings (piers) to support the floor.
<b>plan review</b>	A review for verification of compliance with the building code, a process in which your building plans are reviewed to make sure they comply with basic safety, engineering, and planning rules.
<b>precast concrete</b>	Concrete elements created offsite that are transported to the construction site for final assembly.

Term	Definition
<b>prescriptive path</b>	The prescriptive path requires each element meet a minimum acceptable standard as outlined in the applicable codes.
<b>punch list</b>	A document listing construction work that does not meet the customer's specifications. It is made at the end of the project as the contractor needs to complete the job to receive the payment.
<b>purlin</b>	A horizontal and longitudinal beam used on the roof structure to support the rafters.
<b>rafter</b>	Lumber used to support the roof sheathing and roof loads. Generally, 2' x 10's and 2' x 12's are used. The rafters of a flat roof are sometimes called roof joists.
<b>redlines</b>	A redline drawing is essentially an intermediate drawing that shows corrections or changes to a previous drawing. The term redline literally comes from the (typically) red pen used to amend the drawings by hand. Redlines at plan review note requirements that must be followed during construction for the structure to be code compliant.
<b>renovation</b>	Total or partial upgrading of a facility to higher standards of quality or efficiency. Under certain conditions a renovation may also be classified as an improvement.
<b>ridge vents</b>	Installed on the roof and allow heat to escape from the attic.
<b>rim joist</b>	In flooring, a rim joist is attached to the end of the main joists to give lateral support.
<b>Roof decking</b>	Plywood that goes on top of the rafters and under the roof.
<b>rough-in</b>	This is installation of different components that will not be finalized until later.
<b>RTU</b>	Roof top unit, a package unit that contains all heating and air conditioning components that is placed on the roof of a facility.
<b>scope of work</b>	Narrative to describe the intention and extent of the proposed construction submitted for permit. It is presented to the department either on a drawing or as a separate document.
<b>section drawing</b>	A drawing that shows the building's view as if cut on a vertical plane.
<b>setback</b>	The term "setback" refers to the distance a building must be from property lines, other buildings, and site utilities, such as a septic system.
<b>sheathing</b>	The plywood, oriented strand board (OSB), or other product attached to framing members to give the structure strength.
<b>Sheetrock</b>	A manufactured panel made out of gypsum plaster and encased in a thin cardboard.
<b>shingles</b>	Roof covering of asphalt, asbestos, wood, tile, slate, or other material cut to stock lengths, widths, and thicknesses.
<b>shop drawings</b>	A contractor's drawings that details the fabrication of components.
<b>shoring</b>	A construction method that uses wood or metal props to support the structure while it is worked on.
<b>site plan (plot plan)</b>	Sometimes called a plot plan – is an architectural document that functions as a readable map of a building site, giving you all the details you need to know about how the structure will be oriented on the lot.

Term	Definition
<b>soffit</b>	The area below the eaves and overhangs, or the underside where the roof overhangs the walls; usually the underside of an overhanging cornice.
<b>specifications</b>	The specifications provide a written narrative describing the materials and work quality desired for the building design.
<b>stamped plans</b>	Plans for the renovation or construction of a building that have been stamped by an architect or engineer licensed in the state of Oregon
<b>stub-out</b>	The major components of the plumbing or electrical parts that are installed inside the wall and through the rebar (they will be finished at a later date)
<b>subcontractor</b>	The subcontractor is specialized in a specific construction or building trade, such as electrical or plumbing. They are contract workers who are hired by the general contractor.
<b>submittals</b>	Material data, shop drawings, and product data for architects and engineers so they can verify that the correct products were installed.
<b>tie</b>	Construction elements used to tie to separate materials together inside cavity walls.
<b>treated lumber</b>	A wood product that has been impregnated with chemical pesticides such as CCA (chromated copper arsenate) to reduce damage from wood rot or insects. Often used for the portions of a structure that are likely to be in contact with soil and water. Wood may also be treated with a fire retardant.
<b>trim</b>	The finish materials in a building, such as moldings applied around openings (e.g., window trim or door trim) or at the floor and ceiling of rooms (e.g., baseboard, cornice, and other moldings). Also, the physical work of installing interior doors and interior woodwork, to include all handrails, guardrails, stair way balustrades, mantles, light boxes, base, door casings, cabinets, countertops, shelves, window sills, aprons, etc.
<b>underpinning</b>	Construction technique to strengthen the foundation of an existing structure with the use of beams, concrete, or base pining.