



Commercial Electrical Permit Submittal Guide

All electrical applications and plans for work in a commercial space require a review.

Application Requirements:

- ❑ Commercial electrical permit application form
- ❑ Electrical plan review checklist
- ❑ Two sets of plans (site plan, electrical plan, and one-line/riser diagram)

Permit Fees:

Fees for commercial permits are based upon the valuation of the project. The plan review fee is assessed at 35% of the permit fee. Electrical permit fees are listed on the application form.

Plan Submittal Requirements:

All commercial electrical permit applications require accurate plans and information clearly indicating the nature and extent of the proposed work and the location of the work. All plans shall be consistent with the attached plan submittal standards.

The attached electrical plan review checklist will be completed by the electrical designer. It is intended to enable city staff to determine that an application is complete and will be used by the electrical reviewer to verify that the proposed design is in compliance with the appropriate codes.

Level 1 Applications:

The following types of installations require submittal of two copies of plans and may require electrical plan review. See application for complete submittal requirements.

- Installation, replacement or relocation of individual equipment or appliance
- Tenant improvements/alterations that increase loads by less than 100 amps
- Alterations involving removal, relocation or replacement of fewer than 50% of the total number of existing outlets and fixtures
- Upgrades and modernization of existing components: service or sub-panels, feeders, boxes, devices, fixtures, wiring to improve the safety, functionality, and energy efficiency of existing systems

- Underground conduit within building footprint or covered by another permit.
- Street lighting (public or private) with engineered plans
- Temporary power poles and portable generators
- Electrical installations for public or private agencies when all work will be performed by qualified electrical personnel employed by the agency with established quality assurance and safety programs
- Low voltage data, telecom, HVAC and security systems

Level 2 Applications:

All of the following types of work or uses require submittal of two copies of plans and a completed Electrical Plan Review Checklist, and require plan review:

- Multifamily: four units and larger
- All work on electrical systems operating at over 600 volts
- All commercial generator installations
- All work in areas determined to be a hazardous (classified) location by the NEC.
- Existing tenant alterations where the load is increased by more than 100 amperes, or the service is altered. This will include sub panels, transformers, ups systems, and generators
- Alterations involving removal, relocation or replacement of more than 50% of the total number of existing outlets and fixtures combined.
- Low voltage fire alarm systems
- Underground conduit outside building footprint and not covered by another permit.

Level 3 Applications:

In addition to the submittal requirements listed for Level 2 applications, the commercial electrical installations listed below require design and plans prepared by a registered Washington State Electrical Engineer, and may require independent, third party plan review by a qualified firm or individual:

- Services or feeders rated 1600 amperes or larger, or any special considerations to the service
- Installations that require engineering supervision by the NEC
- All educational, institutional and health care occupancies per WAC 296-46B-010
- Alterations to or installations in structures where the area of work exceeds 4000sf RCW 18.08.410.
- Facilities and structures classified as essential facilities per the International Building Code or Bellingham Municipal Code
- Installations that by their nature are complex or hazardous or pose unique design problems as required by the Building Official

Format & Design Standards

1. Format

- All drawings must be original drawings in ink on white bond paper or photocopied reproductions.
- Diazzo (blueline) prints will not be accepted.

2. Paper Size

- Drawings must be submitted on 11" x 17", 18" x 24", or 24" x 36" sheets.
- All sheets in a drawing set must be the same size and sequentially labeled and dated.
- Revisions must be clearly marked.

3. Scale

- All scale sizes must be standard architectural or engineering scales.
- Site plans must be drawn at 1" = 20' or larger scale.
- Floor plans, elevations and sections shall be drawn at not less than 1/8" = 1' scale and must be dimensioned.
- Details must be drawn at a scale large enough to clearly illustrate the particular detail, with a minimum scale of 3/4" = 1'.

4. Reproducibility

- All drawings must be clear, accurate, legible and high-contrast. Contrast must be sufficient to permit archival photographic or digital reproduction.

5. Architectural & Engineering Professional Seal(s)

- Residential Construction: Structures that do not conform to the Conventional Light-Frame Construction Design Provisions of 2006 International Residential Code Section R301 must be designed by a licensed architect or engineer.
- Commercial Construction: Alterations or additions to structures larger than 4000 square feet and multi-family buildings with five or more units are required to be designed by a licensed professional architect, per RCW 18.08.410.
- Drawings and structural calculations prepared by a professional architect or engineer licensed to practice in the State of Washington must be signed and sealed by the architect or engineer, per WAC 196-24-095.
- Submittals prepared by design professionals must include at least one set of plans with original seals and signatures (additional sets may be copies).
- Structural details shall not be hand-drawn or superimposed upon architectural floor plans prepared by others.
- Structural drawings shall be free of extraneous architectural details.
- Structural details presented elsewhere in the drawings or on documents other than structural drawings shall be reviewed by the design professional and corrected or revised as necessary to eliminate inconsistent or contradictory information, specifications or details.
- One set of structural calculations supporting the plans and details shown in the structural floor plans must include an original seal and signature.

Electrical Plan Review Checklist (Level 2 & 3 Applications)

The intent of this checklist is to provide a general guideline for electrical plan review. It may not include all items to be verified for every plan review encountered and it may include more items than a specific set of electrical plans may encompass. Use the checklist for the electrical plans submitted and the scope of the particular job.

Electrical Load Calculations

- ___ Breakdown of connected loads into proper NEC categories (lighting, receptacles, motors, HVAC, kitchen equipment, appliances, etc.).
- ___ NEC demand factors applied to each category of load.
- ___ Total connected load in VA or KVA.
- ___ Total calculated amps.
- ___ Panel board load calculation worksheet completed for all panel boards.
- ___ Starting loads for the worst case (max. starting loads with everything starting that that is required to start at the same time) and any starting variables (soft start, variable frequency drives, etc.) for the Emergency, Legally Required, and Optional Standby systems.

Fault Current Calculations on the Riser Diagram

- ___ Submit the riser diagram on a City of Bellingham form. Provide sufficient information on the riser diagram to verify the calculations.

Projects designed by a professional engineer or projects with services >400 amps.

Fault Current Summary must include the following;

- ___ The starting nodes for fault current in a cascading format as they relate to the one-line diagram.
 - ___ The starting fault current at the beginning of each conductor.
 - ___ The ending fault current at the ending of the conductor.
 - ___ The conductor's impedance, size and length.
 - ___ The conduit type (Metallic or Non-Metallic).
 - ___ The A.I.C. rating of the service, panel boards, and over-current devices.
- ___ Utility transformer size in KVA, impedance (%Z), and available fault current.
 - ___ Complete the fault current information through the subpanel-board level or provide calculations to below the minimum AIC rating of the electrical equipment and over-current devices.
 - ___ Available fault current shown on the one-line diagram for all nodes

- _____ Series rated systems: indicate the circuit breaker model numbers for every panel or switch board on the one-line or the panel schedules. Provide corresponding series rating charts from the manufacturer (with arrows indicating the breaker types) in order to verify the series rated system. Provide the information in a systematic way as it relates to the one-line diagram, down to the point in the system that the fault current is less than the fully rated or series rated over current protective device and gear.

Riser Diagram (one-line)

- _____ Clearly identify the service point.
- _____ Identify voltages.
- _____ Service conduit(s) size & type, number of parallel runs, conductor(s) size & type, insulation type, and number of conductors.
- _____ Service equipment ampacity, A.I.C. rating and the A.I.C. ratings of the over current protection.
- _____ Indicating points (nodes) at line and load points along the one line diagram. The nodes should state the AIC levels at key points of terminations of electrical equipment.
- _____ Indication of ground fault protection of equipment when required.
- _____ Size of the grounded service conductor for the maximum unbalanced load.
- _____ Grounding electrode system, including concrete encased electrode, the sizing of the grounding electrode conductor, and main bonding jumper for the service equipment.
- _____ Feeder(s) conduit size & type, conductor size & type, and number of conductors.
- _____ Type of equipment grounding conductor and equipment bonding jumper for feeder(s), size if applicable.
- _____ Panel-board(s) ampacity, A.I.C. rating and over-current protection.
- _____ Transformer(s) secondary tap conductor length to over-current protective device.
- _____ Grounding electrode system and grounding electrode conductor for transformer(s).
- _____ Size of equipment bonding jumper and system bonding jumper for the transformer(s).
- _____ Over-current protection of transformer(s) complies with NEC 450-3.
- _____ Identify all fuse types (class type).

Floor Plan (Lighting)

- _____ Denote the type and location of all lighting fixtures.

- _____ Denote all required switch locations.
- _____ Home-run conduit(s) showing size, type, and number of conductors.
- _____ Branch circuit(s) properly sized for the load.
- _____ Emergency lighting clearly denoted on plans.
- _____ Unit equipment used for egress lighting complies with NEC 700-12(e).
- _____ Photometric plans for Egress lighting in parking garages. Please provide, for each level of building parking, photometric drawings of the emergency egress lighting per 2003 IBC section 1006.4, showing 1 ft. candle average and 1 ft. candle minimum, in a pathway down each drive isle leading to each exit.
- _____ Fill out a lighting summary form.

Energy Code Compliance

- _____ Electrical plans correspond to the lighting summary; including number and wattage of the lighting fixtures, type of lighting fixture, the occupancy type, and the watts per square foot allowed.
- _____ Lighting control complies with 1513 of the current adopted Washington State Energy Code. (When required) http://www.energy.wsu.edu/code/code_support.cfm Chapter 15
- _____ Completed copies of a lighting summary form.
<http://www.neec.net/resources/resources.html>

Floor Plan (Power)

- _____ Electrical plans denote the location of all switchboard(s), panelboard(s), and transformer(s).
- _____ All electrical equipment has working clearance shown as required by NEC Article 110.
- _____ Receptacle outlet locations. Receptacles required by local amendments, for rooftops, for show windows, etc., and as required by NEC 210-52 and Bellevue City Codes and Ordinances.
- _____ Electrical equipment schedule.
- _____ Locations denoted on electrical plans for all motors, compressors, heaters, stationary appliances, etc.
- _____ Homerun conduit(s) showing size, type, and number of conductors.
- _____ Branch circuit(s) properly sized for the load.
- _____ Over 112.5 KVA transformers require 1 hour rated construction surrounding them.

_____ Diagram of any transformer vaults including drain pipes and fire ratings

Panel Schedules

_____ Panel board(s) are identified.

_____ Panel board busbar rating in amps shown.

_____ Panel board voltage rating is shown.

_____ Main breaker size or main lug only is shown.

_____ Panel schedule denotes double lugs or feed-through lugs.

_____ The description or coding is provided for each branch circuit.

_____ The connected load of each branch circuit is shown in VA or KVA.

_____ The total connected load is shown in VA or KVA.

_____ The A.I.C. rating of the panel board and over-current devices

_____ Time/current curves showing compliance with the selective coordination requirements for elevators and escalators. This shall be shown to the next common over-current device (common to more than one driving machine) above the elevator over-current device to the level of .01 time line.

Emergency, Legally Required Standby, or Optional Standby Systems

See also the section on Equipment System Designations, which follows this section.

_____ Generator capacity and voltage.

_____ UPS capacity and voltage.

_____ System properly sized for the load.

_____ Indicate that the room, that houses the emergency generating system, has a 2 hour fire rating (NFPA 20)

_____ Emergency system is totally separate from all other systems.

_____ Individual transfer switches required.

_____ Grounding electrode conductor properly sized (When required for separately derived systems). State the number of poles in the transfer switch.

_____ Signage as required by NEC is denoted on plans.

- _____ Selective coordination of over-current protective devices for Emergency and Legally Required systems down to the .01 timeline – overlaid time/current curves for each branch from each power source to each branch circuit over-current protective device on one sheet.
- _____ Provide 2 hour protection of the pressurization fan(s) circuit(s) from the emergency generator to the fan.

Peak Demand Records (NEC 220.87 or BCC 23.30.220.87)

- _____ Starting and ending dates of the metering.
- _____ Highest reading of the metering period clearly shown.
- _____ Power factor adjustment shown, when necessary.
- _____ Explain the details of seasonal and occupancy adjustment factors.
- _____ Utility demand records or recordings of demand metering for the peak period must accompany the submittal.
- _____ Signature of the administrator or engineer who took the readings.

Healthcare Facilities

- _____ Clear definition of area use (i.e.: dental, medical, chiropractic, etc.)
- _____ Indicate the ceiling height as it pertains to a Patient Care Area
- _____ Clear definition of rooms uses (i.e.: patient room, nurse’s station, critical care, general care, etc.)
- _____ One line showing separate transfer switches for equipment, life safety, and critical branches
- _____ Ground Fault Protection where required and at the next level as required.
- _____ Wiring methods in patient care areas.
- _____ Selective coordination of over-current protective devices for the emergency system and subfeeds (where required)

Hazardous Locations

- _____ Clear definition of area use; note where the classified location starts and stops.
- _____ Wiring methods (type of conduit).
- _____ Location of sealing fittings where required, and identify the location. (Class 1 Div.1 etc.)

_____ Depth of buried conduit.

_____ Diagram of sump pump showing motors, drain pipes, and all chambers.

Smoke Control Systems (high-rises and places of assembly of 1000 persons only)

_____ Designate the plan as “Smoke Control System”.

_____ Panel schedule (industry standard type) for the emergency panel with connected and demand loads.

_____ Schedule of smoke control components showing equipment, the load in amps or volt-amps, conduit type and size, conductor type and size, and breaker type and size.

_____ Floor plans showing the location of the smoke control components.

_____ Wiring methods for the fire alarm system.

_____ Show all emergency system wiring methods pertaining to the smoke control.

_____ Schedule of individual smoke control components starting loads starting at the same time

_____ Schedule of individual smoke control components running loads.

_____ The total combined loads of smoke control components for start up and run (start up and run shown separately).

_____ Identify the color marking, protection, and routing of the conduit from the generator to the pressurization fan(s).

Reminders and Notes

- Submit seismic bracing calculations and diagrams by engineering standards for equipment between 75 - 400 lbs at 4 feet or more above the floor or roof level, or equipment more than 400 lbs at ground level or any height.
- Location requiring NEC 110.16 & NFPA 70E field marked labels to warn qualified workers of potential electric flash hazards shall be posted.

Emergency and Legally Required Systems Equipment

**TABLE 403(1)
Standby (Legally Required) and Emergency Power**

<u>Type of equipment</u>	<u>Maximum Time to Energize Loads</u>	<u>Minimum Run Time (Duration)</u>	<u>IBC Section</u>	<u>IFC or NFPA Section</u>
Emergency Power Systems ¹				
Exit signs	10 seconds	2 hours for generator power, or 90 minutes for battery backup	1011.5.3	604.2.15 High rises 604.2.16 Underground buildings 1011.5.3 2403.12.6.1 Temporary tents, canopy membrane structures
Exit illumination	10 seconds	8 hours	1006.3	1006.3 604.2.15 High rises 604.2.16 Underground buildings
Any emergency voice/alarm communication including area of refuge communication systems (barrier-free & horizontal exits)	NFPA 72	24 hours	402.12 covered mall buildings 403.11 High rises 405.10 Underground buildings 907.2.1.2 Assembly occupancies	604.2.14 Covered mall buildings 604.2.15 High rises 604.2.16 Underground buildings 907.2.1.2 Assembly occupancies NFPA 72
Fire detection and fire alarms	NFPA 72	24 hours	403.11 High rises 405.10 Underground buildings 909.20.6.2 Smoke proof enclosures 907	604.2.15 High rises 604.2.16 Underground buildings 907.2.8.3 and 907.210.2 NFPA 72
Smoke control systems in high-rise buildings, underground buildings and covered mall building including energy management systems is used for smoke control or smoke removal	60 seconds	2 hours	403.11 High rises 404.6 Atriums 405.10 Underground buildings 909.11 Smoke control	909.11
Fire pumps in high-rise buildings & underground buildings	10 seconds	8 hours (NFPA 20)	403.11 High rises 405.10 Underground buildings	604.2.15 High rises and NFPA 20 604.2.16 Underground buildings 913.2 All Fire Pumps
Smoke proof enclosures and elevator shaft pressurization	60 seconds for ventilation	4 hours	403.11 High rises 909 and 909.20.6.2	
Any shaft exhaust fans required to run continuously in lieu of dampers	60 seconds	4 hours	716	
Elevator car operation in high-rise & underground buildings (including control system, motor controller, operation control, signal equipment, machine room cooling/heating, etc.)	60 seconds	4 hours	3003	604.2.15 High rises 604.2.16 Underground buildings
Elevator car lighting and communications in high-rise & underground buildings	10 seconds	4 hours	3003	604.2.15 High rises 604.2.16 Underground buildings 604.2.19 Elevators
Lights, heating, and cooling for building fire command center and mechanical equipment rooms serving the fire command center	60 seconds	24 hours		604.2.15 High rises
Power (other than lights, heating and cooling) for building fire command center	60 seconds	4 hours		
Mechanical and electrical systems required by IFC 27 (hazardous materials including UPS rooms)	60 seconds	4 hours		Article 27

¹ The fuel pump and associated systems for the emergency or legally required generator shall be provided with power from the generator to maintain fuel supply.

Legally Required Standby ²				
Pressurization equipment for low-rise buildings	60 seconds	4 hours	909 902.20	
Exhaust fans for any loading dock located interior to a building	60 seconds	4 hours		
Operation of elevators used as accessible means of egress in low-rise buildings (including car lighting, communications, control system, motor controller, operation control, signal equipment, machine room cooling/heating etc)	60 seconds	4 hours	1007.4 & .5 3003	604.2.19 elevators 1007.4 & .5
Fire pumps in low-rise buildings	10 seconds	8 hours		913.2 and NFPA 20
Transformer vault ventilation equipment	60 seconds	4 hours		
Heat tape for sprinkler lines & heating in sprinkler riser rooms	60 seconds	24 hours		
Fuel pump system for any legally required system	60 seconds	4 hours		
Sewage disposal pumps	60 seconds	4 hours		
Heat tape for sprinkler lines & heating in sprinkler riser rooms	60 seconds	24 hours		
Fuel pump system for any legally required system	60 seconds	4 hours		
Sewage disposal pumps	60 seconds	4 hours		

² The fuel pump and associated systems for the emergency or legally required generator shall be provided with power from the generator to maintain fuel supply.



Permit Center
 210 Lottie Street
 Bellingham, WA 98225
 phone: 360-778-8300
 fax: 360-778-8301
 www.cob.org

Commercial Electrical Permit Application

- Applications may be submitted by mail, but must be picked up and signed for in person.
- Applicant must be the person doing the electrical work (licensed electrician, property owner or tenant with written authorization from owner)

Office Use Only
Date Received: _____
Permit Numbers: _____

Project Address	Parcel Number
------------------------	----------------------

Electrical Contractor	<input type="checkbox"/> Applicant
Company: _____	
Applicant Name: _____	
Address: _____	
City/State/Zip: _____	
Phone: _____ Fax: _____	
Email: _____	
State License #: _____ Exp: _____	
Bellingham Business Reg. #: _____	

Project Description	In addition, check all work you are performing under this permit:
	<input type="checkbox"/> Service
	<input type="checkbox"/> Lighting
	<input type="checkbox"/> Fire Alarm
	<input type="checkbox"/> LV Data/Phone
	<input type="checkbox"/> LV HVAC Controls
	<input type="checkbox"/> Install/move devices
	<input type="checkbox"/> New circuits

Valuation of Work
\$ _____

Submittal Requirements
<input type="checkbox"/> Two sets of electrical plans and related drawings
- Site plan showing meter & service location
- Floor plan(s) showing work to be completed
- One line/riser diagrams
<input type="checkbox"/> Load Calculations
<input type="checkbox"/> Panel Schedule
<input type="checkbox"/> NREC Lighting Summary for projects involving new or replaced lighting (except residential units)
<input type="checkbox"/> Plan Review Checklist (Level 2 & 3 only)

Electrical Design Contact Person
Name: _____
Phone: _____ Fax: _____
Email: _____

Property Owner	<input type="checkbox"/> Applicant
Name: _____	
Address: _____	
City/State/Zip: _____	
Phone: _____ Fax: _____	

Permit Fees	
\$25.00 Base Fee + fees based on value of work:	
<u>Value of Work</u> <u>Permit Fee</u>	
Up to \$1,000	\$80
\$1,001 to \$5,000	\$80 plus 4.0% of amount over \$1,000
\$5,001 to \$10,000	\$240 plus 3% of amount over \$5,000
\$10,001 to \$25,000	\$390 plus 1.5% of amount over \$10,000
\$25,001 to \$50,000	\$615 plus 1% of amount over \$25,000
\$50,001 to \$250,000	\$865 plus .50% of amount over \$50,000
\$250,001+	\$1,865 plus .20% of amount over \$250,000
Plan review fee (35% of Permit fee)	

Tenant	<input type="checkbox"/> Applicant
Name: _____	
Address: _____	
City/State/Zip: _____	
Phone: _____ Fax: _____	
Email: _____	

Staff Acceptance	
<input type="checkbox"/> Approved as submitted	_____
<input type="checkbox"/> Accepted, inspector review required	Date
<input type="checkbox"/> Not accepted, see comments	
Inspector plan review:	
<input type="checkbox"/> Approved <input type="checkbox"/> Outside plan review required	Staff Initials

I am the owner of the property described above or am authorized by the owner to sign and submit this application. I certify under penalty of perjury of the laws of the State of Washington that the information on this application and all information submitted herewith is true, complete and correct. I also acknowledge that by signing this application I am the responsible party to receive all correspondence from the City regarding this project including, but not limited to, expiration notifications. If I, at any point during the review or inspection process, am no longer the Applicant for this project, it is my responsibility to update this information with the City in writing in a timely manner.

Signature by Owner/Applicant/Agent
City and State where this application is signed _____
BSD#004 05/09

Date _____

Inspection and other fees:

Inspections are included in the cost of a permit, however additional fees are required for inspections outside the City's normal work schedule and for re-inspections (see below for more information).

1. Inspections performed outside the City's normal work schedule. (Two hour minimum charge)	\$107.00/hr
2. Reinspection as a result of work not being ready, or only partially ready, access not provided, or repeated inspections for same work due to neglect, carelessness or improper correction or installation. (One hour minimum charge)	\$107.00/hr
3. Reinspections required due to work being covered or concealed before inspection. (One hour minimum charge)	\$107.00/hr
4. Owner or contractor requested inspections on existing installations. (One-half hour minimum charge)	\$107.00/hr
5. Inspections for which no fee is specifically indicated. (One-half hour minimum charge)	\$107.00/hr
6. Plan review fees (\$50.00 minimum charge)	35% of electrical permit fee