

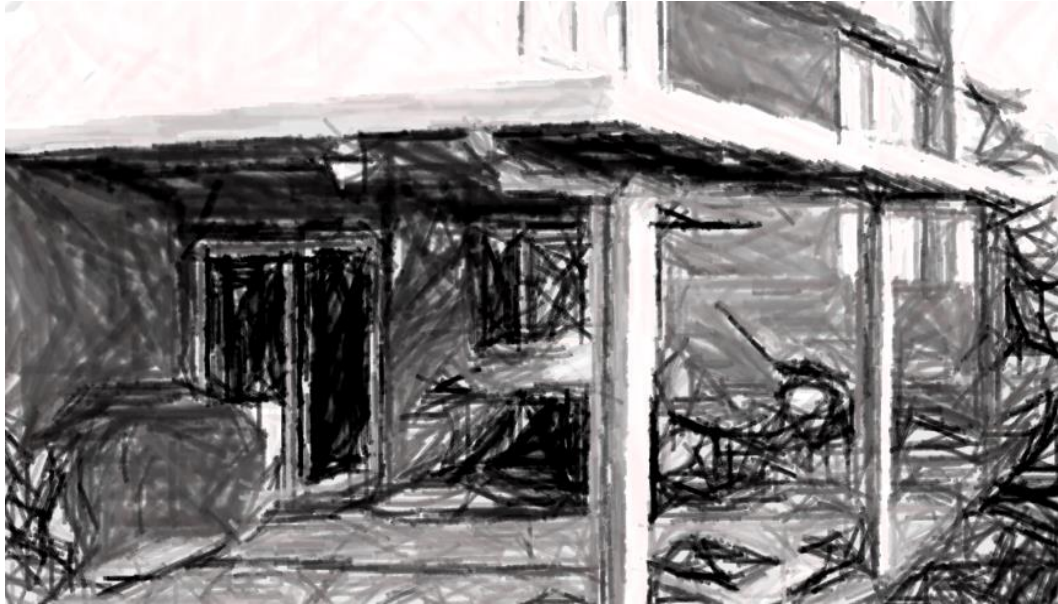
Residential ATTACHED PATIO COVER Checklist and Guide For a Building Permit

(Per the 2015 IRC as amended by St. Louis County
 Ordinances for 1-& 2-Family Dwellings and Townhouses



SAINT LOUIS COUNTY
 Transportation and Public Works

This **Patio Cover Checklist** is based on St. Louis County's (SLCO) policies, construction codes amended and adopted by ordinance. See list below. It is not a substitute for those codes and ordinances, but serves as a guide to reading them. More information and explanation is provided in commentaries and interpretations published by St. Louis County and acknowledged code organizations.



List of Applicable Codes and Ordinances:

2015 International Residential Code (IRC) & Ordinance #27,654-Ch.1116 ("R" "G", "N", and "M" references and Appendix K - Sound Transmission).

2015 International Building Code (IBC) & Ordinance #27,654-Ch.1116\5 ("B" references).

2015 International Property Maintenance Code (IPMC) & Ord. #27,617-Ch.1110 ("PM" refs).

2014 National Electrical Code (NEC) aka NFPA 70 & Ord. #24439-Ch.1102 ("E" references).

For inquiries regarding the information provided in this guide, please contact:

St. Louis County Permit Processing _____ (314) 615-5184

St. Louis County Zoning Review _____ (314) 615-3763

St. Louis County Building Plan Review _____ (314) 615-5485

Right-of-Way Owner

State _____ (888) 275-6636

County _____ (314) 615-8517

Municipality _____ Call the project site's Municipality

St. Louis County's Municipal Contracts Matrix shows those municipalities that currently contract for its Code Enforcement services. The Matrix is on our web site at

<https://stlouiscountymo.gov/st-louis-county-departments/transportation-and-public-works/residential-building/>

For the electronic plan review, scan QR code or visit us online at

<https://stlouiscountymo.gov/st-louis-county-departments/transportation-and-public-works/electronic-plan-review/>



Sections from the Codes, their Referenced Standards, and St. Louis County Ordinances, are shown at ends of statements and are *italicized* in parentheses (.).

NOTICES Regarding Permits



- The applicant (property owner or the owner's authorized agent) is responsible for contacting those applicable agencies that may be affected by the new work, or that may have legal oversight of the new work along with but separate from St. Louis County. Where requirements among the agencies conflict, the most restrictive shall govern the new work. Contact these agencies before beginning work approved under a permit issued by St. Louis County. Such agencies may include:
 1. The project site's Municipality;
 2. The Local Fire Protection District;
 3. Subdivision Trustees.
- Building permit issuance does not authorize construction access to the work site. If a driveway does not exist or cannot be used, the owner/contractor must apply for a permit with the owner of the Right-of-Way to construct somewhere else a temporary entrance into the work site. So, draw 1 or 2, as noted below, on the site plan:(*SLCO Rev. Ord. DOT1105.040-4.c*).
 1. Draw the existing driveway with an arrow on it pointing into the lot and labeled "construction entrance";
OR
 2. Show and label an alternate access with an arrow pointing into the lot and labeled "construction entrance". Note on the site plan: "A separate special use permit shall be obtained from the street right-of-way owner for a construction entrance before any construction accesses the work site".
- Licensed **Electrical Contractors** may sign on to a Building Permit Application before it is approved and issued, as long as the proposed electrical new work is shown in the drawings. Any electrical new work shown in the drawings makes the building permit application an Integrated Permit.
- **A Homeowner** may perform Electrical new work where pre-authorized by passing a written test administered by St. Louis County Code Enforcement Inspections. The test is to demonstrate the **Homeowner** has the knowledge and ability to perform the work.
- **Structural alterations proposed** to the existing building must be drawn and submitted in an **electronic** set properly sealed by a Missouri registered Design Professional. Please be aware properly sealed structural calculations may also be required by the Plan Reviewer, depending on the alterations proposed and adequacy and completeness of sealed drawings submitted.
- Only alterations as shown in approved and issued permit drawings shall be provided in the field. If the Field Inspector finds otherwise, a separate permit application submitted with properly sealed structural drawings and calculations shall be required for review of the outside-work scope alterations.
- **Properly sealed drawings means** the first sheet of the **electronic** submitted set is **electronically** sealed, signed, dated by a Missouri registered engineer or architect, with subsequent sheets bearing the design professional's **electronic** seal. The first sheet, or the title block of each sheet, is to note the design professional's business address and contact number, and include the project address, owner name(s) and a description of the new work proposed. Any revisions to drawings are to be highlighted by clouding or by another easily recognized method.
- **The Plan Reviewer** may determine the proposed work, construction, or conditions require additional drawings and information be submitted to Code Enforcement-Plan Review for review, beyond the minimum submittal requirements noted in this Checklist.

Submittal Requirements: Construction-Ready Drawings, Their General Notes of Construction, & Zoning



- Provide the following minimums in drawings and documents submitted for a permit. Code and Ordinance Sections are in parentheses (.). A patio cover must be open on at least 2 sides (*R309.2*).
- **Electronic Building Permit Application** filled out, signed and dated by the applicant.
- Drawings below in **electronic** set scaled, labeled, and dimensioned as follows (*B107.2.1; SLCO Rev. Ord. R107.1; SLCO Policy*):
 1. **Site Plans** with the following provided:

Notice: For projects in a Municipality, submit the site plans stamped, signed and dated approved by the Muni's Zoning Officer and submit the Zoning application receipt also signed and dated approved:

 - a. Drawn lot configuration with property lines and North direction arrow shown. Note the lot number, subdivision name, dimension setbacks and easements, and name adjoining street(s).
 - b. All existing structures on the lot shown and labeled, including any retaining walls.
 - c. Show and label any on-site septic system –the tank and leach field - or any existing well.
 - d. The labeled and dimensioned location of the patio cover proposed. Dash-outline its roof overhangs. Dimension the structure and the overhang's distances from property lines.
 - e. Show and label any existing swales.
 - f. Note on the Site Plans: "Siltation and erosion control measures must be provided to prevent siltation/erosion from leaving the construction site" (*SLCO Policy*).
 2. **Architectural/Structural Drawings** (*B107.2.1; SLCO Rev. Ord. R107.1; SLCO Policy*):
 - a. **Pier/Slab/Electrical* Plan**, scale 1/4" = 1'-0" typical.
Show and dimension pier locations. Label slab material. Electric is an option. If provided, show labeled locations of lights, switches, and receptacles. Join with a curved line each switch to the light(s) or receptacles controlled.
 - b. **Roof Framing/Cover Plan**, scale 1/4"=1'-0" typ.;
Show and label flashing materials at intersections.
Note in dimensioned plans conventional framing or trusses is/are proposed.
Where roof trusses are proposed, submit the following; a lumber dealer or truss fabricator can provide them (*SLCO Rev. Ords. R502.11.1; R502.11.4; R802.10.1; R802.10*).
 - 1) Manufacturer's Layout of truss assembly;
 - 2) Truss Design Drawings Sealed by Missouri Registered Professional Engineer.
 - c. **Patio Cover Elevations**, scale 1/4"=1'-0" typ.
Dimension header height above grade or slab and identify materials and framing.
 - d. **Framing Assembly Section(s)**, scale 1/2" to 3/4"=1'-0".
Extend from bottom of pier to top of roof. Provide the roof framing, sheathing, and cover. Dimension the projection of any roof overhang.
 - e. **Connection Section Details**, scale 1/2" to 1-1/2"=1'-0".
Provide detailed connections of post-to-pier; post-to-header, both in field and at corners; header-to-rafters; rafters-to-ledger; ledger-to-building framing or structure.
- **See the example drawings at the end of this checklist for reference** in completing your own project-specific drawings. The lists below are Code and Ordinance requirements for a residential patio cover that are to be provided in your drawings and notes.

Design, Construction & Finish Requirements



The following minimum requirements are to be noted and shown in drawings submitted for a permit to construct an Attached Patio Cover:

Flood Hazard Areas

- Be aware attached patio covers constructed on properties that are wholly or partly in flood hazard areas will be reviewed for compliance with St. Louis County's Floodplain Management Ordinance and the Zoning Ordinance. Requirements other than, or in addition to, those noted in this checklist, may need to be provided (*R322 other than SLCO Rev. Ords. R322.1; R322.1.5; R322.1.7*).
- The Zoning Ordinance may be accessed through a 'link' on St. Louis County's website at www.stlouiscountymo.gov/st-louis-county-departments/transportation-and-public-works/codes-and-ordinances/

Concrete Piers & Slab

- Minimum compressive strength of concrete outdoors is 3500-psi with air-entrainment (*Table R402.2*).
- Provide at least 3-1/2" thick floor slab on a base course of at least 4" thick gravel or crushed stone. Slope slab to direct surface drainage away from building and to an approved drain (*R309.1; R506; R506.1*).
- Other floor materials proposed must be approved non-combustible, can be sloped and will maintain surface drainage to an approved drain (*R309.1*).
- Provide piers with minimum 8" diameter extending 30" below grade and with bottom 1/3rd of pier flared to a diameter adequate to support loads exerted on it. Piers shall bear on undisturbed soil.
Notice: A continuous 6" x 12" footing 30" below grade and supporting an 8" thick foundation extending 8" above grade may be considered in place of the piers, where noted on the drawings as being provided for a future conversion to an enclosure allowed and approved on residential properties with future permit (*R301.2; R317.1-Item 2; R403.1.4.1-Item 1; Table R402.2; SLCO Rev. Ord. Table R301.2(1)*).

Piers are recommended to extend 6" to 8" above grade or slab, and a minimum 2" extension above grade or the slab is required to raise the base of the wood post above surface drainage.

Structural Wood Framing & Connections

- Exterior wood structural framing shall be preservative-treated (wolmanized) or naturally durable. Cedar is one example of an acceptable, naturally durable wood (*R407.1*).
- Show and note the sizes, grade(s) or fiber-stress, and species of the structural wood members, including posts, headers, beams, rafters, ceiling joists (if provided), and ledgers. Wood posts shall not be less than 4x4 nominal size. Detail the connections between framing members (*R407.3; R602.3; R802.2*).
- In the elevations or construction/assembly section(s), dimension the height clearance under headers, and dimension the total height to top-of-header or-plate at rafter-bearing. Minimum clear height under headers and ceiling projections is 6'-6", and minimum clear ceiling height is 7'-0" (*R305.1; PM404.3-Exception 1*).
- Provide structural connection details at the top and bottom of posts.
- Show and note rafters (and ceiling joists, if provided) on-center spacing. Show and note the roof slope. Label the roof framing as conventional or as pre-fab trusses on the plans.
Notice: A minimum 3:12 roof slope is required for rafters and ceilings joists sizes, spacing, grades and conditions noted in Tables R802.4(1)(2) and Tables R802.5(1)-(9) in the 2015-IRC (*R802.2; R802.3*).

- For roof framing slopes less than 3:12, submit gravity load and deflection calculations to justify structural adequacy of solid sawn framing and construction proposed. Calculations may be required to be properly sealed by a Missouri engineer or architect (*R802, esp. R802.2; R802.3; R802.4; R802.5; Tables R802.4(1)(2); R802.5.1(1)-(9); Figure R802.5.1*)
- Show and note ledger size, grade or fiber-stress and species. Show and note fastener type, size, length. Leger fastener spacing must correspond to the building's stud spacing to which it shall attach. Note the fastener spacing as staggered or in 2 rows at each stud (*R802.2*).
- In rafters-to-header section details, dimension the rafter projection from the face of the header upon which they set.
- Conventional and truss roof framing assemblies may resist uplift by attaching to their supporting headers/beams, in accordance with Table R602.3(1), if their assemblies meet all of the following *R802.11*):
 1. Verified to have an uplift force not exceeding 200-lbs;
 2. Framing is spaced not more than 24" o.c. and;
 3. The roof overhang does not project more than 24" from the face of the header or beam below it.
- Trusses shall be nailed to the supporting header with 3-16d nails toe nailed without splitting the end of the truss (*R602.3; R802.11; Tables R602.3(1); R802.11; SLCO Policy*).
- Roof framing provided must support the following minimum loads:
 1. Conventional framing rafter or truss top chord:
 - a. Snow Load: 20 lbs. per sq. ft. (*R301.2; R301.6*).
 - b. Dead Load: Actual weight of framing plus the weight of 2 layers of roof covering (*R301.4; R908*).
 2. Where shown or noted as proposed, truss bottom chords or ceiling joists of conventional framing (*R301.5; Table R301.5*):
 - a. Shall support a 20-lbs. per sq. ft. live load where the clear area between a ceiling joist and the rafter above is at least 42", and/or where a rectangle at least 42" x 24" in the same plane as the truss assembly or joist/rafter framing can fit in the space between the joist and rafter, or in the space of the truss web configuration (*Table R301.5, Footnote g*).
 - b. Shall support 10-lbs. per sq. ft. live load where the rectangle-space dimensions are less than those noted in 2.a. above.
 - c. **Notice:** The live load design on the ceiling joist or truss bottom chord of shall not be required where all conditions below are met (*SLCO Policy*):
 - 1) Minimum 1/2" gypsum board at underside of ceiling joists or truss bottom chords.
 - 2) Access opening in a ceiling finish is minimum 22"x 30" without pull-down stairs (*ref. R807.1 for opening size only*).
 - 3) Warning signs each side of attic access opening located at least 36" above the bottom chord and within 18" of the opening's edge. Signs are metal or approved materials durable in attic conditions; are at least 40-sq. inches, have a background contrasting with 3/4"-high letters noting "WARNING-TRUSSES NOT DESIGNED FOR ATTIC STORAGE" (*SLCO Policy*).
 - 4) In the attic around the opening, provide a horizontal railing attached to the trusses 24" - 36" above the bottom chord. The railing shall be 1x4's, 2x4's or 3/8"x 6" plywood and shall obstruct easy access for storage. The railing may be shop or field applied (*SLCO Policy*).
 - d. Shall support dead Load, determined by using actual framing loads (*R301.4*).
- Metal-plate-connected wood truss design and manufacture shall comply with ANSI/TPI 1. Drawings shall note the trusses shall be braced for lateral stability and to prevent rotation during construction and upon completion (*R802.10.2; R802.10.3; SLCO Policy*).

Fire-Resistant Construction

- The exposed structural framing of attached patio covers – such as wood posts and headers - are considered ‘very open’ walls and shall not be closer than 3’-0” to a property line in a subdivision where all dwellings are not sprinklered throughout in compliance with NFPA 13D (*SLCO Rev. Ord. Table R302.1(1)*).
- Structural framing closer than 3’-0” to a property line shall be protected in a minimum 1-hour fire-resistance rated assembly tested in accordance with ASTM E 119 or UL 263 with exposure from both sides (*SLCO Rev. Ord. Table R302.1(1)*).

Roof Sheathing

- Provide at least wood structural panel (WSP) sheathing - like plywood or OSB (oriented strand board), - that has a maximum 24/0 span rating for fastening to trusses or rafters spaced 24" o.c., and: (*Table R503.2.1.1(1); R803.2.1; Ref. Std. APA Pub. N335P, D481*):
 1. Is minimum 15/32" thick without edge support, or;
 2. Is minimum 3/8" thick with edge support, and;
 3. Edge support of tongue-and-groove joints, 2x lumber blocking, or panel edge clips at the mid-point between each support.

Roof Cover, Slope, Underlayment, Flashing & Drip Edge

- Provide Class A, B, or C shingles on roofs where any edge less than 3’-0” from a lot line (*R902.1*).
- **Notice:** Conventional roof framing must have at least a 3:12 slope to comply with Code requirements. Where less, submit gravity load and deflection calculations to justify the structural adequacy of the framing. The Building Plan Reviewer may require a Missouri engineer or architect seal the calculations (*R802, esp. R802.2; R802.3; R802.4; R802.5; Tables R802.4(1)(2); R802.5.1(1)-(9); Figure R802.5.1*).
- Underlayment must be at least Type I or 15# felt per ASTM D 226; D 1970; D 4869; or D 6757 (*R905.1.1*).
- Underlayment for asphalt shingles shall comply with the following minimums:
 1. Provide at least 2 layers of underlayment on slopes of 2:12 to less than 4:12. Starting parallel with the eave, fasten a 19" strip of underlayment. Then starting parallel with the eave, apply 36" wide sheets of underlayment. Successive 36" wide sheets of underlayment shall overlap the previous 36" wide sheet by 19". Fasten underlayment to hold in place (*R905.1.1; R905.2; Table 905.1.1(2)*).
Notice: The rafter size, spacing and span proposed may require at least a 3:12 slope.
 2. Provide at least 1 layer of underlayment on slopes 4:12 and greater. Apply underlayment shingle fashion, so it is parallel to and starts from the eave and is lapped 2". Fasten to adequately hold in place. Lap ends 4" and offset 6’-0" (*R905.1.1; Table 905.1.1(2)*).
- Provide corrosion-resistant flashing at intersections, at changes in roof slope or direction, at walls and chimneys, around roof openings, and at abutments with porches and decks. Comply with St. Louis County Ordinances for valley flashing requirements (*R903.2; SLCO Rev. Ord. R905.2.8.2*).
- Provide a drip edge at eaves and rakes of shingle roofs. Extend it at least 2" onto the roof sheathing and at least 1/4" below the roof sheathing. Provide roof underlayment over the drip edge along the eaves and under the drip edge at rakes (*R905.2.8.5*).

Roof Drainage

- Provide gutters and downspouts on roof overhangs projecting less than 36" (*P1103.2; P1103.3; SLCO Rev. Ord. P1101.12.1; SLCO Policy*).
- Note storm drainage may discharge onto flat areas like lawns and streets, where the storm water flows away from the building and away from adjoining property and shall not create a nuisance. Note surface drainage shall be directed to an approved water course or piped to a storm drain.
Notice: Discharging to or within 10’-0” of a property line, sidewalk, driveway, or street, or discharging

that creates a nuisance to adjoining properties is prohibited (*P1101.2; P1101.11*).

Roof Ventilation

- Provide roof cross-ventilation where an enclosed attic space is provided under the carport rafter framing and above its ceiling joists. Minimum net free ventilating area is 1/150th of attic area (*R806.1; R806.2*).
- Ventilation must open directly to outside air. Openings shall comply with the following (*R806.1*):
 1. Have at least a minimum dimension of 1/16" and a maximum dimension of 1/4".
 2. Openings with a least dimension more than 1/4" shall be covered with a corrosion-resistant wire cloth screening, hardware cloth or approved similar material.
- Cross-ventilation may be provided by coupling soffit vents with continuous ridge vents or box vents placed near the ridge. Only 40%-50% of the cross-ventilation openings shall be provided at or near the roof ridge. The balance shall be provided at the roof soffits or eaves. Make sure there is at least a 1" continuous air passage at the underside of the roof sheathing (*R806.2; R806.3*).

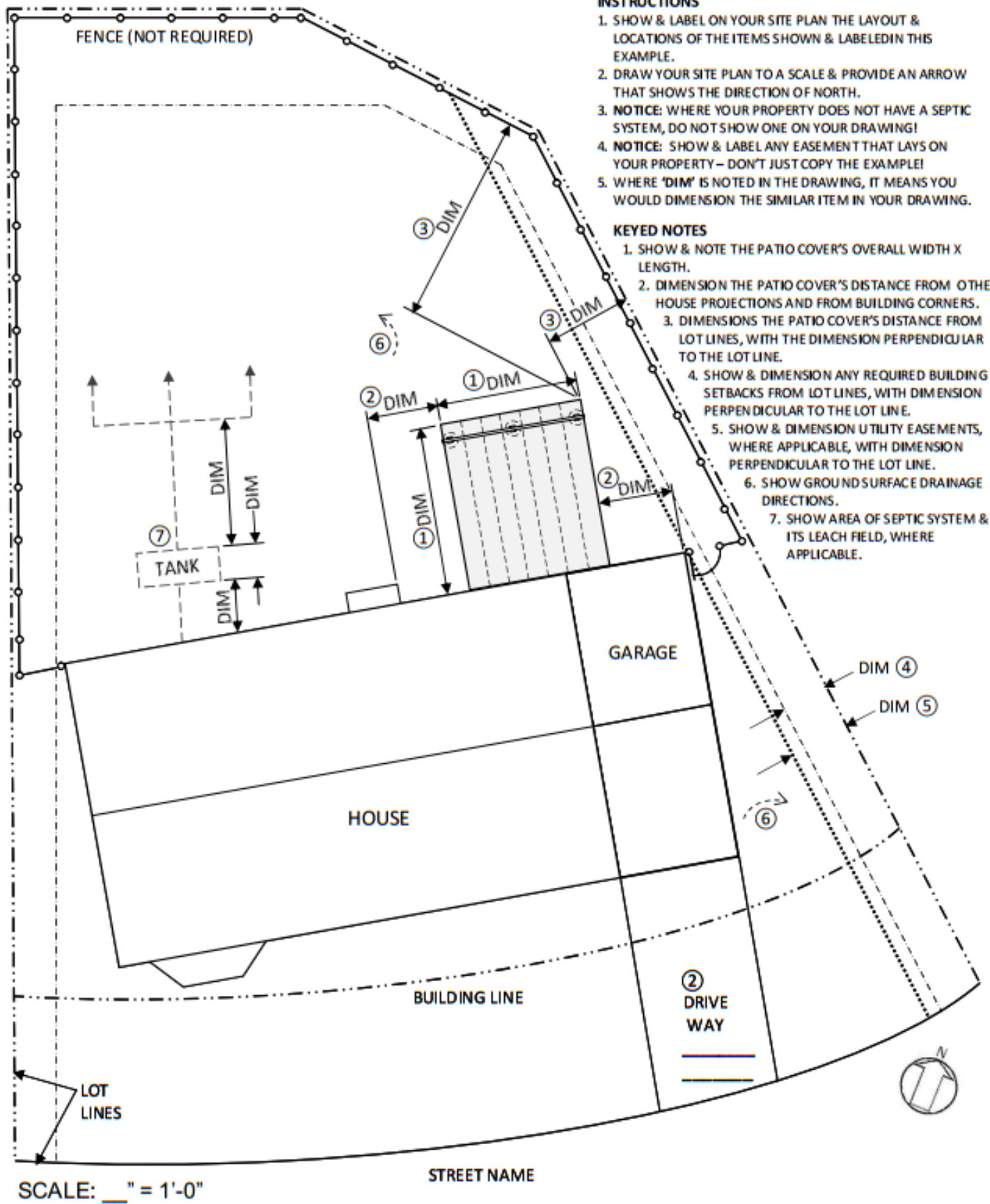
Electrical Requirements



The provision of electric power with a patio cover is optional. However, where electrical is proposed with a patio cover, comply with the following minimums:

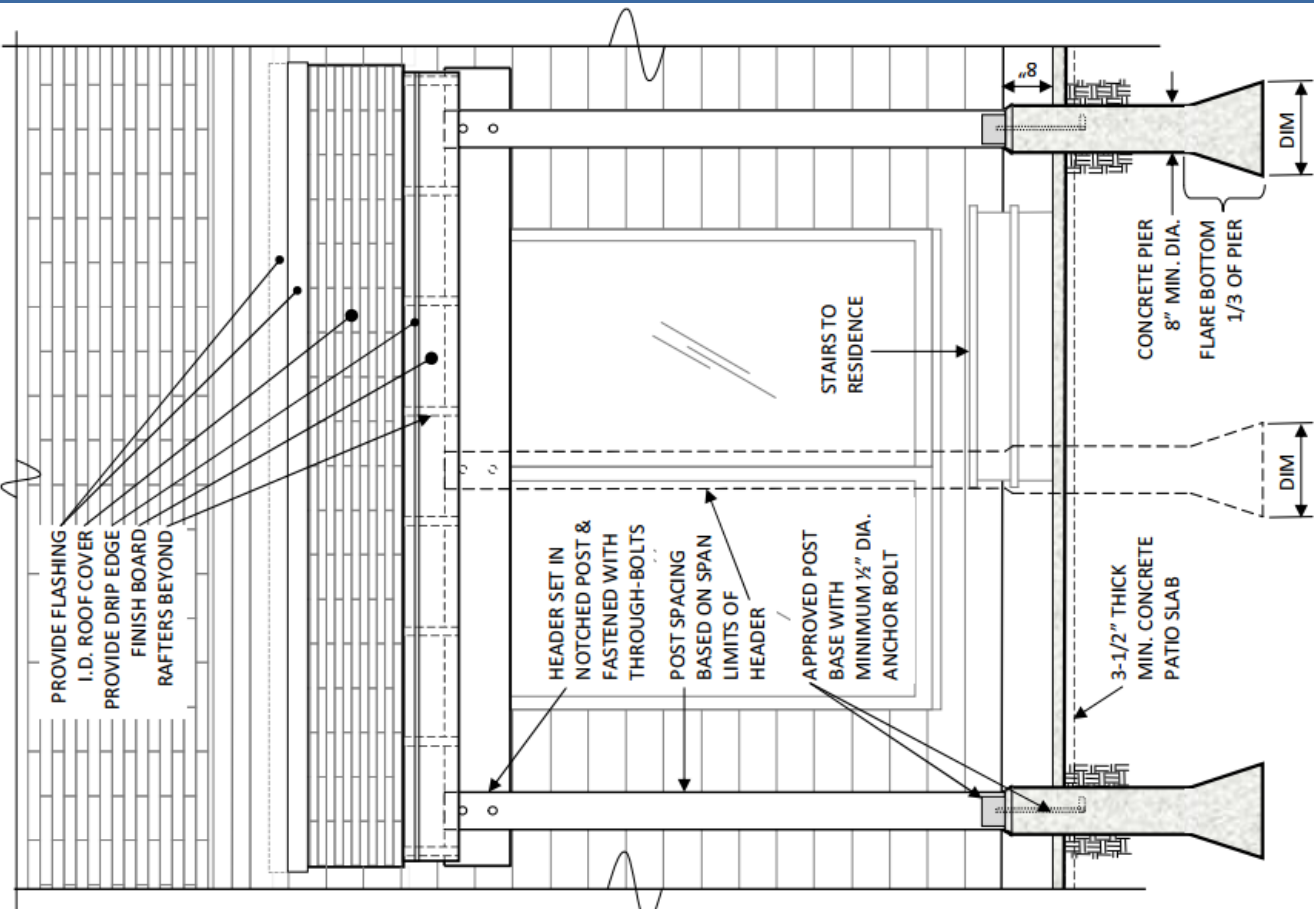
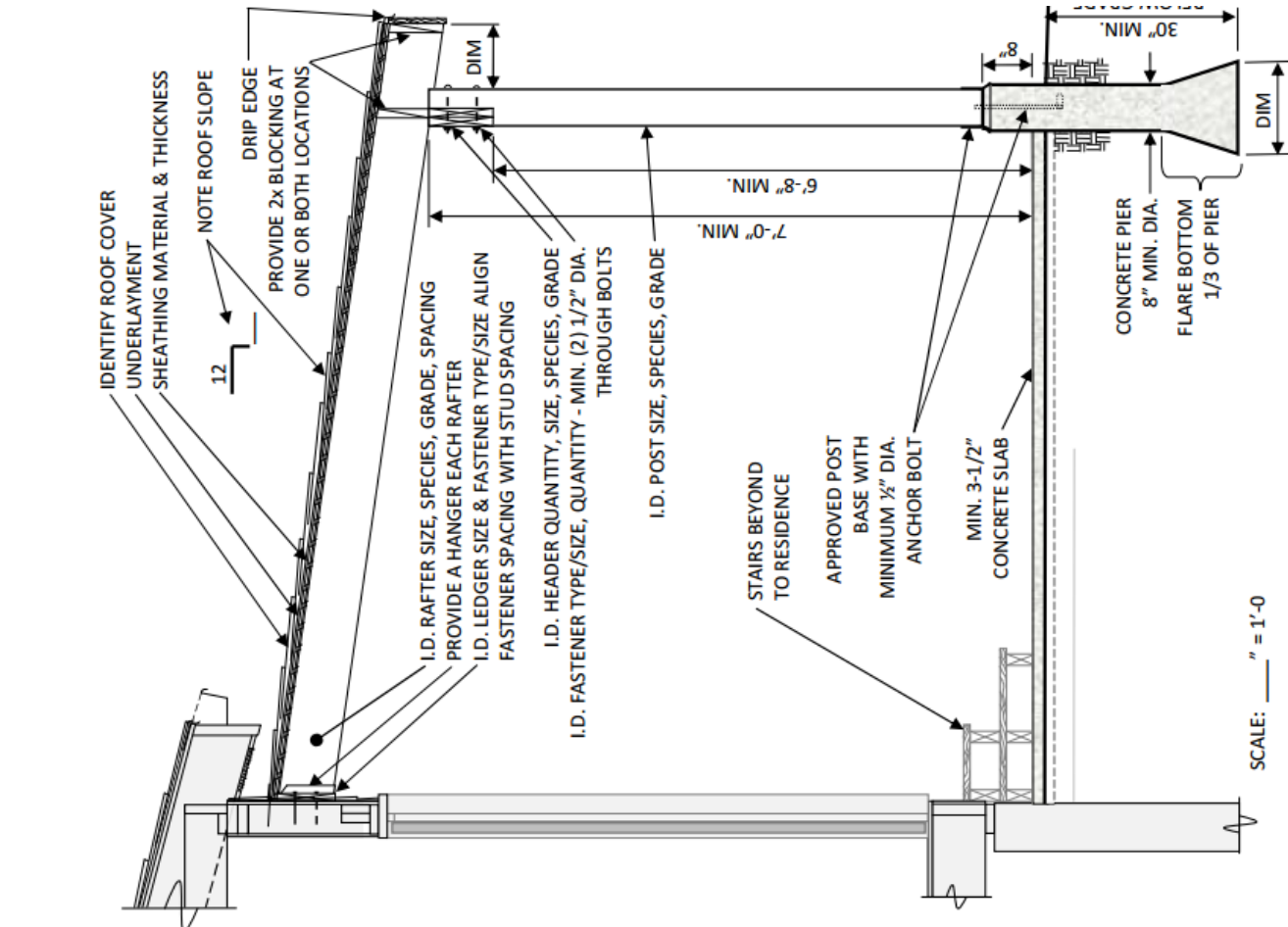
- Provide a plan layout of the new work electrical proposed. In the plan, show and label or key the proposed receptacles, lights or fans and the switches that control them. Use a curved line to link each switch to the light or fan outlet controlled.
- Note in the plan the ground-fault circuit-interrupter (GFCI) protection is to be provided as required for outdoor receptacles 125 volt, single phase, 15 and 20 amperes (*SLCO Rev. Ord. E210.8(A)*).

Notice: The preceding requirements apply to most simple **Patio Covers, Attached** to dwellings on residential properties. However, the Plan Reviewer may determine the actual new work shown in the drawings requires additional information be submitted to verify Code compliance of the new work proposed. The above requirements are based on the construction codes in effect at the time this checklist was last updated. Please be aware St. Louis County Code Enforcement updates its construction codes every few years.



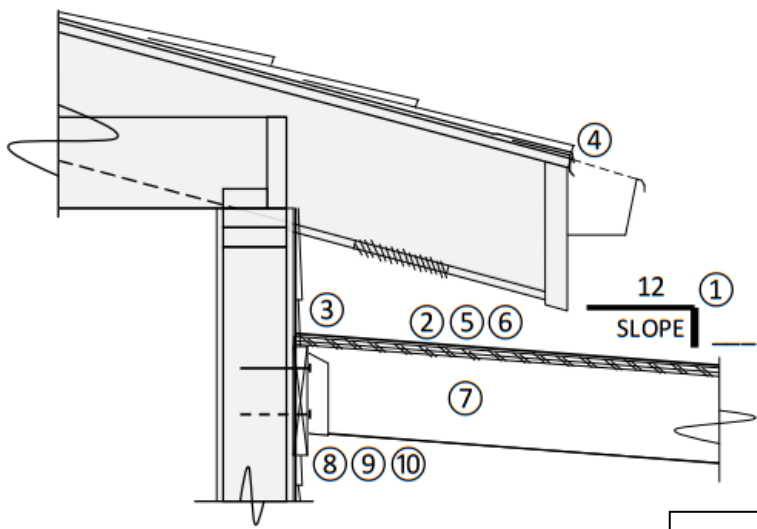
EXAMPLE SITE PLAN FOR A PATIO COVER

EXAMPLE SECTION & ELEVATION

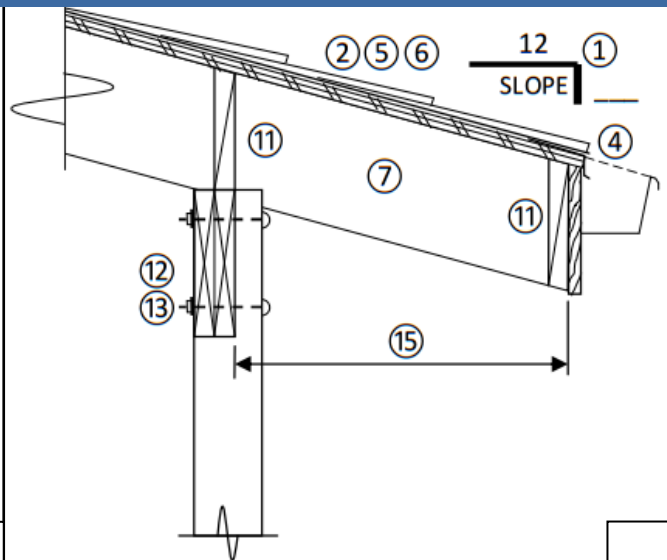


SECTION-ELEVATION

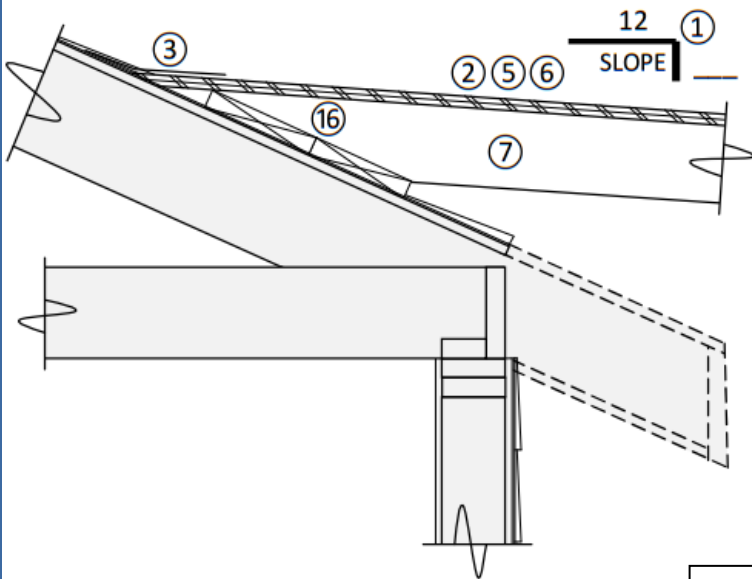
PROJECTED END ELEVATION



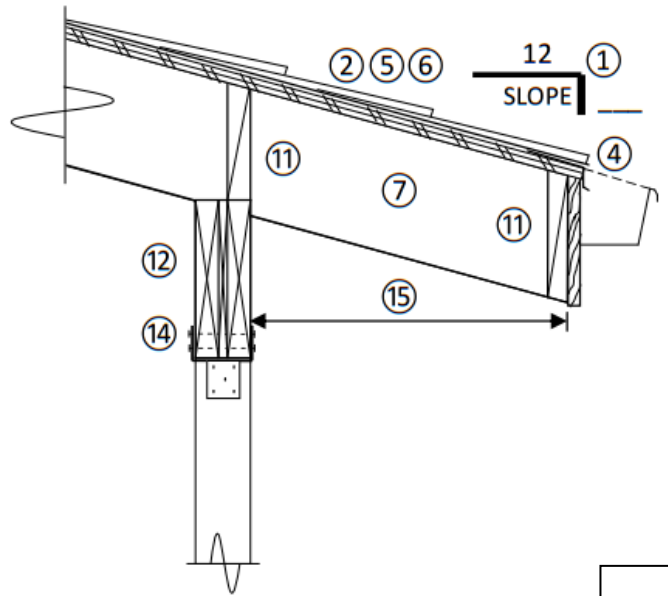
RAFTERS TO HOUSE STUDS



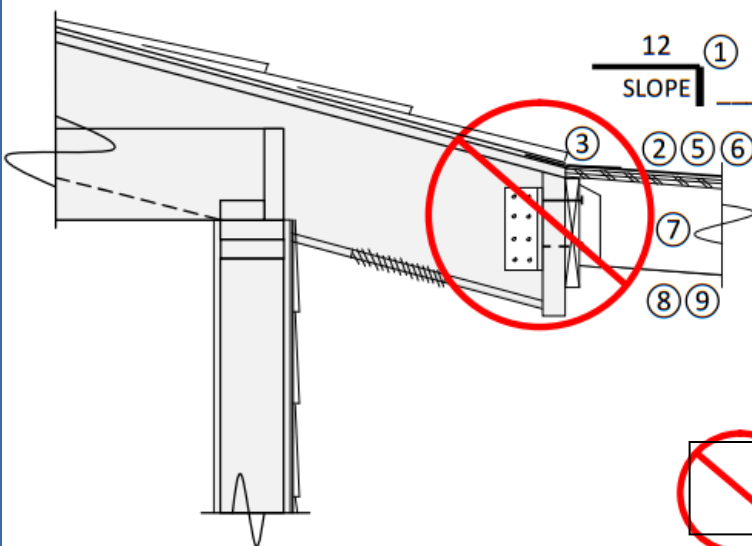
HEADER IN NOTCHED 6X6 POST



RAFTERS ON HOUSE ROOF FRAMING



HEADER IN POST CAP ON 4X4 POST



REQUIRES ENGINEERING – MUST BE SEALED

1. NOTE ROOF SLOPE
2. IDENTIFY ROOF COVER
3. PROVIDE FLASHING FOR POSITIVE DRAINAGE
4. PROVIDE ROOF DRIP EDGE & GUTTER
5. IDENTIFY UNDERLAYMENT
6. IDENTIFY SHEATHING & THICKNESS
7. NOTE RAFTER SPECIES, GRADE, SIZE & O.C. SPACING
8. LABEL LEDGER SPECIES, GRADE, SIZE & HANGER
9. NOTE LEDGER FASTENER TYPE, DIAMETER, LENGTH, NO. OF ROWS & SPACING MATCHING HOUSE STUDS
10. NOTE LEDGER FASTENERS PENETRATE HOUSE STUDS
11. NOTE 2X BLOCKING
12. LABEL HEADER SPECIES, GRADE, SIZE & QUANTITY
13. IDENTIFY HEADER-TO-POST FASTENERS
14. IDENTIFY HEADER-TO-POST CONNECTORS
15. DIMENSION ROOF PROJECTION FROM FACE OF HEADER
16. 2X NAILER PLATE(S) FOR FULL RAFTER BEARING

DRAWING NOTES KEY