

Building Plan Submittal Reminder List

(9/09/10)

What information do I need to include as part of my building plan submittal package?

1. Four complete bound sets of the intended construction plans or one complete set of construction plans and three copies of the cover sheet of the plans, which must include a complete sheet index. The complete set(s) and/or cover sheets must all include the original seal & signature of the designer(s) when the building volume exceeds 50,000 cubic feet. After approval it will be the designer's responsibility to attach the appropriate plan sheets to the approved cover sheets.
2. One set of specifications if not included on the drawings themselves.
3. Completed application form SBD-118 with signatures as needed.
4. Fees as determined from schedule. (Note that fees [see application form SBD-118 page 3] vary depending if the project is to be constructed in a "certified municipality". Contact Safety & Buildings or visit our website for a current list of commercial building certified municipalities.)
5. Sufficient calculations and information to substantiate that the documents conform to the code for structural, energy, and HVAC as appropriate.
6. The Division also offers optional worksheets to help submitters show compliance with applicable codes in a clear and logical manner in lieu of providing equivalent information on the plans.
7. The following is offered as a guideline of what may be needed for submittal and does not limit department authority to request additional information as necessary to determine code compliance.

FOOTING/FOUNDATION SUBMITTAL (Optional as separate submittal prior to full plans.)

A. Design Loads shown on plans (Ensure thorough coordination of structural design before construction begins.)

1. Live loads
2. Dead loads
3. Wind loads
4. Snow loads
5. Seismic design category and design loads if seismic design category is other than 'A'.
5. Special loads (snow drift, equipment, steeples, shear walls, etc.)
6. Indication of load transfer down to the foundation

B. Site Plan

1. Distances to property lines, existing buildings, streets, etc.
2. Pertinent recorded easements on adjoining property
3. Type of construction and occupancies of existing buildings on this site within 60'

C. Schematic Floor Plans, Elevations, Wall Sections

1. Exit stair & exit door locations
2. Fire wall locations
3. Window and fire department access openings

D. Calculations or Reference Tables

See section I under building submittal on following pages and section F below
If submitting reference tables, please highlight loading & member used in copy of that table.

E. Footing/Foundation

1. Soil properties (type of soil and bearing capacity of soil)
2. Footing & foundation sizes (width, length, thickness, depth below grade)

3. Reinforcing steel (location, size, grade, details of hooks & splices, etc.)
4. Anchor bolt sizes, locations, embedment length and type (hooked, tack-welded nut, etc.), projections above top of footings/foundations, and calculated capacities of anchor bolts
5. Retaining wall details as applicable (width, length, depth, and reinforcement)
6. Pile foundation details and determination of pile capacity using appropriate safety factors (type of piles used, depth, size, & material strengths) as applicable
7. Consideration of special loads such as buoyancy and hydrostatic loads as applicable
8. Perimeter insulation
9. Blasting permits (if needed)

F. Footing Sizing Calculation

1. Calculation using critical load case for each different size footing shown on the plans
2. If it is a pole building, then at least one sample pole embedment calculation must be shown for the side wall poles and end wall poles, as well as the footing sizing calculation for such poles
3. Calculations must include the soil bearing capacity used, as well as shear and bending resistance of the footing

BUILDING SUBMITTAL – (New and Addition)

A. Footing/Foundation

See Sections E & F from footing & foundation submittals above

B. Site Plans

1. Distances to property lines, buildings, streets, etc.
2. Pertinent recorded easements on adjoining property
3. Show type of construction and occupancies of existing building(s) being added onto or also located on this site within 60'
4. Barrier-free parking and access paths (include slopes)
5. Court widths and imaginary lot line locations

C. Floor Plans & Related Plan Sheets

1. Uses and sizes of rooms
2. Exit location(s), exit lights, door swing directions, ramp, and stair details
3. If partial automatic fire sprinkler coverage, show protected areas, type of system/design standard and required separations between sprinklered and unsprinklered areas
4. Fire rated assemblies, required for issues such as area limits, occupancy, class of construction, incidental uses, sprinkler limits (specify each as fire wall, smoke barrier, fire barrier, or fire partition)
5. Window and door information (sizes, fire ratings, safety glaze, undercutting, etc.)
6. Sanitary facilities (types, numbers, and locations)
7. Stair and shaft enclosures
8. Type, amount & location of hazardous materials and related control areas
9. Smoke detectors
10. Fire alarms
11. Fire extinguishers
11. Barrier-free requirements (see additional separate list)
12. Occupancy-based special, detailed requirements (usually in IBC Chapter 4)

D. Elevations/Sections

1. Exterior grade, floor elevations, and roof elevations
2. Accessibility features

3. Exterior openings
4. Egress details including stairs and areas of refuge
5. Exterior finish
6. Stair, ramp, handrail & guard construction
7. Headroom clearances
8. Construction materials used (structure, insulation, vapor retarders, sheathings & finishes)
9. Structural connections required for load transfer (hangers, clips, & fasteners needed)
10. Lateral load resisting elements (systems & details)

E. Fire-Resistive Details

1. Design & listing of walls, floor/ceilings, and roof/ceiling systems (if required to be rated)
 - a. Location & extent (horizontally & vertically)
 - b. Materials used in the assembly
 - c. Assembly listing source (UL or Table 720.1(2) item#...)
 - d. Hourly rating (on plan and section)
2. Complete section through the assembly (including required attachments)
3. Firestopping and firesafing (comply with tested & listed firestop systems in IBC 712)
4. Opening protective assemblies (label, size limits in IBC section 715)
5. Draftstopping (IBC section 717)
6. Tested and listed fire resistant joint assemblies between fire resistance rated assemblies (IBC 713)
7. Calculated fire resistance per s. 721 including calculations and details of the assembly

F. Building Envelope and Thermal Calculations - Note that these are considered a part of the building plan submission, not the HVAC plan, as building designer determines the amounts & locations of all building insulation; thus the building plans cannot be approved without this portion of the submittal

1. Building envelope thermal compliance calculations
2. Insulation amounts & location on plans must match the calculations
3. Fenestrations (windows, doors & skylights) must use default values or include NFRC test data
4. Wisconsin also accepts thermal performance calculation generated by the **COMcheck-EZ** computer program for commercial buildings and residential building 4 stories & taller. Wisconsin accepts the use of **REScheck** program for residential buildings 3 stories or less above grade with 3 dwellings or more. These programs are available to be downloaded for free at: www.energycodes.gov

G. Miscellaneous Calculations:

1. Occupant load and exit width calculations, especially for large buildings
2. Grade plane, height and number of stories above grade plane
3. Sanitary fixture determination, minimum number of each fixture type
4. Hazardous materials control area quantities (if applicable)

H. Lighting Plans – See separate reminder list

I. Building Plan - Structural Submittals:

1. Live loads (floor, roof, crane, partition, etc.)
2. Itemized dead loads
3. Snow loads (including unbalanced)
4. Wind loads for main wind-force-resisting system and components & cladding loads
5. Seismic design category and design loads if other than seismic design category 'A'.
6. Special loads (drifting snow, equipment, steeples, signs, shearwalls, etc.)
7. Continuous load transfer path to foundations – required connections and consideration for uplift & overturning

8. All design loads shall be shown on the plans and within the calculations. Sample calculations submitted shall show how the design loads were calculated. The following information, as a minimum, must be provided on the plans and/or calculations in order to determine the snow, wind, and seismic design loads (where applicable):
 - a. Terrain category and minimum design wind speed
 - b. Exposure category and factors (snow & wind)
 - c. Importance categories and factors (seismic, snow & wind)
 - d. Soil site class determination
 - e. Seismic use group and design category
 - f. Design ground snow load

J. Framing (Floor & Roof Framing):

1. Member sizes, spacing, material properties and bridging requirements
2. Materials (wood, steel, trusses, pre-cast, etc.), applicable adjustment factors, and allowable stresses of materials used (bending, shear, compressive, etc.) should be noted or in specifications
3. Critical bearing, anchorage, & connections required (when over code prescribed minimum)
4. Shear wall details (if applicable) with at least: location, connector spacing, materials, design capacity of shear wall, and connections of shear wall to roof diaphragm, drag struts, and footings/foundations
5. Calculations verifying capacity of floor/roof joists and headers supporting joists
6. Calculations verifying capacity of diaphragms (include any adjustments) or highlighted table
7. Structural calculations corresponding to framing plans
8. Stud and pole design calculations as applicable
9. Calculations for load transfer from roof and/or floor framing elements to the foundations, including design of all transferring elements (i.e.: columns, foundations, etc.)
10. Typical (for each joist size/span) joist sizing calculations under the critical loading condition and typical supporting member/element sizing calculation must be included in the submitted structural calculations. Typical door/window header calculations taken at the worst case must be submitted. If diaphragm design is utilized, then typical horizontal diaphragm and shearwall design calculations must be submitted showing loading is less than system design capacity for the system/materials and connections shown on the plan.

K. Masonry Construction:

1. Compliance with all empirical masonry requirements or submitted engineered masonry calculations
2. Masonry properties [material, thickness, and type (hollow or solid)]
3. Mortar type and properties of grout
4. Lateral supports of masonry walls
5. Reinforcement details (type, location, and strength)
6. Bonding requirements (type of bond and type of tie assemblies)
7. Anchorage of masonry to structural elements (for lateral support of masonry), roof or floor anchorage to masonry bearing walls, and non-load bearing exterior or interior masonry anchorage to structural frame
8. Details of bearing on masonry or of masonry bearing on other materials (type & size needed)
9. Veneer details (material, thickness, backing/bearing supports, attachment method)
10. If using engineered masonry, then complete masonry calculations shall be submitted.

L. Structural Component Plan Submittal - General:

Structural components are those parts of a building structure that are typically pre-engineered and pre-manufactured prior to arrival at the construction site. These include:

1. Wood trusses
2. Precast concrete
3. Pre-engineered metal buildings
4. Laminated wood

5. Steel joist girders (& special loaded steel joists)
6. Structural steel

Safety & Buildings Division requires that complete plans and calculations for these components be submitted prior to their installation. All structural component submittals must contain the following information.

1. Project identification information such as owner's name and address of project
2. Building code and referenced standard editions utilized in design
3. All applicable design loads shown on plans. Design loads shall match those shown on the conditionally approved building plans.
4. Framing plans if they were not included with the previously approved building plans or if such did not provide the following information:
 - a. Location and designation of all component members
 - b. Bearing and anchorage conditions
5. Complete structural calculations, considering all loading conditions and combinations in accordance with applicable standard(s), including special loading conditions such as crane loads, impact loads, material handling, rack storage, and equipment loads, for typical members and the connectors that are part of the component.

There are two options available for component plan submittals:

1. Submit component plans and calculations with the building plans. If the component plans are submitted with the initial building plan set, then 1 component plan shall be attached to each building plan, creating full plan sets.
2. The component plans and calculations may be submitted at a later date. If this option is chosen, the following procedure must be followed:
 - a. Submit one set of properly signed & sealed structural component plans and applicable calculations. The signature & seal on the component drawings is to be that of the component designer (not the building designer). The framing plan may be properly signed & sealed or provided with a signature of an engineer or architect and a stamp indicating review of the plan. Revisions to a previously submitted & approved plan **must** be properly signed & sealed and may require re-submittal for review and approval.
 - b. Submit a completed SBD-118 application form (preferably a copy of the original building plan application form) and a component submittal fee of \$100 to the office designated in the condition of approval listed in the building plan approval letter.
 - c. If different from the structural component designer and if the building is over 50,000 cubic feet in volume, the building designer must indicate review of the plans by either providing an original signature on the component submittal line (line 9 b.) of the SBD-118 application form OR providing a statement on the component plans to the effect, "*I have reviewed against my overall building design and intent and find the component plan acceptable*" with the designer's signature. A signed cover letter to this effect is also acceptable. The original seal and signature of the building designer on component plans designed by someone else is NOT appropriate.
 - d. An identical component set (also bearing *indication of review* by the building designer) shall be maintained at the job site. It must be available to state or municipal inspectors and others who have need of this information. Designer should attach the state letter of review (or non-review) to this set.
 - e. Owners and designers should also be prepared to present a third similarly noted component plan to the local authority when required by that municipality.

M. Specific Component Submittals:

1. **Wood Truss Submittals:**
 - a. Truss plans - Individual truss plans for each truss type/designation including the following:

- 1) Truss geometry and member locations
 - a) Truss shape, member configuration, and member and bracing sizes
 - b) Truss pitch, span and joint locations
 - c) Bearing locations
 - d) Truss spacing, number of truss plies, and required connections between plies or truss types such as piggy back trusses
 - e) Metal connector plate type, size/gage, location and orientation
 - f) Permanent bracing requirements (individual members and/or continuous lateral bracing)
 - 2) Truss material and manufacturing specifications
 - a) Lumber species and grade of all truss and bracing members
 - b) Metal connector plate capacity OR material approval number (WI material approval or independent third party evaluation service approval i.e. ICC ES). The plans shall also include all information required by the WI or third party approval.
 - c) Fabrication tolerance or quality control factor, Cq, per ANSI/TPI 1-2002
 - d) Other connector specifications – size, strength, and number of bolts, nails, or other timber connectors
 - b. Calculations:
 - 1) Applicable design loads (dead, live, snow, wind, and special loads (snow drift, equipment, etc.))
 - 2) Calculation of member loads and stresses including applicable adjustment factors for wood design considering all applicable loading conditions and combinations
 - 3) Combined stress index of less than or equal to 1.0 for applicable members
 - 4) Vertical and horizontal reactions at bearing locations
 - 5) At least **one** of the following:
 - a) Calculations to determine the allowable capacities of nails, bolts, or other timber connectors
 - b) A report of test results to determine metal connector plate capacities
 - c) A metal plate connector material approval number, which provides the plate capacities (WI material approval or independent third party evaluation service approval i.e. ICC ES).
 - 6) At least **two** of the following
 - a) Required metal connector plate area (or number of nails, bolts, etc.) for each member at each joint
 - b) Provided The metal connector plate area (or number of nails, bolts, etc.) for each member at each joint
 - c) The Joint Stress Index (JSI) for each joint which must be less than or equal to 1.0
 - 7) Analysis and design of all connections between members and trusses supplied by the component designer considering all applicable loading conditions and combinations , i.e. truss or joist hangars for jack trusses, connection of piggy back trusses, etc.
2. **Precast Concrete plan requirements:**
- a. Width, depth/thickness, lengths, and camber of precast members
 - b. Strand or reinforcement sizes, locations, and concrete cover thickness
 - c. Embedments for connections to other structural members/systems
 - d. Stirrup sizes and locations (if required)
 - e. Bearing and anchorage conditions/details (clearly show restrained or non-restrained ends in accordance with ASTM E119)
 - f. Fire resistive rating of pre-cast members based on restraint condition (if applicable)
3. **Metal building plan requirements:**
- a. All primary and secondary member (beam, column, girt, purlin, bracing, etc.) locations, designations, and material specifications/properties for all structural members
 - b. Details of all connections of primary and secondary structural members and components and cladding.

- c. Critical dimensions and section properties for all structural members including webs and flanges of frame members at the base, haunch, ridge, and any other location where member size changes.
Providing part numbers or designations without section properties is not sufficient information.

- d. Vertical, horizontal, and moment reactions at all bearing locations

Structural calculations should pay particular attention to any rack storage system that imparts loads to the metal building or supports the metal building (consult the Rack Manufacturers Institute standard for scope and design information).

4. Laminated wood plan requirements:

- a. Width, depth/thickness, length, and camber of members
- b. Lumber species and grade or specification of member combinations of all members
- c. Sketch showing member geometry
- d. Bearing locations and vertical, horizontal, and moment reactions
- e. Adjustment factors used in design (load duration, wet service, repetitive member factors, etc.)
- f. Bearing and anchorage conditions/details

5. Steel joist girder plan requirements:

- a. Depth and camber of girder trusses
- b. Span of girder trusses
- c. Sketch showing girder truss geometry, connections, member sizes, and material properties
- d. Joist girder designation per Steel Joist Institute
- e. Bridging sizes, locations, connections and material properties

6. Structural steel plan requirements (if not fully designed and detailed including connections on the building plans or the structural steel framework plans submitted in advance of the architectural plans):

- a. Plans shall show the size, section, material grade, and location of all members, floor levels, column centers and offsets, and member camber.
- b. Plans shall also show the location of and provide details for wind bracing, welded and bolted connections, column and bearing stiffeners, web reinforcement, etc.
- c. Bearing and anchorage conditions/details and vertical, horizontal, and moment reactions. Clearly show number and location of bolts or size & type of welds
- d. Structural steel shop drawings, signed and sealed by the building designer of record or the structural steel fabricator if appropriately registered, when the building volume exceeds 50,000 cubic feet, will be considered sufficient plans for structural steel component submittal.

Structural calculations should pay particular attention to any rack storage system that imparts loads to the steel members/supports of the building or supports the building (consult the Rack Manufacturers Institute standard for scope and design information).

BUILDING SUBMITTAL - Initial Tenant Space Alterations. - See IEBC checklist for subsequent tenant space alterations, other alterations or changes of use.

A. Tenant Space Plans

1. Schematic plan indicating existing conditions [this plan should show the complete existing facility]
 - a. Complete building exiting plan showing all common exits and stairways
 - b. All fire-resistive walls (ratings & locations)
 - c. Location and number of public sanitary facilities
 - d. Location of project within the building
2. Pertinent documents [such as code variances previously approved and condition(s) of past plan approval that restrict this space or other spaces that affect or are affected by this space]
3. Building submittal requirements [all applicable items from previous building submittal list]