

COMMON CODE REFERENCES

All engineers and architects involved in the design of the structure are to seal the related sheets of plans, details and calculations in accordance with the rules of the State Board of Technical Registration.

Provide two copies of all applicable drawings. All corrections and revisions should be made on original tracings or finished reproducible set (revision clouds are not suggested until after a permit has been issued). Pencil corrections and white-out on final drawings will not be accepted.

GENERAL:

- Provide neat, organized, and legible plan.
- Provide minimum 3/32" lettering per Unified Development Code.
- Specify each scale used (preferred scales: layout 1/4" = 1', details 3/4" = 1').
- Provide consecutive sheet numbers on each construction drawing, R106.1.1.
- The City of Tucson has adopted the 2018 International family of codes. As of 1/01/2013 all code references should refer to the currently adopted code or appeal must be made to the Building Official for alternate code use.
- All registrant seals must include date of expiration of current registration.

SITE PLAN: (NOT REQUIRED FOR MODEL PLANS)

- Specify the location of all utility lines and service meters, R106.1.1.
- Specify overhead or underground electrical service. Overhead service for new construction requires an appeal to the Building Official, IBC amendment section 112.1.1.
- Provide the dimensions of all structures on site, the distances from property lines to structures, square footage calculations, and locate any unique topographical areas.
- Provide a complete set of notes on the plan to meet the Inclusive Home Design Ordinance 10463.
- Provide an accessible route from the public way extending throughout the entire first floor (except for exempt areas as defined in section 1003.3), 1003.2. The elevation drawing or the site plan must show a ramped sidewalk if a paved driveway is not the accessible route.
- Vertical changes in floor elevation may not exceed 1/4 inch (1/2 inch when beveled), 1003.4.
- Thresholds may not exceed 1/2 inch in height, 404.2.5.
- All door hardware must be lever-type or otherwise usable without tight grasping or twisting of the wrist, 404.2.7.
- All pass-through door openings on the accessible route shall have a net width of not less than 30 inches (2'8" door) 1003.5.2.1.
- Specify all switches, receptacles, and controls within 15 to 48 inches of the floor (To include thermostat controls), 1003.9.
- Provide blocking in bathrooms for future installation of grab bars around: toilets, showers, and bathtubs, 1003.11.2.

FLOOR PLANS:

- Label all rooms and spaces. Show floor plan for all rooms adjoining additions, R106.1.1.
- Provide natural light (8% of floor area) into all habitable rooms, R303.1.
- Provide natural ventilation (4% of floor area) into all habitable rooms. R303.1
- Identify ceiling heights in all areas. Note average height at sloped ceiling areas, R305.1.
- Specify the minimum space required for water closets: not less than 30" wide and 21" in front, Figure R307.1.
- Specify nonabsorbent wall surface minimum 6' above the floor with cement, fiber-cement, or glass-mat board backing in tub/shower enclosures, R307.2, R702.4.2.
- Specify use of existing rooms adjoining the proposed addition. Note: removing existing windows from sleeping rooms may require a new emergency escape rescue opening, R310.
- Show the location of the attic access in a hallway or other readily accessible location with a minimum opening size 22"x30", R807.
- Show fireplace location, hearth size and materials, R1001 or R1004. Provide fireplace cut sheets or note the requirement for deferred submittal approval prior to installation.

Doors and Windows

- Show location, size, and operable portion of all doors and windows, R106.1.1.
- Provide sufficient emergency escape/rescue openings from sleeping rooms, R310. Minimum net opening of 5.7square feet for floors above grade level, 5 square feet for floors at grade level. Maximum sill height = 44". Minimum clear opening = 24" high x 20" wide.
- Specify safety glazing in hazardous locations, R308.4.
 - Within 18" of the floor when individual panes exceed 9 square feet,
 - Within 24" of doorways
 - Less than 60" above and within 60" horizontally from tub/shower floors.
 - Less than 36" above a walking surface adjacent to stairways and landings
- One exit door shall be side hinged not less than 32" wide, R311.2.
- Show locations of skylights (dashed lines) on floor plan. ICBO # on all skylights over 2' by 4'.
- Provide fall protection for windows located more than 72 inches above the adjoining grade, R312.

Garage

- Doors between a garage and a residence shall be self-closing minimum 20-minute fire-rated, R302.5.1.
- Openings from a garage directly into sleeping rooms are not permitted, R302.5.1.
- Provide ½" gypsum board on all walls common to the garage and house in compliance with R302.6.
- Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8" type X gypsum board or equivalent, and ½" gypsum board on supporting walls, R302.6.
- Show the direction of slope for the garage floor, R309.1.
- Gas appliances installed in garages shall be mounted on platforms at least 18" above the floor, M1307.3.
- Provide impact protection for appliances located in garages, M1307.3.1.

Stairs

- The walls and soffit of the enclosed space under stairs shall be protected on the enclosed side with ½" gypsum board, R302.7.
- Provide details and dimensions for stairways, R311.7.
 - Min. width: 36"
 - Min. tread depth: 10"
 - Max. riser height: 7 ¾"
- Provide a handrail for stairways of four or more risers, R311.7.8.

Fire separation

- Exterior walls with a fire separation distance less than 3 feet shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections shall not extend to a point closer than 2 feet from the line used to determine the fire separation distance. Projections extending into the fire separation distance shall have not less than one-hour fire-resistive construction on the underside, 2012 Amendment R302.1.
- Individual dwelling units in duplexes must be separated by a 1-hour firewall from floor to bottom of roof sheathing, R302.3.
- Townhouse parapets shall have the same fire-resistance rating as that required for the supporting walls with a height not less than 30" above the roof, R302.2.

FOUNDATION PLANS:

- Location for all footings:
 - Fireplaces
 - Sunken or raised areas
 - Stair pads
 - Girder truss / Posts or columns
 - Interior bearing walls
- Cross-reference all details to the foundation plans.
- Provide cross-section detail for under-floor access design.
- Show location of underground supply and return air ducts.
- Specify elevation changes in finished floor heights as well as height of steps.
- Provide a floor or landing outside exterior doors, R311.3.
- Provide a note for termite treatment, R318.

- Note grade away from foundations shall fall min 6" within the first 10', R401.3.
- Note soil bearing pressure used in the design of the footings, Table R401.4.1
- Note top of foundation to be extended 12" plus 2% (of distance between front face and curb) above the street gutter, R403.1.7.3.
- All exterior framed walls require continuous concrete footings min. 12" wide x 12" below grade with treated sill plates and anchor bolts per R403.1 & R403.1.6 (including carport and porch enclosures).
- Specify height of finished floor minimum 6" above grade, R404.1.6.
- Provide venting for under-floor areas, R408.1.
- Specify size of access to under-floor area, R408.4.
- Specify thickness of patio slabs and the direction of slope, R506.1.
- Specify locations of foundation hold-downs for alternate brace wall panels that have minimum uplift capacity per Table R602.10.6.1.
- Note on the drawing that pre-stressed or post-tensioned slabs shall be permanently labeled on the slab at the center of the garage door opening as well as with a metal tag indicating 'POST TENSIONED SLAB' permanently attached to the main water shut off valve. A special inspection request must be included with the permit application.

STRUCTURAL/FRAMING PLANS:

- Show size, spacing and span of all framing members
 - Trusses, joists, rafters, ledgers
 - Beams, glue-lams, lintels, headers
 - Posts, columns, trimmers and king studs
- Specify design criteria on plans. Provide values for floor/roof dead and live loads.
- Provide an engineer's calculation, design, and seal for partition and screen walls exceeding 7' in height above grade on either side, and/or retaining walls exceeding 4' in height measured from the bottom of the footing to the top of the wall.
- Model plans require separate framing plans to clarify each elevation.
- Provide a header schedule consistent with Table 602.7(1) or specify size of steel lintels.
- Provide sufficient nailing for each framing member, Table R602.3(1).
- Provide a stamp from a registered design professional and lateral analysis for wood studs that exceed the prescriptive allowance of Table R602.3(5) or R602.3(6).
- Provide a complete braced wall line layout showing the location of braced wall panels within 10 feet of each end of each braced wall line and shall be no more than 20 feet apart, R403.1.6, R602.10.2.2.
- Specify materials, and provide a nailing schedule for braced wall panels, Table R602.10.4.
- Provide a sufficient load path from the roof sheathing to the foundation, R602.10.8, R602.11.
- Continuous structural panel sheathing shall comply with R602.10.4.2.
- Specify the size and spacing of rafters, R802.4.
- Specify lumber grade/species, or manufacturer and series for glue-lams and "I" joists, R802.1.
- When the roof pitch is less than 3:12, design structural members that support rafters and joists as beams (such as ridges, hips, and valleys), R802.4.4.
- Truss calculations must be signed, dated and wet-sealed by an engineer who is registered in Arizona. Truss calculations shall be cross-referenced to the floor plans. Note the requirement for a deferred submittal if the truss calculations will not be submitted with the plan review.
- Specify gable-end bracing with connections to the structure, R802.10.3.
- Specify the location and size of all roof drains/scuppers, R903.4.
- A special inspection request is required with the permit application for welding, R109.2

ELEVATIONS:

- Specify height above grade for finished floor, windows/doors, exterior walls, rooflines, porches, chimneys, etc.
- Provide complete drawings of all patio covers, decks, fireplaces and bay windows.
- Indicate all materials used; stucco, concrete block, glass block, roofing system, siding, veneer, etc.
- Specify attic (thermal barrier) protection from rigid foam on gable ends, R316.4.
- For thin-coat stucco systems, indicate the ICC ESR #, system name, and vapor barrier, R703.7.
- Provide an attic space ventilation calculation and note the size and location of all attic vents needed to comply, R806.2.

- Revise note on sheet xx for unvented attic assemblies to comply with R806.5
- Specify two-layer underlayment for low-slope shingle roofs (2:12 to 4:12), R905.2.2.
- Specify roof slope and roofing type, grade of materials, and method of installation, R905.
 - Tile: Specify weight and ICC ESR # of concrete or clay-type roofing.
 - Roll roofing: min slope 1" per foot, R905.5.2.
 - Built-up: min slope ¼" per foot, R905.9.1.
- Show fireplace chimney on elevation drawings with a minimum 2' height above any roof point within 10' and not less than 3' above penetration, R1003.9.
- Indicate a cap over masonry chimneys per R1003.9.1.
- Show the mechanical unit and its working platform on the elevation drawings, M1305.1

SECTIONS - DETAILS:

- Cross-reference all cross-sections to the floor plan and framing plans.
- Completely detail all connections:
 - Double joists parallel to bearing partitions
 - Double joists and trimmer joists at framed openings (roof and floor)
 - Blocking at floor joist ends and bearing walls
 - Trusses to top plate (slotted ties for scissor trusses)
 - Beam to post, post to slab
 - Ledgers to masonry or framing
 - Joist to ledger
 - Continuous load path for shear transfer (roof sheathing to foundation)
 - Stair stringers to wall
- Specify all hardware used by type, size and required attachment to framing members (Straps, clips, anchors, hangers, post caps and bases)
- Welded connections require special inspections. If used, a special inspection request must be included with the permit application, UAC306.1.5.
- Provide draft-stopping at concealed spaces (walls, partitions, furred spaces, ceiling and floor levels, around vents, chimneys/fireplaces, stairs, etc.) R302.11.
- Sill plates that rest on concrete are required to be decay-resistant, R317.1.
- 6" separation of untreated posts or columns above finished grade and 1" above concrete, R317.1.4.
- 6" clearance above grade to untreated exterior wood siding, sheathing and exposed wall framing, R317.1 (5).
- 6" minimum foundation height above finished grade (4" with veneer), R404.1.6.
- Detail footing width, height, and depth (min. 12" into undisturbed soil, R403.1.4), Table R403.1.
 - Footings under braced walls, R602.10.6.
 - Stem walls, Table R404.1.1 (1-4).
- Anchor-bolt spacing, R403.1.6:
 - Minimum ½" diameter / Minimum 7" embedment
 - Maximum 6' o/c and within 12" of each end
 - Quarter-points of alternate braced wall panels, R602.10.6.1.
- Specify water-resistive barrier over wall framing, R703.1.1.
- Siding: Specify material, type of fasteners and spacing and type of vapor barrier, R703.3.3.
- Stucco: Show weep screeds with a min. clearance 4" above grade or 2" above paved areas, R703.7.2.1.
- Veneer: Specify anchoring method, backing, vapor barrier and support (ties spaced max 24" o/c horizontally & vertically, and supporting not more than 2.67sq. ft.), R703.2 & R703.7.3.
- Show 1" air space between sheathing and veneer R703.8.
- Show the required joist/rafter bearing contact to supporting members, R502.6 & R802.6.
- Specify the ledger connection to the supporting wall, R801.2.
- Detail non-bearing interior wall conditions (rafter/joist connections & gaps), R802.10.1(10).
- Detail all over-framing connections for intersecting pitched roof assemblies. Provide a minimum opening of 22" by 30" for access and ventilation between over-framed assemblies (>30 S.F.), R807.
- Specify wall and ceiling covering. Note: Ceiling gypsum board must be either 5/8" or ½" sag resistant when applied to ceilings framed at 24" o/c, IRC table R702.3.5 footnote d.
- Provide uplift resistance for roof framing, R802.11.1.
- Eave vents require min. 1" clearance between ceiling insulation and roof sheathing, R806.3.

- Condensation control is required for the unvented roof assembly method. Specify an air-impermeable rigid insulation material sealed tight to the roof sheathing (above or below) or spray applied closed cell foam to a minimum value of R5, R806.5.

Masonry construction

- Show wood beams with 1/2" end clearances from masonry on top, end, and sides, R317.1(4).
- Specify all beam seat hardware.
- Specify lateral support of masonry walls, R606.9.
- Note and specify the size, spacing and length of anchor bolts for top plates and ledgers, R606.11.
- Specify all ledger connections to masonry walls (3x ledger material required), Figure R606.11(1).
- Chimney crickets, R1003.20.
- Masonry fireplaces: dimensions, sections, and firebox plan. State the size of the flue and hearth.
- Basement walls require engineered design.

PLUMBING PLANS:

- Plumbing shall comply with 2012 IRC as amended. The plans should be designed according to this code or appeal to the Building Official for alternate design approval.
- The Tucson Water policy adopted 7/13/12 limits the maximum demand for a 5/8" water meter to 15 GPM; confirm with Tucson Water that the existing meter will be able to meet the proposed water demand. Reference Tables P2903.6 and P2903.6 (1), IRC 2012.
- All construction drawings submitted after March 1, 2009 for one- or two-family dwellings require a solar water heating system, or future installation preparation with one of the following provisions: control and 3/4" water piping; 3" metallic sleeve; or an accessible attic over the water heater, Ordinance 10549.
- All construction drawings submitted after June 1, 2010 for one- or two-family dwellings must provide segregated building drains for future gray water utilization, Ordinance #11089.
- Isometric drawings of DWV systems are required for multiple story buildings.
- Specify the access location to the new water heater and provide fuel or power source to unit, M2005.
- Provide protection of (indoor rated) equipment located outdoors, G2406.3.
- Provide gas lines sizes for each gas line branch according to the proposed demand, G2413.
- Provide a gas line isometric and size the supply pipe for the connected demand. Include the length of line and BTU demand for each appliance, size of each branch, total demand, and total developed length from meter to the most remote appliance on the system, G2413.1, Table G2413.4 (1).
- Any underground gas piping beneath buildings shall be encased in an approved sealed & vented conduit, G2415.14.
- Gas meters shall be located at least 3' from sources of ignition.
- Note and specify all piping materials, P2609.
- Clarify the location of the proposed gray water diverter valves. Note: only listed fittings may be used inside the building, P2609.3.
- Shower and tub/shower combinations that have individual control valves shall be of the pressure balance or thermostatic mixing valve type, P2708.4.
- Indicate the required pan below water heaters located in a location where leakage from the tank would cause damage, P2801.6.
- Provide pressure and temperature relief valve for the water heater terminating to the exterior facing no more than 6 above the grade, P2803.6.1.
- Show galvanized steel pans under storage tank-type water heaters, P2901.5.
- Provide location of hose bibs and note the requirement of vacuum breakers, P2902.4.
- Specify water conservation requirements: Water closets = 1.6 gallons per flush, Sinks = 2.2 GPM, Showerheads = 2.5 GPM, P2903.2.
- Provide note requiring that water hammer arrestor be installed in accordance with ASSE 1010-2004 on water lines serving appliances equipped with quick-closing valves to include but not limited to: clothes washers, dishwashers, and refrigerators, IRC P2903.5.
- Provide a water fixture unit schedule for all plumbing fixtures supplied by the water meter (including existing) P2903.6.
- Specify the size of the proposed water meter and the diameter of the water supply line from the meter to the service entrance, P2903.7. The Tucson Water policy adopted 7/13/12 limits the maximum demand for a 5/8" water meter to 15 GPM; Reference Tables P2903.6 and P2903.6 (1), IRC 2012.

- Specify the maximum developed length of water line from the meter the furthest appliance served, and the lowest available working pressure, P2903.7.
- Show the size and location of all cleanouts, P3005.2.
 - Junction of building drain and building sewer. Two-way cleanout within 2' from the building.
 - Not more than 100 feet apart.
 - Change of direction greater than 45 degrees.
 - Near the base of each vertical waste or soil stack.
 - Cleanouts are required at the kitchen sink area, State amendment.
- Provide clean outs near the base of vertical waste stacks, P3005.2.6.
- Provide a minimum 3" waste line for water closets, Table P3005.4.1.
- Drainage piping serving fixtures which have flood level rim located below the elevation of the next upstream manhole cover of the public sewer shall be protected from back-flow of sewage by a backwater valve, P3008.1.
- Provide location of sump and sewage ejectors.
- Provide vent sizes, P3101.1.
- Condensate disposal may not discharge into a plumbing vent, P3103.4.
- Plumbing vents shall be a minimum of 10 feet away from all air intakes, P3103.5.
- Show trap arms within acceptable distances from plumbing vents, Table P3105.1.
- Vertical wet venting is not permitted for fixtures located on different floor levels, P3108.4.
- Details are required for island venting (air admittance valves/Chicago Loops), P3112.
- Vent piping diameter shall be at least 1¼" and shall not be less than one-half the size of the drain served, P3113.1.
- Provide a trap primer for the proposed floor drain, P3201.2.
- All construction drawings submitted after June 1, 2010 for one- or two-family dwellings must provide gray water utilization or preparation, Ordinance #10579/11089 revised July 9, 2013. Provide gray water segregation for at least one (1) bathing fixture or clothes washing machine for all single story buildings and all bathing fixtures and clothes washers on stories above grade level when the available distribution area exceeds 200 square feet. Gravity discharge is required when feasible including all fixtures on stories above grade level. Gray water stacks from upper floors must pass through an exterior-wall for future gravity distribution that includes a stub out with an aliened 2" vertical drop colored purple to a cleanout cap 2' above grade.

MECHANICAL PLANS:

- Mechanical shall comply with 2012 IRC chapters 12 - 24.
- Provide ACCA Manual S based on building loads calculated in accordance with Manual J, M1401.3.
- Provide Manual D calculations for duct design, M1601.1.
- Provide Manual J/S/D calculations for the forced air unit in accordance with M1401.3, M1601.1.
- A structural engineer is required to verify new equipment on existing engineered roof framing systems.
- Provide a heated air source to all habitable rooms capable of maintaining a room temperature of 68 degrees at a point three feet above the floor, R303.10.
- Provide whole-house mechanical ventilation, R303.4, M1505.
- Air intake openings shall be located a minimum of 10' from (any street or alley), or 2 feet below any vent or chimney, R303.5.
- Provide location of return air ducts and register sizes, M1602.
- Show supply and return air ducts with a minimum R-8 insulation when located outside the thermal envelope, N1103.3.1.
- Designate the location, capacity and fuel type of the heating and air conditioning equipment. Designate the locations of each supply register, return air grill and all ductwork, M1301.
- Place the energy certificate near an indoor furnace or utility room, N1101.14.
- Air inlets shall be located a minimum of 10' from vent openings or exhaust outlets unless the outlet is 3 feet above the air inlet, M1602.2.1, G2427.8.
- Provide a mechanical equipment specification list, M1302.1.
- Show location of access, catwalk and working platform for heating or air conditioning equipment located in the attic, M1305.1.2.
- Appliances located in a garage/carport require impact protection, M1307.3.1.
- Show the condensate line and secondary for HVAC unit, M1411.3.

- Show dryer vent size and location for venting to exterior (max 25' w/bend reductions), M1502.
- Show exhaust fan locations for bathroom and kitchen venting to the exterior (min 50 and 100 CFM rating respectively), R303.3, M1505.
- Provide (an HVAC system with) whole-house mechanical ventilation with continuous or a minimum controlled intermittent airflow rate, R303.4 & M1505.
- Gas appliances require combustion air openings, M1701.1.
- Flues connected to more than one appliance shall be not less than the area of the largest connector plus 50% of the additional connectors. Water heater typical - 3" flue. Furnace - 4" flue. IRC M1805.3.
- Gas fired water heaters may not be located in a storage closet, M2005.2.
- Gas fired water heaters located in a bedroom or bathroom require a sealed enclosure, M2005.2.
- Show a minimum 2' termination above any roof point within 10' measured horizontally and not less than 3' above the point where a chimney (metal pipe) passes through the roof, Figure G2427.5.3.
- Mechanical draft vent systems shall terminate at least 3' above forced air inlets located within 10', G2427.8.

ELECTRICAL PLANS:

- Electrical work shall comply with 2012 IRC chapters 34 - 42.
- Provide authorization from TEP for multiple service drops to the parcel, SR-301.
- On June 17, 2008, Mayor and Council unanimously voted to require all new residences to be solar ready for electric (PV). Starting July 1, 2009, all new single family homes or duplexes must include in the plans either a photovoltaic system or preparation for later installation of a PV system in order to receive a permit. Photovoltaic Preparation must include all of the following: A. Reserve a 4 square foot area for equipment (meter, disconnect & inverter) adjacent to the electrical service panel or near the proposed collector panel space. B. Indicate the best roof space available for accommodating future PV solar collector panels with capacity for collector dead loading (typically 4 lbs/SF). C. A minimum 3,800 volt-ampere PV electrical load entry on the Service Load Calculation (show as a continuous load of 15.8 A). D. An Electrical Panel Schedule with a 240 volt circuit breaker space (two slots) labeled "reserved for Photo Voltaic".
- Provide carbon monoxide alarms per R315. Alarms must be installed in residences with attached garages and/or fuel-fired appliances when any work is performed that requires a permit.
- Show locations of smoke detectors (every sleeping room and hallways leading to). All smoke detectors must be interconnected with a power source from the building wiring, and shall be equipped with battery backup. When ceiling finish materials are not removed, existing bedrooms may be equipped with battery operated smoke detectors, R314.
- Smoke detectors are required in existing buildings when interior alterations occur, R314.2.1.
- Specify high-efficacy lamps for at least 90% of all lighting fixtures, N1104.1.
- Provide an electrical riser diagram with grounding method and bonding to metallic piping E3607/8. Show an underground service entrance on the Riser Diagram or complete the Underground Electrical Service Wavier form.
- Show the location of the panel with a 30"W x 36"D clear working space, E3405.2, E3405.4.
- Panelboards may not be located in clothes closets or bathrooms, E3405.5.
- Gas lines shall not be used as the primary grounding method, E3608.6.
- Provide riser diagrams for sub-panels with feeder conductors, conduit sizes, and over-current protection (with appropriate correction factors), E3705.3.
- Tucson Electric Power requires a 2½" diameter conduit for service entrance conductors, TEP SR-305.
- All meters shall be located on an exterior house or garage wall, but not under a carport, breezeway, patio, porch, or area that can be enclosed with building expansion, TEP SR-405.
- TEP requires meters and associated equipment to be relocated from under patios when the service is upgraded or the area is enclosed, TEP SR-405.L.
- Provide equipment rated for 22,000 AIC short circuit protection when the underground cable length is less than 45 feet, Electric Service Requirements TEP SR-510.
- Electrical drops over buildings must meet service standards by TEP and E3604.2.
- Provide electrical load calculations for determining the service panel size, E3602.2.
- Provide feeder load calculations for sub-panels (40% demand factor may not be applied), E3704.2.
- Provide a panel schedule: panel size, circuit numbers, ampacity, and wire sizes, E3404.11, E3706.2.

- Provide a readily accessible service disconnect for each dwelling unit (no more than 6 switches) E3601.6.2, E3601.7.
- For single-family dwellings, the service shall not be rated less than 100 amperes, E3602.1
- Accessory structures, with electricity, shall have no less than 60 amperes, E3602.1.
- Provide a separate (dedicated) GFCI 20-amp branch circuit for receptacles in an attached garage and detached garages with service, E3703.5.
- Use Table E3705.5.3 for sizing 15, 20 & 30 AMP branch circuit conductors.
- Use Table E3705.1 (60 degree C column) for sizing branch circuits and conductors rated <100 amps.
- Designate the circuit number for each light fixture, receptacle, appliance, and equip disconnect on the electrical layout, E3404.13, E3706.2.
- Laundry rooms require at least one 20-amp circuit that shall serve no other outlets, E3703.3, 3901.8.
- Bathrooms require a separate 20-amp circuit with receptacles within 3' of the basin, E3703.4, E3901.6.
- Bathrooms require a separate 20-amp circuit with receptacles within 3' of the basin, E3703.4, E3901.6.
- Cables shall be protected with conduit where subject to physical damage, E3802.3.2.
- Show receptacle outlets at wall spaces 2' or more so that no point along the wall (excluding door openings) is more than 6' from a receptacle outlet, E3901.2.
- Provide floor receptacles at spaces in exterior walls occupied by fixed panels of glass so that no point is more than 6 feet from an outlet, E3901.2.1, E3901.2.2(2).
- Kitchens require two or more 20-amp GFCI small appliance circuits to serve countertop receptacles. Such circuits shall be GFCI protected and shall not serve other rooms (except breakfast areas, pantries, etc.), E3901.3, E3902.6.
- Show receptacle outlets at each kitchen counter space wider than 12" so that no point along the wall line is more than 24" from a receptacle outlet, E3901.4.1.
- Island or peninsula counter tops with a long dimension of 24" and a short dimension of 12" or greater shall have at least one receptacle, E3901.4.2/3.
- Receptacles shall not be located below a counter where the countertop extends more than 6" beyond its support base, E3901.4.5.
- Exterior outlets at grade level shall be provided at both the front and back of the dwelling, E3901.7.
- Show garage receptacle outlets at each vehicle bay not more than 5.5 feet above the floor, E3901.9.
- Attached garages require a GFCI receptacle at each vehicle bay on a separate dedicated circuit, E3901.9, E3902.2, E3703.5.
- Hallways of 10' or more in length require a receptacle, E3901.10.
- Convenience receptacles and light switches/fixtures shall be provided within 25' of mechanical equipment, E3901.12.
- GFCI protection required in bathrooms, kitchens, unfinished basements, garages/carports, exterior receptacles, and within 6' of a wet bar or sink, E3902.
- Show clothes washer and dishwasher receptacles with readily accessible GFCI protection typically from an upstream device, E3902.9 & 10.
- All outlets specified in section E3902.16 shall be protected with combination-type arc-fault breakers (not just bedroom outlets).
- At least one wall switch controlled light or outlet must be provided in bathrooms, hallways, stairways, attached garages, outdoor entrances or exits, and all habitable rooms, E3903.3.
- Specify faceplate grounding per E4001.11.1.
- Specify tamper resistant receptacles per E4002.14.
- Lights installed over a shower or bathtub must be approved for use in wet area, E4003.9.
- Note that light fixtures in clothes closets shall be installed in accordance with E4003.12.
- Outlet boxes must be UL listed and approved (ceiling fans require boxes listed for such use), E4004.5.
- Indicate location of all mechanical equipment and appliance disconnect switches, E4101.5.

OUTDOOR LIGHTING CODE

- Show compliance with City of Tucson Outdoor Lighting Code with an approved lighting calculation in accordance with OLC 3.1.2. Include all exterior fixtures on the property in the calculations. Model plans should specify a minimum lot size for the proposed exterior lighting.
- Provide cut sheets for all FCO fixtures showing the angle of cutoff, light emissions and fixture wattage. All other fixtures are assumed to be unshielded (non-FCO style) 104.2.
- Exterior lighting within 25 feet of adjacent residential property lines must be fully shielded, 401.3.3.

- Flood lighting may not be considered ‘full cut off’ if the fixture incorporates an adjustable angle of the lamp, OLC 202.
- The lumen value associated for any fixture must be based on the maximum lamp the fixture is rated for, OLC 202.

INTERNATIONAL ENERGY CONSERVATION CODE:

- **Energy Certificate:** (Mandatory) place near the indoor furnace or in utility room, N1101.14.
- Indicate how the thermal envelope of the building will be maintained around areas with combustion air openings through the insulation, N1102.
- Specify the “R” value of the insulation, as well as the “U” factor and the solar heat gain coefficient of the windows and doors. Tucson is in climate zone 2B. The simplified prescribed energy values for glazing and skylights is U=0.40, SHGC=0.25, ceiling R=38 and walls R=13. Mass wall requirement is R=4 when 50% of insulation is exterior and R=6 when applied interior, N1102.1.
- Specify a “U” factor and solar heat gain coefficient of the windows and doors that meets or exceeds the requirements of N1102.1. The simplified prescribed energy value for climate zone 2B glazing is U=0.40 and skylights is U=0.65, the default SHGC is 0.25.
- Specify prescriptive insulation and fenestration values per Table N1102.1.1/R402.1.1 or submit justified analysis. Simplified prescribed energy values for climate zone 2B: ceilings=R-38, frame walls=R13, masonry walls=R-4/6, windows=U-0.40, SHGC=0.25.
- Show hot water pipe with minimum R-3 insulation, N1103.4.2.
- Specify high-efficacy lamps for at least 90% of all lighting fixtures, N1104.1.

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