


June 1, 2005

**ST LOUIS COUNTY DEPARTMENT OF PUBLIC WORKS
SINGLE-FAMILY DWELLING DESIGN CHECKLIST**
(Abridged Summary of the 2003 IRC Addressing One & Two Family Dwellings and
Townhouse Design)

This Single-Family Dwelling Design Checklist is to be used as a guide in conjunction with the construction codes as adopted by St. Louis County and not as a substitute for the codes. Additional information and explanation regarding the code regulations may be found in the commentaries to the codes, as well as code interpretations published by the code organizations and St. Louis County.

June 1, 2005
(Revised 7/28/05 and 12/9/05)

 A vertical bar in the left hand margin indicates a significant change from the last Single Family Dwelling Checklist revision on July 28, 2005. The revision date for this document may be found in the lower left corner of each page.

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**LIST OF ALL THE CHANGES BETWEEN BOCA NATIONAL
BUILDING CODE/1999 AND THE INTERNATIONAL
RESIDENTIAL CODE/2003**

REQUIREMENTS FOR SUBMITTAL FOR A BUILDING PERMIT

- A clarification has been added stating the electrical panel location and flue elevations need to be provided

PLAN PREPARATION AND SUBMITTAL

- All plans must be properly sealed by a Missouri Registered Design Professional

ZONING APPROVAL

- No change

FIRE DISTRICT APPROVAL

- Clarified the fire district is a separate jurisdiction

**ON-SITE WELLS AND/OR INDIVIDUAL SANITARY SEWAGE
DISPOSAL SYSTEM APPROVAL**

- No change

SITE PLAN

- Roof overhangs need to be shown in some circumstances
- Window areaways need to be shown
- Exempts some retaining walls from the building permit process
- Land Disturbance permits – new note needed on all site plans

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- New or updated Master Plan submissions with no specific site (70000 permit) shall include a site plan scale footprint of the house with the options clearly noted
- Additional elevations may be needed for a four level structure to verify it is a maximum of three stories above grade
- Grade slope away from the foundation has changed

GENERAL HEIGHT AND AREA LIMITATIONS FRAME CONSTRUCTION

- Allows houses to be constructed up to three stories above grade.

CONCRETE

- Clarified the need for 6 mil poly vapor barrier under basement slabs
- Basement and interior slabs shall be air entrained if subjected to freezing and thawing

FOUNDATIONS

- 12" concrete wall thickness or 10" reinforced wall with vertical reinforcement bars is required for 9'-0" foundation pour height
- Anchor bolts spacing and locations changed
- The 2 #4 rebars at top and bottom of the foundation wall and the 2 #5 rebars around foundation openings is only required for 8' high, 8" thick concrete foundation pour. Other foundations may be poured without rebar.
Exception: Some braced wall panel options require rebar top and bottom in the supporting foundation
- 10" thick foundation is required to support a brick veneer wall exceeding 20 feet in height.

WATER PROOFING AND DAMPPROOFING

- Clarified the need for a 6 mil poly vapor barrier under a basement concrete slab in a ground water present excavation

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STRUCTURAL FRAMING AND SHEATHING

- Limitations on placement of bearing walls on floor joists
- Limitations on story height to a maximum 12'
- Prescriptive braced wall requirements. For more information, the following documents may be downloaded from www.stlouisco.com/pubworks:
 - Appendix A One and Two Family Wind Bracing Guideline
 - Appendix B Townhouses Seismic Bracing Guidelines
 - Simplified Bracing Method for One and Two Family Dwelling when the Entire Structure is Sheathed with Wood Structural Panel
- Townhouses considered an irregular shape are structurally outside the scope of the IRC
- Trusses shall be nailed to the top plate of the wall with 3-16d nails toe nailed without splitting the end of the truss

ROOFING

- 15 pound felt is required under all asphalt roof shingles
- Ice shield requirements have been deleted.
- Change in Valley flashing

SMOKE DETECTORS

- No change

WALLS

- Townhouses require parapets above the common wall
- Roof overhangs require one hour protection when located less than 3' to a property line
- Increased wall bracing is required on townhouses with brick veneer
- Brick veneer anchorage requirement has changed

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- Included 2001 rule concerning bay windows with respect to property/imaginary line
- Clarified location of vapor retarder
- Clarified use of water resistant gypsum backer board for tiles or wall panels in a bathroom
- Clarified use of water-resistant sheathing paper

INSULATION

- No change

FIREBLOCKING

- Fireblocking is required at horizontal intervals when a framed wall is set away from foundation wall
- Drywall applied to the bottom of the stair when the stair has an enclosed accessible space
- Fireblocking required at the dwelling unit separation line of the cornices of two family dwellings and townhouses

DRAFTSTOPPING

- Ceilings suspended below joists or attached to bottom of open wood floor trusses shall be draftstopped at 1000 square feet intervals

ATTIC AND CRAWL SPACE ACCESS

- 16x24 access panel for crawl spaces
- 30" vertical headroom required above the attic access opening

LIGHT AND VENTILATION

- Emergency escape and rescue opening is required for all basements with rough in plumbing for a future bathroom or basements with a finished area
- Changes in the amount of roof ventilation needed in the upper 1/3 of the attic

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- 1" clearance required between insulation and sheathing at eave/cornice vents
- Crawl space vents are required to be within 3' of each corner of the crawl space

SAFETY GLAZING

- Safety glazing now has two categories (type I and type II)
- Additional safety glazing locations adjacent to stairs and stair landings

GARAGES

- Door thickness changed
- Separation between garage and room above has been reduced
- Step at interior door has been deleted

ENERGY CONSERVATION

- No changes

STAIRWAYS AND EXITS

- Nosing is not required on 11" treads
- Toe boards are not required on open risers for a stair 30" or less in vertical height
- Handrails are required on stairs with 4 or more risers
- Guards required at a drop off exceeding 30"
- Balusters on the side of stair may be spaced so there is less than 4 3/8" clear in between.
- No restriction on climbable guards
- Drywall required in a closet located beneath a stair

FIREPLACES

- Changes in the size of a foundation for a full masonry fireplace

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- Changes in the throat opening in a fully masonry fireplace
- Changes in the clearance to combustibles from a full masonry fireplace
- Flue liner changes in a fully masonry fireplace
- Changes in the damper in a fully masonry fireplace
- All fireplaces require an exterior air supply

MINIMUM ROOM DIMENSIONS

- Changes in ceiling heights in unfinished basements and bathroom

HEATING AND AIR-CONDITIONING AND GENERAL MECHANICAL

- Restrictions on gas appliances located in a closet used only for the purpose of housing the appliance
- Vibration Isolators required between mechanical equipment and metal ducts.
- Makeup air needed to serve kitchen exhaust systems of 600 cfm or greater.

ELECTRICAL

- Arc-fault circuit interruption protection shall be provided in all bedrooms
- Clearances around electrical panels. Counters/cabinets may not be installed under the panel.

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ST. LOUIS COUNTY DEPARTMENT OF PUBLIC WORKS SINGLE-FAMILY DWELLING DESIGN CHECKLIST

Based upon the following Codes & Ordinances:

2003 International Residential Code and Ordinance #22314 (“R” “G”, and “M” references)

2002 National Electrical Code and Ordinance #19998 and 21553 (“E” references)

2003 Uniform Plumbing Code and Ordinance #22338 (“P” references)

* Asterisk designates changes in the code, ordinance, policy, or plan submittal requirements since the prior code adoptions; however, be aware that code requirements under previous codes which are no longer in effect have been deleted from the list.

** Refer to the building code for the applicable definition.

Items which may be incorporated into specifications or general notes are identified with the symbol >. All other requirements shall be shown on the plans, elevations, sections, and detail drawings.

The vertical bar in the left margin indicates a significant change from the last Single Family Dwelling Checklist revised on 7/28/05. the revision date for this document may be found in the lower left corner of each page.

REQUIREMENTS FOR SUBMITTAL FOR A BUILDING PERMIT

Reference
Section

R106.1 Policy	Four (4) sets of building construction plans, drawn to scale, and containing the following: 1. Site Plan 2. Architectural/Structural Plans a. Foundation Plan(s) & Section(s) b. Floor Plan(s) c. Exterior Building Elevations (each side) d. Structural Framing & Supporting Structural Elements Shown e. Wall Sections f. Stair Section(s) g. Fireplace (plan and section views). Include 1 copy of the Installation Manual on Pre-fabricated Fireplaces with plan
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	<p>submittal-this copy will be retained by Public Works. A second copy of the installation instructions shall be made available on the job site for use by the Inspection Staff.</p>								
<p>R502.11.1 R802.11.1 R106.1 P16.3 P16.18</p>	<p>h. Other Sections and Details as necessary i. Specifications and General Notes</p> <p>3. Truss Plans a. Truss Identification/Layout Plan b. Individual Truss Drawings Sealed by Missouri Registered Professional Engineer <u>Exception:</u> Trusses reviewed and approved by the Project Registered Design Professional (Refer to structural framing and sheathing section of this checklist).</p> <p>4. Electrical Plans (switch, outlet and light layout, panel location that is commonly shown on the Architectural Plans)</p> <p>5. Mechanical Plans a. Equipment/Duct Layout Plan b. Sections, Flue Elevations Details, & Schedules</p> <p>6. Heat Loss and Heat Gain Calculations</p> <p>7. Energy Conservation Calculations <u>Exception:</u> Wood frame structures utilizing Acceptable Practice Method (Refer to Energy Conservation Section of this checklist)</p> <p>8. Percolation Test or Soil Morphology Test & Sewage Disposal System Plans (Refer to on-site wells and/or individual sanitary sewage disposal system approval section of this checklist.) <u>Exception:</u> Dwellings connected to a Public Sanitary Sewer</p> <p>9. Issuance of a building permit for the project does not authorize construction access to the work site. The owner/contractor shall apply for a permit to construct a temporary entrance from the following agency:</p> <table border="0" data-bbox="487 1344 1315 1501"> <tr> <td><u>Right of Way Owner</u></td> <td><u>Contact</u></td> </tr> <tr> <td>State</td> <td>888-275-6636</td> </tr> <tr> <td>County</td> <td>314-615-8516</td> </tr> <tr> <td>Municipality</td> <td>Municipality</td> </tr> </table>	<u>Right of Way Owner</u>	<u>Contact</u>	State	888-275-6636	County	314-615-8516	Municipality	Municipality
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County	314-615-8516								
Municipality	Municipality								
	<p><u>PLAN PREPARATION & SUBMITTAL</u></p>								
<p>114.1 B114.3 R106.1 Policy **</p>	<p>Architectural/Structural plans must be sealed by a Missouri registered design professional (architect or professional engineer) on each sheet. All plans, calculations, and specifications shall be dated and bear an original embossed or inked seal and original signature of the registered design professional on the cover sheet in addition to any mechanically reproduced seals on the remaining sheets. The plans shall include the name, address and phone number of the registered design professional.</p>								

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Policy	Electrical Plans, Mechanical Plans, Heat Loss and Gain Calculations and Energy Conservation Calculations do not normally need to be prepared, sealed, and signed by a licensed design professional.
	<u>ZONING APPROVAL</u>
SLCRO 1101.041	The plans for all dwellings to be built in the unincorporated portion of St. Louis County must comply with the St. Louis County Zoning Ordinance. The plans for dwellings located within contracting municipalities must be reviewed and approved by the municipality for compliance with zoning and other local ordinances prior to issuance of a permit.
R109.1	Prior to occupancy of any building located within the 100 year flood elevation, a Letter of Map Revision (LOMR) must be obtained from FEMA that removes the required minimum lot area from the flood plain.
	<u>FIRE DISTRICT APPROVAL</u>
	The applicant shall apply for permit(s) separately with the Fire Protection District.
	<u>ON-SITE WELLS AND/OR INDIVIDUAL SANITARY SEWAGE DISPOSAL SYSTEM APPROVAL</u>
R106.1 P16 thru P17	Dwellings served by on-site sanitary sewage disposal systems must have the plans for those facilities approved by the Public Works Plumbing Inspection Section prior to the issuance of a building permit. A Missouri Registered Civil Engineer must conduct a Percolation Test or Soil Morphology Test and design a Sewage Disposal System for the site. Refer to separate St. Louis County handouts regarding rules, regulations, and procedures. On-site wells are regulated through the Missouri Department of Natural Resources. Contact DNR for permit requirements.
	THE FOLLOWING REQUIREMENTS SHALL BE INCORPORATED INTO THE BUILDING CONSTRUCTION PLANS SUBMITTED
	<u>SITE PLAN</u>
Policy R302.1 R106.2 Policy **	Site plan shall be drawn to scale with scale indicated. Indicate configuration and dimensions of the lot. Indicate building foundation footprint on lot with dimensions around the building perimeter. Indicate all cantilevers, roof overhangs of more than 18", all roof overhangs where the edge of the overhang is less than 3' the property line (roof overhangs, protected with 1 hour construction on the underside, may not be less than 2' to the property line), balconies, decks, wing walls porches, areaways, window wells, and other appendage projections. Show driveway from street and

	<p>indicate pavement type. Indicate all existing structures (if applicable) on the site plan.</p>
<p>Policy</p>	<p>Indicate top of foundation and/or finish floor elevation. Indicate number of stories and if house is to have an in-grade or walk-out basement.</p>
<p>Policy **</p>	<p>Indicate both existing and finished grade elevations at each corner of the building, at each corner of the lot, and at the driveway entrance from the street. Existing grade elevations shall be either a) based on existing site conditions or b) taken from the approved subdivision improvement and/or grading plan if applicable. Use USGS Datum when available. Direction of drainage shall be indicated with arrows. Indicate location of swales.</p> <p><u>Note:</u> Additional finish grade elevation information (contour lines and/or spot elevations at 10'-0" intervals around the house perimeter) may be required for buildings having 4 floor levels. This additional elevation information provided around the building perimeter shall be the lowest finished grade elevation within the area between the basement wall and a point 6'-0" out from the wall. A structure 4 stories or more above grade is outside the scope of this checklist and the International Residential Code and must be designed under The International Building Code/2003. Refer to "General Story Height Limitations -Frame Construction" in this checklist for details on how to determine the number of stories above grade.</p>
<p>R404.1.6 R319.1 **</p>	<p>Finished grades at the building to be a minimum of 6" below top of foundation for wood frame and 4" below for wood frame with brick veneer. All wood framing members that rest on top of the foundation located less than 8 inches above the exposed ground and all other wood less than 6 inches from the ground shall be pressure treated in accordance with Section R319.1. Caution: An 8' foundation wall pour height with 7' unbalanced backfill will result in the exterior grade height 8 1/2" below the top of the foundation wall.</p>
<p>R401.3 Policy**</p>	<p>Grade shall be noted to slope away from foundation a minimum of a 6" drop within the first 10' or to a swale.</p>
<p>R105.1 Policy</p>	<p>A separate building permit is required for any retaining wall meeting the following conditions:</p> <ul style="list-style-type: none"> A. The wall exceeds 3' in height. Height is measured from the top of the grade on the non-retained side of the wall to the top of the wall. B. exceeds 2' in height and supports a surcharge load (driveway, pool, or similar structure). C. The wall is located less than or equal to its height from the property line. D. The wall has a fence or guardrail on top of the wall and the total

	<p>height of the wall and fence/guardrail combined exceeds 6'. E. Any wall that would block or affect an existing swale or drainage path.</p>
	<p>Location and height of retaining walls shall be shown on the site plan.</p>
<p>Policy** ></p>	<p>Site plans shall include the following note: Siltation and erosion control measures must be provided to prevent siltation/erosion from leaving the construction site.</p>
<p>Policy</p>	<p>North directional arrow shall be shown.</p>
<p>Policy</p>	<p>Dimensions of the required front, side and rear yards shall be indicated.</p>
<p>Policy</p>	<p>Front building line shall be dimensioned.</p>
<p>Policy</p>	<p>Show size and location of any easements on the lot. Indicate names and location of adjacent street or streets.</p>
<p>Policy</p>	<p>Show lot number, block number (if any), plat or addition to subdivision number and recorded subdivision name.</p>
<p>Policy</p>	<p>Show location of on-site sanitary sewage disposal system and/or well, if applicable.</p>
<p>R106.1 R401.4 R403.1.8</p>	<p>Engineer's seal is required on the site plan if structure is to be built upon compacted fill ground or if other than spread footings are proposed. <u>Exception:</u> Where approved soil compaction report is on file or a Missouri Professional Engineer (Geotechnical) is retained to observe the excavation.</p>
<p>Policy R106.1 R323.1</p>	<p>A Missouri Licensed Surveyor's or Missouri Professional Engineer's seal is required on the site plan if any portion of the lot is located in a flood plain. Basement floor elevation must be above the 100 year flood plain elevation. Low sill must be a minimum of 2'-0" above the flood plain elevation. Indicate the 100 year flood plain elevation and flood plain boundary location on the site plan.</p>
<p>Policy R109.1</p>	<p>Buildings constructed in a flood plain shall have the lowest floor elevation and the as-built low sill elevation certified by a Registered Engineer or Registered Land Surveyor, before the required foundation inspection approval can be given, to insure that the required LOMR can be obtained.</p>
<p>Policy**</p>	<p>New or updated plans submitted for a Masterplan review utilizing the 70000 series permit process (i.e. no specific site) shall include a scaled footprint</p>

	<p>drawing with dimensions that will fit a 4" x 4" maximum area. All proposed options that change the footprint of the building shall be clearly detailed.</p>
	<p><u>LAND DISTURBANCE</u></p>
<p>SLCOR 21578,2003 Section 106.3 **</p>	<p>A Land Disturbance permit is required in unincorporated areas and municipalities contracting for Land Disturbance enforcement if the disturbed area is:</p> <ul style="list-style-type: none"> A. 2000 square feet or greater in area, or B. cut or fill of 30 or more cubic yards, or C. cut or fill at the property line, or D. cut or fill that would permanently divert one drainage area to another drainage area, or E. cut or fill which would deposit mud or harmful silt, or create erosion or damage to adjoining properties, or F. cut or fill that would block or affect an existing swale or drainage path in a manner to cause damming and ponding. <p>Note: One must consider both the excavated area and the fill area when computing the total square feet of land disturbance.</p>
	<p><u>GENERAL STORY HEIGHT LIMITATIONS – FRAME CONSTRUCTION</u></p>
<p>R101.2**</p>	<p>Dwellings designed utilizing the International Residential Code/2003 may be constructed to 3 stories above the grade plane. <u>Note:</u> Basements are considered as a story above grade where the finished surface of the floor above the basement is a) more than 6'-0" above the grade plane; or b) more than 6'-0" above the finished ground level for more than 50% of the total building perimeter; or c) more than 12'-0" above the finished ground level at any point. The building height in feet is the vertical distance from grade plane to the average height of the highest roof surface.</p>
	<p><u>CONCRETE</u></p>
<p>R506 ></p>	<p>Minimum thickness of concrete floor slabs supported directly on the ground is 3 1/2 ". Slabs (including garage slabs) shall be placed over a minimum 4" base course of gravel or crushed stone. A 6 mil polyethylene barrier with joints lapped not less than 6" shall be placed between the concrete floor slab and the base course.</p> <p style="padding-left: 40px;">Exception: Garages and exterior flatwork not likely to be enclosed at a later date shall not require the polyethylene barrier.</p>
<p>Table R402.2</p>	<p>Minimum compressive strength of concrete shall be:</p>

<p>></p>	<p>2500 psi - basement slabs and footings 3000 psi - basement walls and foundation walls 3500 psi - porches, walks, patios, steps, garage and carport floor slabs and driveways</p> <p>Concrete for all basement walls, foundation walls, porches, walks, patios, steps, garage and carport floor slabs and driveways shall be air-entrained. Basement slabs and interior slabs shall be air entrained if the placed concrete is subjected to freezing and thawing.</p>				
	<p><u>FOOTINGS</u></p>				
<p>Policy R403</p>	<p>The following minimum footing width sizes are required for bearing :</p>				
		<p>BEARING ON UNDISTURBED SOIL</p>		<p>2000psf BEARING CERTIFIED BY A MISSOURI PROFESSIONAL ENGINEER¹</p>	
		<p>Framed Wall</p>	<p>Framed Wall w/Brick Veneer</p>	<p>Framed Wall</p>	<p>Framed Wall w/Brick Veneer</p>
	<p>1 Story slab on Grade</p>	<p>12"</p>	<p>12"</p>	<p>12"</p>	<p>12"</p>
	<p>1 Story w/Basement</p>	<p>21"</p>	<p>24"</p>	<p>16"</p>	<p>18"</p>
	<p>2 Story slab on Grade</p>	<p>15"</p>	<p>21"</p>	<p>12"</p>	<p>16"</p>
	<p>2 Story w/Basement</p>	<p>24"</p>	<p>30"</p>	<p>18"</p>	<p>23"</p>
	<p>3 Story Slab on Grade</p>	<p>23"</p>	<p>32"</p>	<p>17"</p>	<p>24"</p>
	<p>3 Story w/Basement</p>	<p>27"</p>	<p>36"</p>	<p>21"</p>	<p>27"</p>
<p>R403.1.1</p>	<p>1. Documented by a sealed letter on a per lot(s) basis or by a sealed compaction report for the entire subdivision.</p>				
<p>Table R301.2(1) **</p>	<p>The foundation wall shall set in the middle of the footing. The footing thickness shall be a minimum of 6 inches but not less than the distance the footing extends horizontally past the face of the foundation wall.</p>				
<p>Policy</p>	<p>The bottom of all footings must be a minimum of 2'-6" below finished grade and bear on undisturbed soil or prepared fill.</p>				
<p>Policy</p>	<p>Show stepped footings where required by adjacent grades and detail footing/foundation construction at excavation overdig areas.</p>				
<p>Policy</p>	<p>Interior footings integral with a concrete slab shall be a minimum 16" wide x 12" deep unless verified by calculations for smaller size.</p>				
<p>R403.1.4</p>	<p>Exterior footings shall extend a minimum of 12" into undisturbed soil and at least 30" below finished grade.</p>				

<u>FOUNDATIONS</u>													
Table R404.1.1(1) **	PLAIN CONCRETE FOUNDATION WALLS												
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Max. Wall Height</th> <th style="width: 33%;">Max. Depth of Unbalanced Backfill</th> <th style="width: 33%;">Min. Nominal Wall Thickness</th> </tr> </thead> <tbody> <tr> <td>7'-0"</td> <td>6'-0" or less 7'-0"</td> <td>8" 10" Note a</td> </tr> <tr> <td>8'-0"</td> <td>6'-0" or less 7'-0" 8'-0"</td> <td>10" Note a 10" Note a 12" Note b</td> </tr> <tr> <td>9'-0"</td> <td>6'-0" or less 7'-0" 8'-0" 9'-0"</td> <td>10" 10" 12" Note b 12"</td> </tr> </tbody> </table>	Max. Wall Height	Max. Depth of Unbalanced Backfill	Min. Nominal Wall Thickness	7'-0"	6'-0" or less 7'-0"	8" 10" Note a	8'-0"	6'-0" or less 7'-0" 8'-0"	10" Note a 10" Note a 12" Note b	9'-0"	6'-0" or less 7'-0" 8'-0" 9'-0"	10" 10" 12" Note b 12"
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9'-0"	6'-0" or less 7'-0" 8'-0" 9'-0"	10" 10" 12" Note b 12"											
<p>Note a: Where unstable soil or ground water conditions do not exist, plain concrete foundation walls may be constructed a minimum of 8" thick where the wall height from the top of the footing to the top of the wall does not exceed 8' and when the unbalanced backfill height from the top of the basement slab to the finished grade immediately adjacent to the wall does not exceed 7' Minimum of (2) # 4 reinforcing bars shall be provided in the top and bottom of plain concrete foundation walls. Minimum of (2) #5 reinforcing bars shall be provided around all window and door openings in plain concrete foundation and basement walls. Bars shall extend a minimum 24" beyond the corners of the openings</p> <p>Note b: Where unstable or ground water conditions do not exist, plain concrete foundation walls may be constructed a minimum of 10" thick when supporting an unbalanced backfill of 8' or less. A minimum of (2) #5 reinforcing bars shall be placed horizontally in the top, middle, and bottom of the foundation wall.</p>													
<p>R602.10.6.1 R602.10.6.2</p>	<p>A minimum of one #4 rebar is required in the top and bottom of foundation walls supporting braced wall panels constructed in accordance with Sections R602.10.6.1 or R602.10.6.2. These braced wall panels are known as alternate braced wall panels A and B respectively in The St. Louis County Appendix A and Appendix B.</p>												
<p>R404.1.2</p>	<p>Reinforced concrete foundation walls 9' or less in height shall be designed in accordance with Tables R404.1.1(2), R404.1.1(3), and R404.1.1(4) of the Residential Code or shall have sealed structural analysis.</p>												
<p>R404.1.1</p>	<p>The following situations require sealed structural calculations:</p>												

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<p>R404.1.2 R404.1.3</p>	<ol style="list-style-type: none"> 1. Reinforced or plain concrete/masonry foundations not designed in accordance with one of the Tables referenced in Sections R404.1.1 or R404.1.2. 2. Foundation walls subject to hydrostatic pressure from groundwater. 3. Foundation walls supporting more than 48 inches of unbalanced backfill that does not have permanent lateral support at the top and bottom of the wall.
<p>R404.1.5</p>	<p>The thickness of concrete and masonry foundation walls shall not be less than the thickness of the wall supported, except that foundation walls of at least 8" nominal thickness shall be permitted under brick-veneer frame walls and under 10" wide cavity walls where the total height of the wall supported, including gables, is not more than 20'.</p>
<p>Policy</p>	<p>All foundations are to be keyed to the footing.</p>
<p>Policy</p>	<p>Porch haunches or brackets require reinforcing.</p>
<p>Policy R403.1.6 R404.3** ></p>	<p>1/2" round anchor bolts, placed a maximum of 6'-0" o.c., set a minimum of 7" into concrete required for anchoring of sill plates (2 x 4 minimum) around entire foundation with nuts and 1 1/2" washers are to be provided. Sill plates are to be grouted level or have sill sealer with approved shim materials and methods. A minimum of 2 bolts required per section of sill plate. There shall be an anchor bolt located 4 to 12 inches from the end of each sill plate.</p>
<p>R403.1.6.1**</p>	<p>Townhouse anchor bolt requirements: 1/2" round anchor bolts, placed a maximum of 6'-0" o.c. (4' o.c. if the building is more than 2 stories in height), set a minimum of 7" into concrete required for anchoring of sill plates (2x4 minimum) around the entire foundation and interior sole plates supporting bearing walls on interior footings integral with the concrete slab with 3/16" x 2" x 2" plate washer and nuts. Sill plates are to be grouted level or have sill sealer with approved shim materials and methods. A minimum of 2 anchor bolts required per section of plate. There shall be an anchor bolt located 4 to 12 inches from the end of each sill/sole plate.</p>
<p>Policy</p>	<p>Dwellings supported on piers require pier plans drawn and sealed by a Missouri Registered Architect or Professional Engineer.</p>
<p><u>WATERPROOFING & DAMPPROOFING</u></p>	
<p>R406.1 R406.2</p>	<p>Walls or portions thereof that retain earth and enclose interior spaces and floors below grade shall be waterproofed or dampproofed depending on the presence or non-presence of groundwater.</p>

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R406.2	An evaluation of the soil for the presence or absence of ground water is required. The evaluation report shall be based on either a subsurface soil investigation or satisfactory data from adjacent areas together with an inspection of the excavation prior to pouring concrete.
R405.1 >	<u>No ground water present</u> - Provide drain tile, perforated pipe, or other approved foundation drainage systems around perimeter of the outside of the foundation or inside the foundation. Drain discharge shall be by gravity to daylight or be connected to a basement floor sump.
R405.1 >	An approved filter membrane shall be placed over the top of the joints/pipe perforations. The tile/pipe shall be placed on 2" minimum gravel or crushed stone and have 6" minimum cover.
R405.1 >	Drainage system shall discharge by gravity to daylight or be connected to an approved sump (15" in diameter x 18" deep with fitted cover). A sump pump shall be provided if basement is finished or partially finished with pump discharge by an approved method.
R506.2.3 >	Provide dampproofing of floor slab with a 6 mil polyethylene film below slab, with joints in membrane lapped a minimum of 6".
R406.1 >	Walls shall be dampproofed with a bituminous material, 3 lb. per sq. yd. of acrylic modified cement, 1/8" coat of surface bonding mortar, or by any of the materials permitted for wall waterproofing. (see "Groundwater Present" section for these materials.)
R405.1 R405.1.1 >	<u>Groundwater present</u> - Provide drain tile, perforated pipe, or other approved foundation drainage system both inside and outside of foundation.
R405.1.1 >	Drainage system shall discharge by gravity to daylight or be connected to an approved sump (15" in diameter x 18" deep with fitted cover) having a sump pump that discharges into an approved disposal system.
R506.2.3 >	Provide a 6 mil polyethylene film below slab, with joints in membrane lapped a minimum of 6".
R406.2 >	Foundation to be waterproofed with two ply hot-mopped felts, 6 mil P.V.C., 40 mil polymer modified asphalt, or 6 mil polyethylene. Joints to be lapped and sealed per manufacturer's installation instruction.

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R406.2 >	Waterproofing to be applied from the top of the footing to the finished grade.								
P1101.1 > >	Downspout discharge shall be directed away from foundation.								
P1105.2 P1101.5.6	Sump pump discharge and roof drainage shall be piped to a storm drain or to approved water course. Discharging to or within 10' of a sidewalk, driveway, street or to create a nuisance to adjoining properties is prohibited.								
<u>STRUCTURAL FRAMING AND SHEATHING</u>									
R502.3 R502.4**	Floor Joists spans shall comply with Tables R502.3.1(1) and R502.3.1(2). Joists under a parallel bearing partitions shall be of adequate size to carry the load. Bearing partitions perpendicular to joists shall not be offset from the supporting beam or bearing wall a distance greater than the joist depth. Cantilevered floor joist carrying a roof and an exterior bearing wall shall be constructed in accordance with Table R502.3.3(1).								
Policy	Indicate size, weight and spacing of all steel beams and columns. Indicate size, spacing and either fiber stress, or species and grade of lumber, of all wood beams and columns. Identify interior bearing wall locations.								
Policy R502.3	Indicate direction of floor joists, size, spacing, and either fiber stress, or species and grade of lumber. Detail horizontal chases where floor joists and/or sheathing are modified to accommodate space for chase.								
R301.5	All floor framing shall be designed to support the following minimums: <table style="margin-left: 40px; border: none;"> <tr> <td>Floor areas other than sleeping rooms</td> <td>L.L. 40 lb. per sq. ft.</td> </tr> <tr> <td>Sleeping rooms</td> <td>L.L. 30 lb. per sq. ft.</td> </tr> <tr> <td>Balcony (exterior).**</td> <td>L.L. 60 lb. per sq. ft.</td> </tr> <tr> <td>Deck **</td> <td>L.L. 40 lb. per sq. ft.</td> </tr> </table>	Floor areas other than sleeping rooms	L.L. 40 lb. per sq. ft.	Sleeping rooms	L.L. 30 lb. per sq. ft.	Balcony (exterior).**	L.L. 60 lb. per sq. ft.	Deck **	L.L. 40 lb. per sq. ft.
Floor areas other than sleeping rooms	L.L. 40 lb. per sq. ft.								
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Balcony (exterior).**	L.L. 60 lb. per sq. ft.								
Deck **	L.L. 40 lb. per sq. ft.								
R301.7	Floors, roofs and walls shall comply with the allowable deflection criteria.								
Policy R502.4 >	Size of wood headers and steel lintels indicated over each opening in the exterior wall.								
Policy	Wall height shall be measured from the bottom of the sole/sill plate to the top of the double top plate. A 2" variation is allowed to account for actual dimensions. For example: A 10'-2" actual wall height may be constructed as a 10' wall.								
R301.3	Laterally unsupported bearing wall height may not exceed 10' (Table								

<p>Table R602.3(5) Table R602.3.1 Policy **</p>	<p>R602.3(5) in height without a sealed structural analysis addressing the wind (and seismic in townhouses) force resisting system of the structure in the longitudinal direction in accordance with the International Building Code 2003 (Townhouse seismic design: $S_s = 0.54g$, $S_1 = 0.18g$). In addition, wood stud walls exceeding the heights or vertical loading conditions detailed in Tables R602.3(5) and R602.3.1 shall include sealed structural analysis addressing the combined axial compression (live, dead, and/or snow) and flexural bending (wind) in the transverse direction. All structural calculations shall include an analysis for deflection.</p>
	<p>Exception: Sealed structural analysis addressing the wind (and seismic in townhouses) force resisting system of the structure is not required for a wall height up to 12' in laterally unsupported height if the wall bracing in Table R602.10.1 is increased by 20% (Note: Use Categories A and B row for a single family dwelling. Use Category C row for a townhouse).</p>
	<p>NOTE: WALL HEIGHTS EXCEEDING 12' (e.g. ATRIUM RANCH OR AN OPEN FOYER ON A 2 STORY RESIDENCE) IS OUTSIDE THE SCOPE OF THE IRC 2003. ONE SET OF STRUCTURAL CALCULATIONS ALONG WITH FOUR SETS OF DETAILED PLANS PROPERLY SIGNED, SEALED, AND DATED BY A MISSOURI REGISTERED DESIGN PROFESSIONAL SHALL BE SUBMITTED TO THIS OFFICE.</p>
<p>Policy Table R602.3 (1)</p>	<p>All wood stud wall framing 12' or less in height shall have continuous balloon wall framing from the sole/sill plate to the top plate. The top plate shall be located at the ceiling or higher and be secured to the perpendicular roof/ceiling or floor framing in accordance with the following:</p>
	<p>Conventional wood (stick-built) roof: Each ceiling joist shall be secured to the top plate with 3-8d toe nails. Each rafter shall be secured to the top plate with 2-16d toe nails.</p>
	<p>Wood roof trusses: Each truss shall be secured to the top plate with 3-16d toe nails.</p>
	<p>Wood floor joists/trusses: Each floor joist or truss shall be secured to the top plate with 3-8d toe nails.</p>
	<p>A ballooned framed wall 12' or less in height constructed parallel to the</p>

roof, ceiling or floor framing where the top plate of the wall is located at the ceiling or higher shall be attached to the parallel roof, ceiling, or floor framing with 8d nails at 6" on center.

In the situation where a wall is not ballooned framed from floor to ceiling line similar to the situation that occurs between a gable end wall and a gable end truss with a horizontal bottom chord that is adjacent to a vaulted ceiling:

Floor to ceiling height 12' or less:

The two walls or the wall and the gable end truss shall be strapped together with on the interior side with a vertical 16 gauge metal 1 ¼" wide by 21" long strap. A minimum of 10" of the strap shall be connected to each wall or gable truss with 9-16d nails for a total of 18-16d nails in the entire strap. Straps shall be located at each end of the connected walls or wall and gable truss where space allows for the 10" length of strap. The spacing between the straps may not exceed 4' on center. The straps shall not be bent horizontally to accommodate wood framing. If applicable, nailers should be added to one of the walls or gable end using a minimum of 9-16d nails to create the vertical plane needed to mount the strap.

Floor to ceiling height greater than 12': Provide structural calculations properly sealed by a Missouri Registered Design Professional addressing both transverse and longitudinal loading.

R301.1.3
R602.10
Policy
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All structures shall be braced in accordance with the following criteria. The plans shall detail the type of bracing, bracing connections, bracing panel locations, braced wall line locations, and the linear percentage of braced wall panels in each braced wall line. The Design Professional shall graphically indicate the locations of each braced wall line on the floor plans or in a separate key floor plan. The braced wall panels shall be shown on the floor plans, elevation drawings, or on separate key floor plan or elevation views. The percentages of braced wall panels within each braced wall line shall be

	<p>calculated by the design professional and clearly noted on the architectural drawings or the architect may indicate the number of braced wall panels and the bracing method (1 through 8):</p> <p>Exception: The design professional follows “The Simplified Bracing Method for One and Two Family Dwellings when the Entire Structure is Sheathed in Wood Structural Panels” policy. This policy may be found at www.stlouisco.com/pubworks.</p> <p>Single Family Dwellings (Utilizing A & B row of Table R602.10.1):</p>
<p>Table R602.10.1 R602.10.1 **</p>	<p>One story or top story of a two or three story building: Use brace methods 1, 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least 25' on center and at least 16% of the braced wall line must be composed of braced wall panels.</p> <p>First story of a two story or a second story of a three story: Use brace methods 1, 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least every 25' on center and at least 16% of the braced wall line must be composed of braced wall panels for brace method 3 (25% of the braced wall line for brace methods 1, 2, 4, 5, 6, 7, or 8).</p> <p>First story of a three story: Use brace methods 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least 25' on center and at least 25% of the braced wall line must be composed of braced wall panels for brace method 3 (35% of the braced wall line for brace methods 2, 4, 5, 6, 7, or 8).</p> <p>Townhouses (utilizing C row of Table R of Table R602.10.1):</p>
<p>**</p>	<p>One story or top story of a two or three story building: Use brace methods 1, 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least 25' on center and at least 16% of the braced wall line must be composed of braced wall panels for brace method 3 (25% of the braced wall line for brace methods 1, 2, 4, 5, 6, 7, or 8).</p> <p>First story of a two story or a second story of a three story: Use brace methods 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least every 25' on center and at least 30% of the braced wall line must be composed of braced wall panels for brace method 3 (45% of the braced wall line for brace methods 2, 4, 5, 6, 7, or 8).</p>

<p>Policy</p> <p>R602.10.3 ></p>	<p>First story of a three story: Use brace methods 2, 3, 4, 5, 6, 7, or 8. A braced wall panel shall be located within 12'-6" of each end of a braced wall line and at least 25' on center and at least 45% of the braced wall line must be composed of braced wall panels for brace method 3 (60% of the braced wall line for brace methods 2, 4, 5, 6, 7, or 8).</p> <p>* Exception: The first braced wall panel may be started 20' from one end of a braced wall line as long as all the following criteria is met:</p> <ol style="list-style-type: none">a. The double top plate between the end of the braced wall line and the opposite end of the first braced wall panel shall be placed in a continuous straight line with no off sets.b. The braced wall panel is in the top story or in a story located below the top story. The braced wall panel height, the distance measured from the bottom of the sole/sill plate to the top of the double top plate, shall not be greater than 12'.c. The braced wall panel at the opposite end of the braced wall line shall be located a maximum of 12'-6" from the opposite end of the braced wall line.d. The braced wall line in townhouses shall be braced with wood structural panel sheathing installed in accordance with Table R602.10.1 and Section R602.10.3. A townhouse may have brick veneer on one exterior wall.e. 26-16d box nails shall be applied directly (face nailing) each side of a double top plate splice in the braced wall line. The nails may be placed in a single or double row with the following clearances measured to the centerline of the nail:<ol style="list-style-type: none">1. 1/2" edge clearance2. 3" end clearance3. 3" nail to nail spacing parallel to grain 1/2" between rows of nails perpendicular to grain <p>Note: The architectural plans shall include a detail of this double top plate special nailing pattern.</p> <p>Brace Methods:</p> <ol style="list-style-type: none">1. Nominal 1x4 continuous diagonal braces let in to the top and bottom plates and intervening studs or approved metal strap devices installed in accordance with the manufacturer's specifications. The let in bracing shall be placed at an angle of 45 to 60 degrees with the horizontal.2. Diagonally placed wood boards with 5/8" net minimum thickness placed on studs spaced at 24" o.c. or less. Boards shall be attached
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	<p>to studs and plates in accordance with Table R602.3(1).</p> <ol style="list-style-type: none"> 3. Wood structural panel (plywood or OSB) sheathing with a thickness not less than 5/16" for a 16" stud spacing and not less than 3/8" for a 24" stud spacing. Wood structural panels shall be installed in accordance with Table R602.3(3). 4. Fiberboard sheathing (1/2" or 25/32" thick) applied vertically or horizontally on studs spaced a maximum of 16 inches on center. Structural fiberboard sheathing shall be installed in accordance with Table R602.3(1). 5. Gypsum board with minimum 1/2" thickness placed on studs spaced a maximum of 24" on center and fastened at 7" on center with the size nails specified in Table R602.3(1) for sheathing and Table R702.3.5 for interior gypsum board. 6. Particleboard wall sheathing panels installed in accordance with Table R602.3(4). 7. Portland cement plaster on studs spaced a maximum of 16" on center and installed in accordance with Section R703.6. 8. Hardboard panel siding when installed in accordance with Table R703.4. <p>Notes:</p>
<p>R602.10</p>	<ol style="list-style-type: none"> 1. All exterior walls (exception: walk-out framed walls on a story not considered a story above grade—see Note 5) shall be braced in accordance with the criteria listed above.
<p>R602.10.1.1</p>	<ol style="list-style-type: none"> 2. Braced wall lines shall be placed a maximum of 35' o.c. from other braced wall lines in both the longitudinal and transverse directions of all wood framed stories above grade. Building that have a floor or roof diaphragm length to width ratio of 3 or less may have braced wall lines spaced up to and including 50' from the next adjacent braced wall lines if each braced wall line has a proportionally higher percentage of bracing based on the distance from the farthest braced wall line. i.e. An interior braced wall line placed 40' from an exterior braced wall and 45' away from the next interior braced wall line shall be braced: 45 divided by 35 equals 1.29. 1.29 times 16% (assume 1 story house, Category A and B for this for example) equals 21%. Both interior braced wall lines shall have 21% bracing. The exterior braced wall line shall have 18% bracing (40 divided by 35 = 1.14, 1.14 times 16% = 18%).
<p>R602.10.8 Policy</p>	<ol style="list-style-type: none"> 3. A ceiling or floor joist/truss located directly above an interior braced wall line shall be attached with 8d nails at 6" o.c. toenailed. In situations where the ceiling or floor joist/truss is not located directly above the interior braced wall line or the floor/roof framing above the

	<p>interior braced wall line is perpendicular to the wall, add 2 x 4 blocking at 16" o.c. between the floor/roof framing. The blocking shall be attached to the floor framing with 3- 8d nails toenailed at each end of the block. Each block shall be toenailed to the interior braced wall panel with 3-8d nails toenailed.</p>
<p>R602.10.1</p>	<p>4. An interior braced wall line sole plate shall be attached to a floor joist/truss located directly below the wall with 3-16d nails at 16"o.c.. In situations where the ceiling or floor joist/truss is not located directly below the interior braced wall line or the floor framing below the interior braced wall line is perpendicular to the wall, add 2 x 4 blocking (4" nominal dimension placed vertically or horizontally) at 16" o.c. between the floor framing. The blocking shall be attached to the floor framing with 3- 8d nails toenailed at each end of the block.</p>
<p>R602.10.4</p>	<p>5. An individual horizontal offset in the braced wall line is permitted if the horizontal offset is 4' or less and the total of all the horizontal offsets is less than 8'. Walls with horizontal off- sets that exceed these dimensions and the adjoining perpendicular walls shall be considered separate braced wall lines requiring bracing in accordance with the above criteria.</p>
<p>R602.10.5 Policy</p>	<p>6. A braced wall panel shall meet the following criteria:</p> <ul style="list-style-type: none"> a. The brace method shall cover a minimum of 3 wall studs spaced at 16" o.c or 2 wall studs spaced at 24" o.c. without any openings. b. Brace methods 2, 3, 4, 6, 7, and 8 shall be applied to 4' wall length without any openings. c. Brace method 5 shall be applied to 8' wall length without any openings when the gypsum board is applied to only one side of the wall. A 4' wall length is adequate if the gypsum is applied to both sides of the framed wall. Electrical outlet boxes and switches are permitted openings in a braced wall panel. <p>Exceptions:</p> <ul style="list-style-type: none"> i. Lengths of braced wall panels may be less than 4' when all sheathable areas of the exterior braced wall line is braced utilizing plywood or OSB (Bracing Method 3). Other exterior braced wall lines and interior braced wall lines, if applicable, may be braced with any of the 8 bracing methods. ii. Lengths of braced wall panels may be less than 4' if bracing is installed in accordance with Section R602.10.6.1 or R602.10.6.2.
<p>R602.10.6</p>	<p>7. Walk-out basements with walls constructed of concrete and wood framing shall have bracing in the wood frame walls in accordance with the following:</p>

Policy R502.11.1 R802.10.2	for roof rafters and ceiling joists. Indicate roof pitch. Show rafter and ceiling joist framing layout on plans.
	Roof trusses and floor trusses to comply with TPI 1-2002
	Trussed roofs and/or floors shall have sealed individual truss plans indicating spacing and roof pitch for each span utilized. Include girder trusses if utilized. Show truss framing layout including girder locations on the Architectural/Structural Plans.
	<u>Exception:</u> The Project Registered Design Professional may accept the total responsibility of reviewing and approving truss plans as a shop drawing review process. Under this option the Architectural/Structural plans for the structure must include all of the following:
	<ol style="list-style-type: none">1. Framing layout design concept showing truss span direction, length, spacing, and bearing locations including supporting girder truss locations. Girder to girder truss connections must be designed and detailed; and,2. Comprehensive specification information which addresses each of the following issues:<ul style="list-style-type: none">• Trusses shall be designed and sealed by a Missouri Registered Professional Engineer.• Required live, snow, and Dead Load Design criteria must be noted.• Reference to 2003 International Residential Code, ANSI/AF&PA NDS-2001, and ANSI/TPI 1-2002 as the design standards.• Statement from the Project Registered Design Professional accepting the responsibility of review and approval of the truss design drawings and the respective loads exerted on the structure• Two sets of truss drawings marked approved by the Design Professional are to be returned to the builder and made available to the inspection staff.
R502.11.4 Policy	<u>Note:</u> The Project Design Professional shall review and coordinate the forces that trusses will exert on the structure and specify all lintels, beams, bearing walls, columns, truss to bearing plate connections, truss to truss connections, etc., based upon the truss layout plan.
	All roof framing shall be designed to support the following minimums:
R301.4 R301.6	Top chord of trusses Snow Load 20 lb. per sq. ft. or roof rafter: Dead Load Use actual dead load.(Note: Dead load must include 2 layers of roofing membrane

<p>R301.4 R301.5</p>	<p>Ceiling joists or Use a live load of 20 lb. per sq. ft when there is Bottom chord of trusses:attic storage. Use 10 lb per sq. ft. live load where there is no attic storage. Dead load—use actual dead load.</p>
<p>Policy</p>	<p>Note: The live load design on the ceiling joist or bottom chord of a truss shall not be required if all of the following conditions are adhered to:</p> <ul style="list-style-type: none"> a. Attics with drywall ceilings below that are accessed only by a 22" x 30" scuttle opening without a pull-down stairway. b. Warning signs attached to the trusses on each side of the scuttle opening at least 36" above the bottom chord and within 18" of the edge of the opening. The signs shall be constructed of metal or other approved durable materials suitable for the location and be a minimum of 40 sq. inches in area with 3/4" minimum high letters on a contrasting background that reads "WARNING-TRUSSES NOT DESIGNED FOR ATTIC STORAGE". c. Attic areas over garage areas with drywall ceilings shall also be provided with a horizontal railing attached to the trusses on each side of the scuttle opening at least 24" and not more than 36" above the bottom chord. The railing is intended to be an obstruction to easy access for storage and shall be constructed of either 1x4's, 2x4's or 3/8"x 6" plywood. It may be shop or field applied.
<p>R803.2.1 TableR503.2.1.1 > ></p>	<p>Where trusses or rafters are spaced 24" o.c., roof panels shall be a minimum of 15/32" thick sheathing without edge support or a minimum of 3/8" thick (minimum 24/0 span rated) sheathing with edge support. Edge support shall be tongue-and-groove edges, panel edge clips (at mid-point between each support) or 2x lumber blocking.</p>
<p>R502.8 R602 R802.7</p>	<p>Cutting, notching, and/or boring holes on wood beams, joists, rafters, or studs shall not exceed the limitations noted in Sections R502.8, R602, and R802.7.</p>
<p>R503.2.3 R602.3 R602.10.3 R803.2.3 ></p>	<p>Nailing and fastening of floor, wall, and roof assemblies shall be fastened in accordance with Tables R602.3(1) through R602.3(4) Interior gypsum shall be fastened in accordance with Table R702.3.5. Gypsum sheathing shall be fastened in accordance with Table R602.3(1)</p>
<p>R802.10.5 Policy ></p>	<p>Rafter/Ceiling joist systems shall be nailed to the top plate of the wall in accordance with Table R602.3(1). Trusses shall be nailed to the top plate of the wall with 3-16d nails toe nailed without splitting the end of the truss.</p>

	<u>ROOFING</u>
<p>R902.1</p> <p>></p> <p>R905.2.3</p> <p>Policy</p> <p>R903.2.1</p> <p>R905.2.8</p> <p>></p> <p>R905.9</p> <p>R905.5.2</p> <p>R905.5.4</p> <p>R905.2.7</p> <p>></p>	<p>Class A, B, or C roofing shall be required where the edge of the roof is less than 3' to the property line.</p> <p>All underlayment to be a minimum of Type I per ASTM D226-97a or Type I per ASTM D4869-88(1993)e (Type I is commonly called No. 15 asphalt felt.)</p> <p>Indicate corrosion-resistant flashing at all wall and roof intersections, changes in roof slope or direction, around all roof openings, intersections with chimneys, intersection of exterior walls and porches and decks, etc. Valley flashing shall be installed per R905.2.8.2</p> <p>Built-up membrane roof slope is 1/4:12 with approved low-slope roof covering materials. A Coal-Tar built-up membrane may be installed on 1/8:12 slope.</p> <p>Mineral-surfaced roll roofing shall conform to ASTM D 224, D 249, D 371, D 3909. It shall not be installed on roof slopes below 1:12.</p> <p>Underlayment for asphalt shingles:</p> <p style="padding-left: 40px;">Slopes of 2:12 to less than 4:12 shall be protected with two layers of underlayment. Apply a 19" strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold into place. Starting at the eave, apply 36" wide sheets of underlayment. Successive 36" wide sheets of underlayment shall overlap the previous 36" wide sheet by 19". All underlayment shall be fastened sufficiently to hold into place.</p> <p style="padding-left: 40px;">Slopes equaling or exceeding 4:12 shall be protected with one layer of underlayment. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2", fastened sufficiently to hold in place. End laps shall be offset by 6'.</p>
	<u>SMOKE DETECTORS</u>
<p>Policy</p> <p>R313.1</p>	<p>U.L. listed smoke detectors shall be located on each floor level in the vicinity of all bedroom entrance doors (bedroom hallway) and within each bedroom. Locate bedroom hallway detector upstream from any return air grille, if applicable. Floor levels that do not contain bedrooms shall have the detector located at the ceiling near the stairway. In split level residences a smoke detector installed on the upper level shall suffice for the adjacent lower level provided the lower level is less than one full story below the upper level. If there is an intervening door between the adjacent levels a smoke detector</p>

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<p>R313.1 > > R313.1 R313.2</p>	<p>shall be installed on both levels.</p> <p>When more than one detector is required within the dwelling unit, the detectors shall be interconnected so that activation of one alarm will activate all alarms throughout the dwelling unit.</p> <p>The smoke detectors shall be AC powered and have battery backup. The installation shall also meet NFPA 72-99.</p>
	<p><u>WALLS</u></p>
<p>R302.1 ICC Interp 41-03 **</p>	<p>The following criteria shall be used for single-family dwellings, two-family dwellings with lot lines separating the two dwellings, and townhouses with lot lines separating the each townhouse:</p> <p>Exterior walls with a fire separation distance of less than 3' (measured perpendicularly from the property line) must be built in accordance with a tested wall assembly that is rated for one hour exposure to fire from both sides and the wall shall be constructed with any openings. Townhouses and two-family dwelling units shall be constructed with a 1 hour exterior wall on each side of the property line that exists between the two dwelling units. The two 1 hour exterior walls may be constructed on top of a common foundation wall shared between the units. The wall assembly must be continuous from foundation to roof sheathing. The plans shall contain both the tested assembly identification number (U.L. or equal) and either a text description of the assembly or a labeled detail of the assembly. Parapets are required above two 1 hour exterior walls separating the townhouses in accordance with Section R317.2.2.</p> <p><u>Exception:</u> A parapet is not required if the roof sheathing on each side of the separation walls is fire retardant treated for a minimum distance of 4' perpendicular to the separation walls. -OR- A parapet is not required if 5/8" Type x drywall is installed on the underside of the roof sheathing between the roof rafters/trusses for a distance of 4' perpendicular to the separation walls. The Type x drywall shall be held in place with continuous wood 2x2 ledgers nailed to the side rafter/trusses.</p> <p>Projections from the wall (i.e. roof overhangs) shall not be closer than 2' to the property line. Wall projections located less than 3' but 2' or greater to the property line shall be protected on the underside of the projection with 1 hour fire-resistive construction (2 layers of 5/8" gypsum sheathing).</p>

	<p><u>Exception:</u> Roof overhangs adjacent to interior lot line placement between one and two family dwellings and townhouses may be unprotected on the underside and placed adjacent to the interior lot line if approved fire-retardant treated wood is used as a roof sheathing for a distance of 4' on the side of the separation wall directly underneath the exposed roof overhang. In lieu of fire-retardant treated roof sheathing, 5/8" Type x drywall may be installed on the underside of the roof sheathing between the roof rafters/trusses for a distance of 4' perpendicular to the side of the separation wall under the unprotected overhang. The Type x drywall shall be held in place with continuous wood 2x2 ledgers nailed to the sides of the rafter/trusses.</p>
R302.2	<p>The following criteria shall be used for two-family dwellings with no lot lines separating the two dwellings:</p> <p>Dwelling units shall be separated by a 1 hour fire resistant wall or floor/ceiling assembly and each dwelling unit must have a separate means of egress. All supporting construction of the 1 hour fire resistant assembly shall also be protected with a minimum of a 1 hour fire resistant assembly</p>
R317.1	<p>The following criteria shall be used for townhouses with no lot lines separating the dwellings units:</p>
R317.2	<p>Each townhouse may be separated with two 1 hour fire resistant exterior walls or a common 2 hour fire resistant rated wall. The 2 hour fire resistant common wall shall not be used for any plumbing or mechanical equipment including ducts or vents. Electrical outlet box penetrations of the common 2 hour fire resistant assembly shall be installed in accordance with Section R317.3. A parapet is required above the 2 hour common wall or two 1 hour fire resistant exterior walls constructed in accordance with Section R317.2.2</p>
**	<p><u>Exception:</u> A parapet is not required if the roof sheathing on each side of the separation walls is fire retardant treated for a minimum distance of 4' perpendicular to the separation walls.</p> <p style="text-align: center;">-OR-</p> <p>A parapet is not required if 5/8" Type x drywall is installed on the underside of the roof sheathing between the roof rafters/trusses for a distance of 4' perpendicular to the separation walls. The Type x drywall shall be held in place with continuous wood 2x2 ledgers nailed to the side rafter/trusses.</p>

	<p>The following exceptions shall apply to single family dwellings, townhouses or two-family dwellings (with or without property lines):</p> <ol style="list-style-type: none"> 1. Crawl space vents are allowable openings in all walls, regardless of the fire separation distance. 2. Bay windows, box windows ,and similar projections on walls perpendicular to the property line (both cantilevered and foundation supported designs) shall be considered as part of the main house wall they project from if all of the conditions are met: <ol style="list-style-type: none"> a. The bay or box window projection from the main house does not exceed 2'. b. The main house wall that the bay or box window unit has a minimum fire separation distance of 7', and c. The side/end portion of the bay or box window unit is greater than 3' to the side lot line or imaginary line between structures that is basically 90 degrees \pm to the main house wall that the bay or box window is within. (Distance is measured perpendicular to the window unit from the closest edge of window unit to the lot line or imaginary line)
<p>R315 ></p>	<p>Interior finish materials shall not have a flame spread rating exceeding 200 or a smoke development index exceeding 450.</p>
<p>R318.1 R703.2 R702.4.3 Policy > **</p>	<p>In all framed walls, floors, and roof/ceilings comprising elements of the building thermal envelope, a vapor retarder shall be installed on the warm-in winter side of the insulation. Exception: A vapor retarder shall not be installed under water-resistant gypsum backer board in shower or bathtub compartments.</p>
<p>> R702.4.2 **</p>	<p>Water resistant Gypsum backer board used as a base for tiles or wall panels in bathtub and shower compartments must <u>not</u> be applied over a vapor barrier. Water resistant gypsum backing board shall be permitted to be used on ceilings where framing spacing does not exceed 12 inches on center for ½" thick or 16 inches for 5/8" thick gypsum board.</p>
<p>B1406.3.6</p>	<p>Weather- resistant sheathing paper (Asphalt saturated felt 14# per square otherwise known as Type I felt, Tyvek, Typar, or other approved weather resistant material) shall be installed under certain types of siding and brick/stone veneer listed in Table R703.4 Exceptions: 1. For masonry veneer, a weather-resistant membrane is not</p>

<p>R703.7.6</p> <p>R703.7**</p> <p>R703.4.1.1</p> <p>R703.7.4.1 ></p>	<p>required over water-repellent sheathing materials when a 1" air space is provided between the veneer and the sheathing. When the 1" space is filled with mortar, a weather-resistant membrane is required over the sheathing.</p> <p>2. Vinyl or horizontal aluminum siding</p> <p>Brick veneer walls require weepholes at least 3/16" in diameter spaced less than 33" apart.</p> <p>Maximum height above the foundation for brick veneer is 30'-0" and 38'-0" at the gable of one and two family. Braced wall panel lengths in all stories except the top story of a townhouse shall have 50% more (1.5 times) bracing than the amount of bracing required by Table R602.10.1 to achieve brick veneer heights of 30'-0" and 38'-0" at the gable.</p> <p>Brick veneer anchors around openings larger than 16" in either direction shall be spaced a maximum of 3'-0" o.c. maximum around the perimeter of and within 12" of the opening.</p> <p>Brick veneer shall be anchored to the supporting wall with No. 22 gage by 7/8" ties placed not more than 24" on center horizontally and vertically and shall support no more than 2.67 square feet of wall area. Exception: Brick veneer anchorage on townhouses shall be placed so each tie supports are no more than 2 square feet of brick veneer</p>
<p><u>INSULATION</u></p>	
<p>Policy</p> <p>></p> <p>R316.1</p> <p>R314.1.2 ></p> <p>R314.2.5</p> <p>R314.2.3</p> <p>R314.3</p>	<p>Indicate type, thickness and "R" values of all insulating materials.</p> <p>If batt or blanket insulation, including facings such as vapor retarders or other vapor permeable membranes are left exposed (in areas like unfinished basements), the material shall have a flame spread rating of 25 or less and a smoke development rating of 450 or less. Flame-spread and smoke-developed limitations do not apply to facings that is installed in substantial contact with the unexposed surface of the ceiling, floor, or wall finish.</p> <p>All foam plastic insulation shall be separated from the interior of the building by a thermal barrier of 1/2" gypsum wallboard.</p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> 1. Foam plastic having a maximum thickness of 1/2" when used as siding backer board may be separated from the interior of the building by not less than 2" of mineral fiber insulation instead of the thermal barrier. 2. Foam plastic within an attic or crawl space may be protected by 1 1/2-inch thick mineral fiber insulation, 1/4-inch-thick wood structural

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<p>R314.1.1 ></p>	<p>panel, 3/8-inch thick particleboard or hardboard, 3/8-inch gypsum wallboard, or corrosion-resistant steel having a base metal thickness of 0.016 inch each instead of the thermal barrier.</p> <p>All foam plastics shall have a flame spread rating of 75 or less and a smoke development rating of 450 or less.</p>
	<p><u>FIREBLOCKING</u></p>
<p>R602.8** ></p>	<p>Top and bottom of all conventional, double stud, furred spaces, and staggered stud frame walls are to be fireblocked vertically at the ceiling and floor levels and horizontally at intervals not exceeding 10'.</p>
<p>R602.8 ></p>	<p>Fireblocking required at all soffits and dropped ceilings.</p>
<p>R602.8 R311.2.2 ></p>	<p>Fireblocking required between stairway stringers at the top and bottom of the run. Enclosed accessible spaces under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with ½ " gypsum board.</p>
<p>R602.8 ></p>	<p>Fireblocking required around vent, pipe, and duct penetrations of ceilings and floors.</p>
<p>R602.8 R1001.16 R602.8.1</p>	<p>Fireblocking required at the dwelling unit separation line of the cornices of two family dwellings and townhouses.</p> <p>All spaces between the chimney and the floors and ceilings the chimney passes through shall be fireblocked (1" depth of batt or blanket of mineral wool or glass fiber supported by strips of metal or metal lath).</p>
	<p><u>DRAFTSTOPPING</u></p>
<p>R502.12** ></p>	<p>Ceilings suspended below wood joists or attached directly to wood floor trusses shall be draftstopped at 1000 sq. ft. intervals and parallel to main framing members.</p>
	<p><u>ATTIC AND CRAWL SPACE ACCESS</u></p>
<p>R408.3</p>	<p>A 16" x 24" minimum wall access opening is required for crawl spaces. Refer to Section M1305.1.4 for access opening size when an appliance is located with the crawl space.</p>
<p>R807.1</p>	<p>A 22" x 30" minimum access opening required for attic areas which exceed 30</p>

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	square feet and have a clear height of over 30". The access shall be installed in a hallway or other accessible location. 30" minimum headroom is required at some point vertically above the access opening. Refer to Section M1305.1.3 for access opening size when an appliance is located in the attic.
	<u>LIGHT AND VENTILATION / EMERGENCY ESCAPE</u>
Policy	Indicate size of all windows and sill height above floor on elevation and/or plan views.
R303.1	Glass area in habitable and occupiable rooms shall not be less than 8% of floor area served. One-half of this area must be openable for unobstructed ventilation with screens included.
Policy R310.1 R310.6	<p>All basements with a habitable area, basements with a bathroom or rough in plumbing for a future bathroom, and each bedroom must have one window for emergency escape meeting the following minimums:</p> <p style="padding-left: 40px;">Maximum height to bottom of clear opening - 44" Minimum clear opening width - 20" Minimum net clear opening height - 24" Minimum net clear opening area - 5.7 sq. ft. (The net clear opening dimension shall be obtained by the normal operation of the window from the inside.)</p> <p style="padding-left: 40px;"><u>Exception:</u> Grade floor windows are permitted to have a minimum net clear opening of 5.0 sq. ft.</p> <p>Compliance with the above emergency escape requirement must be indicated by one of the following methods: (Simply showing the rough frame opening for windows is specifically not acceptable).</p> <ol style="list-style-type: none"> 1. A window schedule showing net clear window opening, net glass area and window type and keyed to specific location in the normal manner, or 2. Net clear opening, net glass area and window type may be shown at each location on the plans, or 3. A specific manufacturer may be listed and its sizing code number may be indicated at each location on the plans.
R310.2	Window wells serving a basement emergency escape and rescue shall be a minimum of 9 square feet in horizontal area with a minimum horizontal projection width of 36". The window well shall also be large enough to allow the emergency escape and rescue opening to be fully opened.
R310.2.1	Window wells with a vertical depth greater than 44 inches shall have a permanent ladder or steps. The ladder, if applicable, shall be at least 12"

<p>Policy</p>	<p>wide, project a minimum of 3" from the wall and have rungs spaced not more than 18" on center vertically for the full vertical depth of the window well.</p> <p>A 36" high guard with no openings greater than 4" is required to separate a path, drive, walking surface within 24" of the high side of a window well greater than 48" in vertical depth. Window wells adjacent to a patio slab or deck shall be protected with this guardrail if the vertical depth of the well exceeds 30 inches. Window wells shall be placed in locations that do not require a guard completely around the well.</p>
<p>Policy</p>	<p>Window wells in excess of 48" in depth require structural calculations to verify the structure can retain soil of this height.</p> <p>Exception: Window wells that have an ICC-ES Research Report addressing the structural adequacy of the walls.</p> <p>See the Plumbing Section of this checklist for drain requirements in window wells.</p>
<p>R806**</p>	<p>Attic and enclosed rafter space ventilation (net free) area is to be at least 1/150 of the area served. Two remote vents required for each Attic/space (minimum).</p> <p><u>Exception:</u> Required ventilation area may be reduced to 1/300 where a vapor retarder having a transmission rate not exceeding 1 perm is provided on the conditioned side of the insulation, or if the gable or ridge vents are located in the upper 1/3 of the attic or enclosed rafter space and provide-50% to 80% of the required vent area with the balance of the required vent area is supplied by eave or cornice vents.</p>
<p>R806.3**</p>	<p>A 1" clearance between the top of the insulation and the bottom of the roof sheathing is required when ventilation is provided by eave or cornice vents.</p>
<p>R319.1 R408.1 R408.2 **</p>	<p>Foundation crawl spaces are to have a minimum clear height of at least 18" and shall be provided with vent openings located within 3' of each corner. The total vent area shall be at least 1/150 of the area served.</p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> 1. When an approved vapor barrier is provided over the surface of the ground the required vent area may be reduced to 10% of the above and the vents may have operable louvers. 2. Clear height may be reduced when preservative-treated or naturally durable wood is used for the framing and subfloor.
<p>R408.2 ></p>	<p>Enclosed attic, rafter and crawl space areas may be ventilated by a mechanical exhaust and supply air system of .02 cfm/sq. ft. of horizontal area. The ventilation systems shall operate continuously.</p>

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Policy	Unfinished basements and utility rooms require natural ventilation (net openable area) at the ratio of 1% of the square footage floor area served. Mechanical ventilation with outdoor air (not recirculated air) in accordance with the mechanical code may be substituted at a rate of .05 cfm/sq. ft. of area.
	<u>SAFETY GLAZING:</u>
<p>R308** ></p> <p>Policy</p> <p>R308.4**</p> <p>R308.4 Policy</p> <p>R308.4</p>	<p>Glazing installed in the following locations shall be tested and labeled in accordance with CPSC 16 CFR Part 1201 Standard as a Type I or II category (glazing in sliding doors; any glazing exceeding 9 square feet in area required to be safety glazing in accordance with one of the six categories listed below; and all glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs, and showers shall be a Type II category and noted as such on the Architectural plans):</p> <p>Indicate size of all windows, bottom edge of window height above the floor, and the horizontal distance from the edge of a window to a door where safety glazing might be required by the following conditions. Glazing in the following locations shall be safety glazing:</p> <ol style="list-style-type: none"> 1. Glazing in doors and any portion of a building wall or fence enclosing bathtubs, showers, hot tubs, whirlpools, saunas, steam rooms, spas, indoor or outdoor pools which is located 60" or less, measured horizontally, from the water's edge and less than 60" vertically above a standing surface. 2. Any glazing material adjacent to a door if the nearest vertical edge of the glazing material is within a 24" arc of either vertical edge of the door in a closed position and if the bottom edge of the glazing material is less than 60" above the floor. <ul style="list-style-type: none"> <u>Exceptions:</u> <ol style="list-style-type: none"> a. Where there is an intervening wall or barrier to prevent a person from striking the glazing while approaching the door. b. Glazing adjacent to a door serving a closet or storage area 3' or less in depth c. Decorative glass 3. Safety glazing is required for fixed or operable panels that meet all of the following: <ol style="list-style-type: none"> a.) individual pane greater than 9 sq. ft. and; b.) bottom edge less than 18" above floor and; c.) top edge more than 36" above floor and; d.) walking surface within 36" horizontally

<p>**</p> <p>R308.4</p>	<p>Exceptions:</p> <ul style="list-style-type: none"> i. Decorative glass. ii. 1 ½” protective bar is placed 34” to 38” above the walking surface. The bar shall be capable of withstanding a 50 pounds per linear foot load without contacting the glass. <p>4. All doors Exception: Decorative glass</p> <p>5. Glazing in hand or guard rails</p> <p>6. Glazing adjacent to stairways, landings, and ramps within 36” horizontally of the walking surface and less than 60” vertically above the plane of the walking surface.</p> <p style="text-align: center;">And</p> <p>Glazing adjacent to stairways within 60” horizontally of the bottom tread in any direction when the exposed surface of the glass is less than 60” above the tread nosing.</p> <p style="padding-left: 40px;">Exception: The glazing is protected by a guardrail or a handrail, including balusters or in-fill panels complying with the provisions of Sections 1012 and 1607.7 of the 2003 International Building Code and the glazing is located more than 18” horizontally from this guard or handrail.</p> <p>The following products and uses are specifically exempt from the standard for architectural glazing in hazardous locations:</p> <ul style="list-style-type: none"> 1. Louvered windows and jalousies 3/16” or greater in thickness and no longer than 48”. 2. Openings in doors through which a 3 inch diameter sphere is unable to pass.
	<p><u>SKYLIGHTS AND GLAZING SLOPED 15° OR MORE FROM VERTICAL</u></p>
<p>R308.6.2**</p>	<p>Each light or layer shall consist of any one of the following materials:</p> <ul style="list-style-type: none"> 1. laminated glass with 0.015” polyvinyl butyral interlayer for glass panes 16 square feet or less in area and located such that the highest point of glass is not more than 12 feet above a walking surface, or 2. laminated glass with 0.030” polyvinyl butyral interlayer for glass panes greater than 16 square feet in area or for smaller panes when located more than 12 feet above the walking surface. or 3. wired glass, or; 4. approved rigid plastic, or; 5. heat strengthened glass, or;

<p>R308.6.4</p>	<p>6 fully-tempered glass</p> <p>Screens shall be installed below sloped glazing which contains heat-strengthened glass, fully tempered glass or wired glass as the bottom layer. Screens shall be capable of supporting twice the weight of the glazing and have a mesh opening if no more than 1" x 1".</p> <p><u>Exception:</u> Screens not required if glazing:</p> <ol style="list-style-type: none"> 1. has no walking surface below it, or; 2. is fully tempered glass, a maximum of 3/16" thick, a maximum of 16 sq.ft., and a maximum of 12' above the walking surface, or; 3. is fully tempered glass, a maximum of 10' above the walking surface, and is 30° or less from vertical.
<p>R308.6.8</p>	<p>Skylights installed in roofs with slopes of less than 3 in 12 must be mounted on curbs at least 4" above the roof surface.</p>
<p><u>GARAGE - ATTACHED</u></p>	
<p>R309.2</p>	<p>Caution: Many Fire Dept./Dist. may have more restrictive requirements such as requiring type X listed drywall.</p> <p>½" gypsum board on garage side of the common house/garage wall(s) up to the underside of the roof sheathing, or up to a gypsum board garage ceiling.</p>
<p>R309.1</p>	<p>Door between house and garage shall be 1 3/8" solid core wood door, or 1 3/8" solid or honeycomb core steel door. A door between the garage and a sleeping room is not permitted.</p>
<p>R309.3</p>	<p>The floor shall be sloped to facilitate the movement of liquids toward the main vehicle entry doorway.</p>
<p><u>GARAGE – STORY ABOVE</u></p>	
<p>R309.2**</p>	<p>Ceilings/floor separating garage from dwelling shall be protected with 5/8" Type X Drywall.</p>
<p>R309.2**</p>	<p>Walls separating garage from dwelling shall be protected with 5/8" type X drywall</p>
<p>R309.2**</p>	<p>All bearing walls, beams, and columns supporting the floor/ceiling assembly must be protected with 1/2" drywall.</p>
<p>R309.1**</p>	<p>Door between garage and dwelling to be 1 3/8" solid core wood door or 1 3/8" solid or honeycomb core steel door. A door between the garage and a</p>

<p>R309.3</p>	<p>sleeping room is not permitted.</p> <p>The floor shall be sloped to facilitate the movement of liquids toward the main vehicle entry doorway.</p>														
	<p><u>ENERGY CONSERVATION</u></p>														
<p>N1101.3.2</p> <p>></p> <p>N1102.1</p>	<p>Window and door U-values shall be determined in accordance with NFRC 100-2001, and labeled or certified by the manufacturer, or shall be assigned the U-values listed in the International Energy Conservation Code Tables 102.5.2(1) and 102.5.2(2).</p> <p>Typical sections through the building must be provided indicating the type, thickness and "R" value of insulating materials. "U" values of the windows, doors, and skylights must be specified. (R-values indicated must be obtained by only the insulation material used, not by the total system).</p> <table data-bbox="440 926 1398 1178"> <tr> <td>Roof/Ceiling</td> <td>Min. R-30</td> </tr> <tr> <td>Wood Frame Walls & Band Joists/Boards</td> <td>Min. R-13</td> </tr> <tr> <td>Floor over unheated Crawl Space</td> <td>Min. R-19</td> </tr> <tr> <td>Concrete/Masonry Basement Foundation Walls For Finished Basement Areas</td> <td>Min. R-5 (full height)</td> </tr> <tr> <td>Concrete/Masonry Basement Foundation Walls For Unfinished Basement Areas</td> <td>Min. R-5</td> </tr> </table> <p><u>Exception:</u> Unfinished basements may have up to a maximum of 20% of the total basement wall area exposed above the outside finished grade/ground level as un-insulated concrete foundation walls. The foundation wall area above the outside grade/ground level that may be un-insulated is determined by the formula .20 times the basement wall height of all walls (including insulated exterior frame walls for walk-out basements and walls common to both basement and attached garages) times the perimeter of these basement walls. In unfinished areas the basement foundation wall insulation shall extend down to the basement floor slab or to a minimum of 24 inches below outside finished grade when the grade is above the floor slab elevation.</p> <table data-bbox="440 1619 1370 1688"> <tr> <td>Slab-On-Grade Floors</td> <td>Min. R-4.2 (unheated slab)</td> </tr> <tr> <td></td> <td>Min. R-6.2 (heated slab)</td> </tr> </table> <p><u>Note:</u> The insulation shall be along the perimeter of the foundation wall downward from the slab a minimum distance of 24" or horizontally under the slab for a minimum of 24". Slabs with ductwork below are considered heated slabs.</p> <p>Metal doors, except overhead garage doors, shall be insulated.</p>	Roof/Ceiling	Min. R-30	Wood Frame Walls & Band Joists/Boards	Min. R-13	Floor over unheated Crawl Space	Min. R-19	Concrete/Masonry Basement Foundation Walls For Finished Basement Areas	Min. R-5 (full height)	Concrete/Masonry Basement Foundation Walls For Unfinished Basement Areas	Min. R-5	Slab-On-Grade Floors	Min. R-4.2 (unheated slab)		Min. R-6.2 (heated slab)
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Slab-On-Grade Floors	Min. R-4.2 (unheated slab)														
	Min. R-6.2 (heated slab)														

	<p>Skylights shall be double glazed.</p> <p>Windows for natural ventilation of unfinished basements may be single glazed. All other windows shall comply with <u>one</u> of the following:</p>
	<ol style="list-style-type: none"> 1. Window areas $\leq 24\%$ of gross insulated frame wall area (entire building): <ol style="list-style-type: none"> a. Double glazed with $\frac{1}{2}$" minimum clear glass (overall thickness) in either vinyl, wood, fiberglass or aluminum w/thermal break frames, or; b. Window w/max. overall U value of 0.56. 2. Window areas $>24\% \leq 30\%$ of gross insulated frame wall area (entire building), provide <u>one</u> of the following: <ol style="list-style-type: none"> a. Double glazed with $\frac{1}{2}$" minimum clear glass (overall thickness) in either vinyl, wood, fiberglass or aluminum w/thermal break frames, plus <u>one</u> of the following: <ol style="list-style-type: none"> 1. Windows treated w/ Low-E film, or; 2. Exterior walls w/ min. $\frac{1}{2}$" insulated sheathing with a minimum R value of 3. b. Windows with a max. U-value of 0.51. 3. An energy calculation verifying compliance shall be provided if window areas exceed 30% of the gross insulated frame wall area for the entire building or if any part of the structure has insulation with less than the minimum allowable R value.
	<p><u>STAIRWAYS AND EXITS</u></p>
<p>R311.4.1</p> <p>R311.4.3</p> <p style="text-align: center;"> </p> <p>></p>	<p>Minimum size house entry door shall be 3' in width. Minimum width shall be provided by a single leaf in double leaf doors.</p> <p>All doors require a 3'x 3' landing a maximum of 1.5" below the door threshold. The landing is typically the deck or porch surface.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. A landing serving the primary means of egress (main entry door) of the house shall be a maximum of 7 $\frac{3}{4}$" below the door threshold as long as the door, other than the exterior storm or screen door, does not swing outward over the landing. 2. A landing serving a door not considered a primary means of egress (i.e. kitchen door leading to a deck) may be placed at the bottom of a stair consisting of two risers or less (8 $\frac{1}{4}$" maximum per rise) as long as the door, other than the exterior storm or screen door, does not swing outward over the stair. <p>Locks with thumb turns on the inside are permitted. Inside key operation is</p>

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R311.4.4	permitted provided the key can not be removed from the lock when locked from the inside.
Policy	Minimum clear width of an interior egress door leaf for bathrooms and habitable spaces (spaces used for living, sleeping, eating or cooking) is 28".
Policy	Minimum clear width of doors to or from stairways within the dwelling unit is 29 3/4". (2'-8" door leaf using side hinge hardware).
R311.5.1	Minimum clear width of stairways is 36".
R311.5.2	Minimum headroom clear height of stairways is 6'-8" measured vertically from the tread nosing and from the floor surface of a landing or platform.
Policy Table R301.5	Note number and size of stringers (2 x 12's minimum) and material used for treads. Stairs shall be designed for a 40 psf live load or 300 lb. concentrated load on 4 sq. inches at mid span of a tread; whichever produces the greater stress and deflections.
R311.5.3**	Maximum riser height is 8 1/4" and the minimum tread depth (measured horizontally from tread nose to tread nose) is 9". A 3/4" tread nosing is required on stairways with solid risers. Exception: Nosing is not required where the tread depth is 11"
R311.5.3.2	Stair winders must have 9" minimum tread depth at a point not more than 12" from the narrow end and be at least 6" in depth at the narrow end.
R311.5.3.3	Risers must be solid or have a toe board or other approved guard method which limits the riser opening to less than 4". Open risers without a toe board or other approved guard are prohibited. Exception: The opening between adjacent treads is not limited on stairs with a total rise of 30 inches or less.
R311.5.6** R312.1	Indicate at least one continuous handrail on stair plan and section at 34" to 38" above nosing for stairs with 4 or more risers.
R311.5.1	Handrails (and other projections below the handrail) shall not project more than 4 1/2" into the required stairway width.
Policy R311.5.6.3	Handrails shall meet either: 1. circular cross section with minimum diameter of 1 1/4" but not more than 2", or, 2. other approved shapes having a maximum allowable horizontal width of 2 1/4", maximum graspable perimeter dimension of 6 1/4",

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	<p>and a minimum 4" graspable perimeter dimension</p> <p><u>Note:</u> A large scale architectural cross sectional view shall be provided with critical dimensions for all shapes intended to comply with 2) above.</p>
R312.1**	<p>Guards along open-sided stairs with a total rise more than 30" shall be a minimum of 34" in height above the leading edge of the tread and minimum of 36" in height at the stair landings. Minimum 36" high guards shall be provided along balconies, areaways, mezzanines and open-sided walking surfaces where the difference in floor levels is more than 30"</p>
R312.2**	<p>Open guards shall have intermediate vertical balusters spaced less than 4" apart.</p> <p>Exception: Openings on the side(s) of a stair shall have balusters spaced less than 4 3/8" apart.</p>
R311.2.2	<p>Enclosed accessible space under stairs shall have walls, under stair surface, and any soffits protected on the enclosed side with 1/2" gypsum board.</p>
	<p><u>FIREPLACES</u></p>
<p>Policy R1001.1.1 R1003.9 **</p>	<p>Foundations for masonry fireplaces shall be of non-combustible materials. The foundation shall be a minimum of 12" in thickness and extend 6" beyond each side of the exterior dimensions of the chimney. Indicate the reinforcing in hearth haunch. The 4" (minimum) thick hearth and 2" thick (minimum) hearth extension shall be solid masonry or concrete.</p>
<p>Policy R1001.12 R1003.6 **</p>	<p>Minimum depth of masonry firebox to be 20". The throat shall not be less than 8" above the fireplace opening. The throat opening shall not be less than 4 inches in depth. The cross sectional area of the passageway above the firebox, including the throat, damper, and smoke chamber, shall not be less than the cross sectional area of the flue. Size of masonry fireplace and chimney flue to be determined per Section R1001.12. Indicate dimensions of fireplace opening width and height and distance from the floor of the firebox to the top of the chimney flue liner.</p>
R1003.5	<p>Masonry fireplace walls to have a minimum thickness of 8" of concrete or masonry including 2" of fire brick or 10" of unlined solid masonry or concrete.</p>
<p>R1003.11 R1001.15 **</p>	<p>Clearances to combustibles (framing/sheathing, etc.) from the exterior surface of the fireplace walls shall be 4" minimum from the back of the fireplace, 2" from the front and side of the masonry fireplace, and 2" minimum for the smoke chamber walls and chimneys.</p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Exposed combustible trim, edges of sheathing and siding, and

	<p>drywall may be placed against the masonry fireplace side wall and hearth extensions provided the combustibile edge is a minimum 12" from the firebox lining or flue lining. All wood wall, floor, and roof framing members shall maintain the minimum clearances.</p> <ol style="list-style-type: none"> 2. Combustible mantels or trim may be placed directly on the masonry fireplace front surrounding the fireplace opening provided the material is not within 6" of the fireplace opening. Combustible materials within 12" of the fireplace opening shall not project more than 1/8" for each 1" distance from the opening. 3. Chimneys located outside the exterior walls of the building with an 1" clearance to combustibile completely around the perimeter of the chimney, may have a 1" clearance to combustibles clearance when passing through the soffit or cornice. 4. Masonry chimneys equipped with a listed and labeled liner under UL 1777-98 that is installed in accordance with the manufacturer's installation Instructions. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL 127-99 and installed in accordance with the manufacturer's installation instructions are permitted to have combustibile materials in contact with the exterior surface.
<p>R1003.8 **</p>	<p>The walls of the throat and smoke chamber shall be a minimum of 8" of concrete or solid masonry or a total thickness if a 6" if lined with 2 inches of firebrick.</p>
<p>R1001.7 R1001.8 **</p>	<p>Masonry chimneys shall be constructed of 4" minimum solid masonry and shall be lined with:</p> <ol style="list-style-type: none"> A. A 5/8" clay flue liner meeting the requirements of ASTM C315-00. An air space equal to the thickness of the flue liner is required between the liner and the full masonry chimney. B. Listed chimney lining systems complying with UL 1777-98. C. Factory-built chimneys or chimney units listed for installation within masonry chimneys.
<p>R1003.7.1 **</p>	<p>A ferrous metal fireplace damper is required to be located a minimum of 8" above the fireplace opening.</p>
<p>M1307.1 R1003.10</p>	<p>Hearth sizes: Solid fuel with 6 sq. ft of opening or more - 1' - 8" minimum and 12" each side. Solid fuel with less than 6 sq. ft. of opening - 1' - 4" minimum and 8" each side. Gas fired - per manufacturers installation instructions.</p>
<p>R1001.6</p>	<p>Chimneys shall extend above the roof that they penetrate a minimum of 3'-0". Chimney outlets shall be at least 2'-0" higher than any portion of the building within 10' horizontally.</p>

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Policy	Indicate chimney locations on the exterior elevations.
Policy	All prefab metal fireplaces and stoves indicate manufacturer, make, and model number directly on the plan. Provide 1 copy of manufacturer's installation instructions and proof of testing by a nationally recognized testing agency.
Chapter 24 R1005 **	<p>Gas fireplaces, gas logs, and gas room heaters shall be installed in accordance with Chapter 24. Combustion air shall be provided in accordance with Section G2407.</p> <p>Factory-built or masonry fireplaces shall be equipped with an exterior air supply to assure proper fuel combustion. The air duct serving the exterior air intake and the interior air outlet shall be listed and installed in accordance with the manufacturer's installation instructions for both the factory-built and the masonry fireplace. The cross sectional area of the passageway shall be a minimum of 6 square inches but not more than 55 square inches unless otherwise noted in the installation instructions. The exterior air intake (covered with a corrosion resistant screen of ¼" mesh) may draw air from a naturally ventilated crawl space or attic. The interior air outlet may be located in the back or sides of the fireplace chamber or within 24 inches of the firebox opening on or near the floor. The interior air outlet shall be closable and designed to prevent burning material from dropping into a concealed combustible space. Exterior air intakes shall be installed below the level of the base of the firebox when the interior air inlet is installed inside the fireplace chamber.</p>
	<u>MINIMUM ROOM DIMENSIONS</u>
R304.2 & R304.3	All habitable rooms, except kitchens, shall have an area of not less than 70 square feet. and shall not be less than 7'-0" in any dimension.
R304.1	Every dwelling unit shall have at least one habitable room containing not less than 120 sq. ft. of floor area.
R305.1	<p>Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms, and basements shall have a minimum ceiling height of 7'-0".</p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> 1. Beams and girders (decorative or structural) spaced not less than 4 feet on center may project a maximum of 6" below the 7'-0" required ceiling height. 2. Ceilings in basements without habitable spaces may project to within 6'-8" of the finished floor; and beams, girders, ducts, or other obstructions may project within 6'-4" of the finished floor.

<p>P412.7</p> <p>Policy</p>	<p>3. Bathrooms shall have a minimum ceiling height of 6'-8" over the fixture and at the front clearance area for fixtures as shown in Figure R307.2. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6'-8" at the shower head above a minimum area of 7.2 square feet with no dimension less than 2'-6".</p> <p><u>Note:</u> Basements designed for possible future conversion to a finished basement shall have sufficient clearances to the floor joists, beams, girders, duct work, plumbing, electrical systems, etc. to accommodate a future ceiling installation including box-outs having the minimum required clear heights (depending on room/space usage) noted above.</p>
	<p><u>HEATING AND AIR-CONDITIONING AND GENERAL MECHANICAL</u></p>
<p>B107.5</p> <p>Policy</p> <p>M1601.1.2</p> <p>M1601.2.2</p> <p>M1801.1</p> <p>B2115.4</p> <p>G2427.5.3</p> <p>G2430.1</p> <p>Policy</p> <p>M1702.1</p> <p>M1702.2</p> <p>G2407.6.2</p>	<p>Heating and air-conditioning plans shall indicate furnace location, type (fan assisted induced draft or natural draft), source of combustion air (if applicable), flue sizes, duct layout and diffuser locations. A section detail shall be provided showing all gas appliances, flue sizes, connectors, lengths, heights, and clearance dimensions. Underground ductwork shall be rated for underground use. Underground metallic ducts without an approved protective coating shall be encased in 2" minimum of concrete.</p> <p>Vibration isolators shall be installed between mechanical equipment and metal ducts. Vibration isolators shall be fabricated from approved materials and shall not exceed 10" in length.</p> <p>Approved vent systems for appliances shall be sized, installed and terminated per manufacturer's installation instructions.</p> <p>Chimneys and flues (masonry and metal) shall extend above the roof that they penetrate a minimum of 3'-0". Chimney and flue outlets shall be at least 2'-0" higher than any portion of the building within 10' horizontally. Indicate chimney and flue locations on each floor level plan and in section.</p> <p>Gas appliances located in rooms or spaces whose volume is less than 50 cubic feet/1000 BTU/hr. input rating shall have combustion and ventilation air provided in accordance with the following: Using inside air: 1 sq. in. of free area shall be provided/1000 BTU/hr. each opening. Openings shall not be less than 100 sq. inches of free area. One opening shall be provided within 12" of the ceiling and one within 12" of the floor, no common ducts permitted. Combustion air may not be obtained from bedrooms.</p>

<p>G2406.2**</p>	<p>Using outside air: One opening shall be provided within 12" of the ceiling with a net free area of 1 sq. in/3000 BTU/hr.</p> <p>Appliances shall not be installed in a bedroom, bathroom or a storage closet.</p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> 1. The appliance is a direct vent unit obtaining all combustion air directly from outdoors, or; 2. The appliance is installed in a closet is used solely for appliances, the closet door is self-closing, solid and weather stripped, and combustion air is provided from outdoors.
<p>G2408.5 M1306 M1305.1 Policy</p> <hr/> <p>G2420.5 Policy ></p> <p>G2412.5 ></p> <p>M1307.3 Policy</p> <p>M1307.3.1 Policy</p> <p>G2439.1 G2439.5 Policy* M1501</p> <p>M1506 R303.3 Policy ></p>	<p>Minimum appliance clearance from combustibles is 18 inches, unless the <u>listed</u> manufacturer's installation instructions allow an alternate clearance dimension. A minimum of 30 inches of clearance is required at the front of the appliance for service.</p> <p>Each gas appliance shall have a gas shutoff valve and ground joint union. A sediment trap is required at each appliance or group of appliances.</p> <p>Interior gas piping located outside of the room of the served appliance shall be labeled at intervals of no more than 5 feet.</p> <p><u>Exception:</u> Black steel pipe does not need to be labeled.</p> <p>Fuel burning appliance (furnaces and water heaters) installed in a private garage shall have a clearance of 18" minimum (or higher where required by manufacturer) between finished floor level and the combustion chamber, and be protected from damage by pipe bollards or other approved method.</p> <p>Suspended fuel burning appliances located in private garages shall be installed with a minimum clearance of 6'-0" above the floor.</p> <p>Clothes dryer exhaust shall be independent of all other systems, and exhaust to the exterior through smooth, 4" min. diameter duct. Indicate the duct run on the plans. The maximum developed length of the duct shall be 25' (obtained by adding 5' for each 90° bend and 2.5' for each 45° bend to the length of the straight runs).</p> <p><u>Exception:</u> The maximum developed length may be extended to 55' if clearly labeled cleanouts are provided immediately after the 2nd elbow and at least every 15' of developed length thereafter.</p> <p>Residential bathrooms shall exhaust 50 CFM minimum to the exterior. It is <u>not</u> permissible to discharge exhaust to the attic.</p> <p><u>Exception:</u></p> <ol style="list-style-type: none"> 1. Half-baths without a tub or shower may exhaust to the

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<p>M1506.3 M1502.1 R303.1** R303.9 Policy > M1502.4</p>	<p>attic. 2. Half-baths without a tub or shower may substitute a window w/openable area of at least 4% of the floor area for an exhaust system.</p> <p>Kitchen ranges shall have a hood and downdraft exhausted to the exterior with a 100 CFM fan (intermittent use), or a 20 CFM fan (continuous use). Alternately, a listed, ductless range hood or openable window area equivalent to 4% of the kitchen floor area may be provided.</p> <p>Makeup air shall be provided during the operation of kitchen exhaust systems of 600 CFM or greater exhaust flow. The amount of makeup air shall be approximately equal to the amount of exhaust air. Makeup air shall be provided by gravity or mechanical means or both. For mechanical makeup air system, the exhaust and makeup air systems shall be electrically interlocked to ensure makeup air is provided whenever the exhaust system is in operation.</p>
	<p><u>ELECTRICAL</u></p>
<p>B107.5 Policy</p> <p>B1207.2 ></p> <p>R303.6 E 210-70 ></p> <p>R303.6 E 210-70</p> <p>E 210-8</p>	<p>Show location and capacity of electrical panel and location of all receptacles, lights, ceiling fans, exhaust fans and switches on the Architectural floor plans or indicate as a performance specification. Identify all 240 volt receptacles/circuits. Indicate which light and/or receptacles are controlled by which switches.</p> <p>Note: Electrical services of 600 amps and above require submission of riser diagram detailing the wiring from the service entrance to the sub panels.</p> <p>Interior stairways are to be provided with a minimum of 10 footcandles of light measured at every tread nosing. All exterior stairways serving the dwelling to have a minimum of 1 footcandle measured on the tread runs.</p> <p>Interior stairways shall have lighting controls at each floor level. Switches must be operable from the top and bottom of the stairway without traversing any step of the stairway.</p> <p>All exterior stairways serving the dwelling shall have lighting controlled by one of the following methods: <ol style="list-style-type: none"> 1. Controls inside the dwelling; or, 2. Automatically; or, 3. Continuously operated. </p> <p>Ground fault circuit-interruption protection shall be provided for all 125 volt,</p>

	<p>single phase, 15 and 20 ampere receptacles installed in the following locations:</p> <ol style="list-style-type: none"> 1. Bathrooms 2. Garages except ceiling mounted receptacle for garage door opener and grade-level portions of unfinished accessory buildings.. 3. Outdoors (including inside screened enclosures) 4. Unfinished basement areas and crawl spaces except for laundry circuit and single receptacle dedicated to sump pumps. 5. Receptacles intended to serve kitchen counter top surfaces. 6. Receptacles intended to serve the counter top surfaces of a wet bar that are located within 6'-0" of the outside edge of the wet bar sink.
<p>E210-12*</p> <p>E 210-52*</p> <p>></p> <p>></p>	<p>Arc-fault circuit interruption protection shall be provided for all circuits supplying power to bedrooms.</p> <p>Receptacles are required to be installed in the following areas:</p> <ol style="list-style-type: none"> 1. In all habitable rooms except bathrooms so that no space along a wall is more than 6'-0" from a receptacle. All wall spaces 2'-0" wide or greater require receptacles. Fixed panels of glass doors, fixed room dividers such as free standing bar-type counters or railings shall be included in the 6'-0" measurement. 2. In hallways of 10'-0" or more in length. (Foyer is an entry hallway.) 3. Kitchen and dining area counter top receptacles shall be supplied by at least 2 different 20 amp circuits. Receptacles shall be installed so that no point along the counter is more than 24" from a receptacle. All counter top areas 12" wide or greater separated by sinks, ranges or refrigerators shall be provided with receptacles. Receptacles installed face-up in counter work-surface are prohibited. At least one receptacle shall be installed to serve each island or peninsula counter space that is 24" x 12" or greater. 4. In bathrooms at least one wall mounted receptacle installed within 36" of each basin. 5. Outdoor receptacles (weather-proof type) installed at the front and back of the house, accessible to grade level and not more than 6'-6" above grade level. 6. At least 1 receptacle in laundry area supplied by a dedicated 20 ampere branch circuit. 7. At least 1 receptacle in unfinished basement areas and the garage in addition to the laundry receptacle. 8. Required receptacle outlets located in floors shall be within 18" of wall or fixed room divider and shall be installed in boxes listed for the purpose.
<p>E 210-70</p> <p>M1305.1.3</p>	<p>Lighting is required in the following areas:</p> <ol style="list-style-type: none"> 1. At least 1 wall switched lighting outlet shall be installed in every

<p>></p>	<p>habitable room, bathroom, hallway, stairway, attached garage, detached garage (with electrical power) and at exterior doors. Occupancy sensors may be used in addition to a wall switch or be equipped with a manual override and be located at the customary wall switch location.</p> <p>2. At least 1 lighting outlet and one receptacle are required in each attic, crawl space, basement or utility room that is used for storage or contains heating, air-conditioning or other equipment requiring servicing. The light switch shall be located at the point of entry.</p>
<p>E 410-8 > ></p>	<p>Lighting in clothes closets:</p> <ol style="list-style-type: none"> 1. The use of incandescent fixtures with open or only partially enclosed lamps and the use of pendant fixtures are prohibited. 2. Fixtures may be located only where there are the following minimum clearances to the nearest point of storage space: <ul style="list-style-type: none"> - surface mounted incandescent fixtures - 12" minimum. - surface mounted fluorescent fixtures and recessed fixtures - 6" minimum.
<p>E 240-24 E 110-26</p>	<p>Electrical panels:</p> <ol style="list-style-type: none"> 1. Electrical panels shall not be installed in bathrooms or clothes closets. 2. Lighting is required in the vicinity of the electrical panel. 3. Electrical panels in new construction shall not be installed in areas with less than 6'-6" headroom. 4. A minimum clearance of 3'-0" deep and 30" wide is required in front of electrical panels. Counters and cabinets cannot be installed under the electrical panel.
<p>E 410-4(d)</p>	<p>Lighting fixtures above bathtubs: No parts of hanging fixtures, track lighting and ceiling paddle fans shall be installed within 3'-0" horizontally of a bathtub, measured from the outside edge of the tub and 8'-0" vertically from the top of the tub rim.</p>
<p>E406.8[c]</p>	<p>Receptacles shall not be installed within a bathtub or shower space.</p>
<p>E250-138 E 250-140 ></p>	<p>Grounding: Receptacle outlets for ranges and clothes dryers must be a 3-pole with ground type.</p>
<p>E250-52 E250-53 ></p>	<p>If the underground metal water pipe is used as the grounding electrode, the connection must be made to the pipe within 5'-0" of the point of entrance to the building. A supplemental grounding electrode shall be provided as specified in NEC Sections 250-50 and 250-53.</p>

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	<u>PLUMBING</u>
B107. Policy 5	<p>Show location of kitchen sink(s), dishwasher, bar sink(s), lavatories, water closets, bathtubs, showers, hot water heater(s), floor drain(s), hose bibs, and all other plumbing fixtures on the architectural plans. Show location of plumbing chases.</p> <p>Show location of washer hose connection bibs and laundry standpipe.</p>
P609.2 >	Note that the water service pipe and the building sewer are to be a minimum of 10'-0" apart horizontally.
P610.8 P604.1 >	<p>Indicate the size of the water service line. The minimum size of the water service piping is 1" up to the first branch. Plastic water service piping shall terminate a -minimum of 10'-0" outside the foundation wall and metallic piping brought into the building up to the outlet of the house valve or the PRV outlet; whichever is further from the point of entrance to the building. Minimum water main pressure must be considered when sizing the water service piping.</p>
R307.2	<p>Showers and bathtub / shower enclosures shall have walls constructed of smooth, noncorrosive, nonabsorbent and waterproof materials to a height of not less than 6'-0" above the room floor level.</p>
R307.2	Shower floor surfaces to be smooth, noncorrosive, nonabsorbent and waterproof materials.
Policy	<p>Gutters and downspouts required on roof overhangs less than 36".</p> <p>Downspouts are <u>not</u> to be connected to a sanitary sewer.</p>
P1101.2 >	
P1101.5.2 P1101.7 >	Basement areaway drains and foundation drain tiles are <u>not</u> to be connected to a sanitary sewer.
P412.2.5	A floor drain is required for a water heater and must be within 15'-0" and in the same room.
P316.1.3	Lead-free solder is required on all copper water supply piping.
P1101.5 P1101.7 P1101.8	Window areaway drains less than 10 square feet in area shall be served by a 2" pipe drained to daylight or a sump pit served by an approved pump installation. Window areaway drains 10 square feet or greater but less than

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	100 square feet in area shall be served by a 3" pipe drained in the same manor. Areaways greater than 100 square feet require the drain to be sized in accordance with Table 11-2 of the Plumbing Code. The presence of a cover over the areaway does not negate the need for a drain.
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NOTE:

While the aforementioned items cover the major points for compliance relative to plan preparation / review with the Building Code, Mechanical Code, Electrical Code, and Plumbing Code, other items on the plans which are not in compliance with code requirements, or those needing clarification, will be indicated by the Plan Reviewer. Compliance with this list does not necessarily meet all code requirements that a Plan Reviewer may expect to see on a set of plans. It should also be emphasized that many code requirements are met through the field construction or installation / inspection process and are not necessarily reflected within the approved plan documents.

It is the applicant's responsibility to obtain all permits and approvals required in connection with the proposed work. In addition to St. Louis County Department of Public Works, applicant should check with the St. Louis County Department of Highways & Traffic, the sewer district, the fire district and the local municipality. Other enforcement agencies may have requirements more restrictive or in addition to those noted above.