



Mandatory and Optional Building Guidelines

SECTION 1:

INTEGRATED DESIGN

1-1

Green Development Plan MANDATORY

Using *Appendix A*, submit a Green Development Plan and Checklist that outlines the integrated design approach used for this development that demonstrates involvement of the entire development team. The plan must include the following:

- ✓ The name and role of members of the professional design and development team at the time of the application.
- ✓ A statement of the overall green development goals of the project and the expected/intended outcomes of addressing those goals.
- ✓ A description of the process that was used to select the green building strategies, systems and materials that will be incorporated into the project.
- ✓ A description of how each of the mandatory (and optional) items will be included in the project.
- ✓ Identification of which members of the design and development team are or will be responsible for implementing the green features.
- ✓ A description of follow-up measures to be taken through the completion of design, permitting, construction, occupancy and operation to ensure that the green features are included and correctly installed, and that the owners or tenants receive information about the function and operation of the features.

1-2

Applicant, Architect/Project Designer and/or Contractor Certification MANDATORY

The Architect/Project Designer, General Contractor, HVAC Contractor, and/or the Applicant are required to certify in writing at various stages of the development process their intention to comply and actual compliance with all MANDATORY Green Building Criteria as follows:

- ✓ Certification of Intent to Comply (*Appendix B*) at time of initial application – signed by Applicant and the Architect/Project designer.
- ✓ Certification of Compliance (*Appendix C*) at the end of construction – signed by Recipient, Architect/Project Designer, General Contractor and HVAC Contractor.
- ✓ HERS Index Certification – signed by HERS rater, Recipient and Architect/Project Designer.

1-3

Universal Design MANDATORY

- ✓ Wall Reinforcement – At least one bathroom within the same level where occupants enter their place of residence shall be provided with wood blocking installed within wall framing to support grab bars as needed. The wood blocking shall be located between thirty-three inches (33”) and

thirty-six inches (36") above finished floor. The wood blocking shall be located in all walls adjacent to a toilet, shower stall or bathtub.

- ✓ Switch Requirements – All wall switches controlling light fixtures and fans, shall be located at a height not to exceed forty-eight inches (48"). Height is determined from finished floor to center of switch.
- ✓ Receptacle Requirements – All receptacles shall be located at a height no less than fifteen inches (15") above the finished floor. Height shall be determined from finished floor to center of receptacle.

1-4

Universal Design OPTIONAL

- ✓ Interior Doors (2 Points)
All interior doorways within the same level where occupants enter their place of residence shall provide a minimum clear opening of thirty-two inches (32") when the door is open ninety degrees (90°), measured between the face of the door and the opposite stop.
- ✓ No-Step Entrance (3 Points)
Provide at least one building entrance that is an accessible entrance served by a ramp or a no-step entrance. A building entrance door must have a minimum net clear opening of thirty-two inches (32"). The entrance shall also have a five foot by five foot (5' x 5') landing for maneuvering space.
- ✓ Faucets (1 Point)
Install faucets that are single lever faucets that also meet the mandatory flow rates. Showerhead to be adjustable height removable head type which meets mandatory flow rates.
- ✓ Accessible Toilets (1 Point)
Install ADA toilets in all applications that are centered on at least 36" wide space with no less than 18" from the sidewall.
- ✓ Door Handles (1 Point)
Install lever-style handles on all interior and exterior door applications.
- ✓ Grab Bars (1 Point)
Install grab bars no less than twenty-four inches (24") in walls adjacent to toilet and in shower at a height of thirty-six inches (36") from the finished floor to the center of the bar.

SECTION 2:

SITE, LOCATION AND NEIGHBORHOOD

2-1

Smart Site Location – Proximity to Existing Development **MANDATORY**

Provide a preliminary site map with your application demonstrating that the development is located on a site with access to existing roads, water, sewers and other infrastructure within or contiguous (having at least 25% of the perimeter bordering) to existing development. Do not build on tracts of land that require installing a septic tank or a sanitary sewer or water line extension of 1,000 feet or greater from the property line of the tract being developed, or within critical potable watershed areas.

2-2

Smart Site Location – Protecting Environmental Resources **MANDATORY**

Do not locate new development, including buildings, built structures, roads or other parking areas, on portions of sites that meet any of the following:

- ✓ Land in a wetland or within 100 feet of wetlands, including isolated wetlands or streams. Maintain or establish riparian buffer using native vegetation where possible. Bike and footpaths are allowed if at least 25 feet from wetlands boundary.
- ✓ Land within 100 feet of critical slope area
- ✓ Prime farmland
- ✓ Public Parkland
- ✓ Land that is specifically identified as habitat for any species on federal or state threatened or endangered lists
- ✓ Land within the 100-year floodplain
- ✓ Land outside the corporate limits

2-3

Smart Site Location – Proximity to Services **MANDATORY**

Provide a preliminary location map with your application with exact distances indicating that the project is located within ¼ mile of at least 2, or ½ mile of at least four of the following facilities:

- ✓ Public transportation
- ✓ Supermarket
- ✓ Public school
- ✓ Library
- ✓ Licensed child care center
- ✓ Usable park space
- ✓ Bank
- ✓ Medical or Dental office
- ✓ Post office
- ✓ Convenience store
- ✓ Laundry/Dry cleaner
- ✓ Pharmacy
- ✓ Place of Worship
- ✓ Community or Civic center

2-4	Walkable Neighborhoods – Sidewalks and Pathways MANDATORY
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Connect the project to the pedestrian grid. Provide a preliminary site map with your application indicating that sidewalks or other all-weather pathways exist or were created within a multifamily property or single-family subdivision to link the residential development to public spaces, open spaces and adjacent development. Projects whose building entrances open directly on to a public sidewalk meet this requirement.

2-5	Compact Development OPTIONAL
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- ✓ Tier 1 Net Density (25 Points)
The Project Architect or Designer must complete a density calculation and certify its correctness. Net density for the multi-family units must be:
 - 6 Units per acre for detached or semi-detached houses OR
 - 10 Units per acre for townhomes OR
 - 15 Units per acre for apartments

- ✓ Tier 2 Net Density (30 Points)
The Project Architect or Designer must complete a density calculation and certify its correctness. Net density for multi-family units must be:
 - 7 Units per acre for detached or semi-detached houses OR
 - 12 Units per acre for townhomes OR
 - 20 Units per acre for apartments

2-6	Smart Site Location OPTIONAL
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- ✓ Adaptive Reuse (25 Points)
Locate the Project on a Grayfield, Brownfield or adaptive reuse site.

- ✓ Solar Heating/Cooling (5 Points)
Elongate the building within 15 degrees of due East-West. The glazing on the North- and South-facing walls should be at least 50% greater than the sum of the glazing area on the East- and West-facing walls. The roof should have a minimum of 450 square feet of south-facing area that is oriented appropriately for solar applications. At least 90% of the glazing on the south-facing wall should be completely shaded (using shading, overhangs, etc) at noon on June 21 and unshaded at noon on December 21.

- ✓ Bike parking (5 Points)
Install secured back racks in a paved area in locations with high foot traffic and visibility. The rack should be firmly secured to the ground and sturdy to resist disassembly.
- ✓ Public Transportation (7 Points)
Develop a public transportation kiosk or resource board that includes locations of transportation options as well as resources that provide information to encourage public transportation and local transportation options. The resource should provide transit locations and scheduling. The kiosk or resource board should be located in an area frequently visited by tenants such as common hallways or mail box area.
- ✓ Public Transportation Passes (10 Points)
Design and implement a program offering discounted public transportation passes to residents.
- ✓ ¼ Mile from Public Transportation (12 Points)
Provide a context map demonstrating that the site is within a ¼ mile radius of adequate* public transit services.
- ✓ ½ Mile from Public Transportation (6 Points)
Provide a context map demonstrating that the site is within a ½ mile radius of adequate* public transit services.

**adequate public transit service during peak periods is defined as 20 or more transit rides per weekday per qualifying transit services.*

SECTION 3:

SITE IMPROVEMENTS

3-1	Environmental Remediation MANDATORY
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Upon award of funds, conduct a Phase I Environmental Site Assessment and any additional assessments required to determine whether any hazardous materials are present at the site.

3-2	Erosion and Sedimentation Control MANDATORY
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All construction that disturbs one acre or more requires a stormwater general permit #2 from the Iowa Department of Natural Resources. Obtain authorization and follow the requirements of the permit including the development and implementation of a Stormwater Pollution Prevention Plan before site disturbance begins.

For projects disturbing less than one acre, implement EPA's Best Management Practices for erosion and sedimentation control during construction, referring to the EPA document, Stormwater Management for Construction Activities (EPA 8320R-92-005).

Erosion control measures must include the following:

- ✓ Stockpile and protect disturbed topsoil from erosion (for reuse);
- ✓ Control the path and velocity of runoff with silt fencing or comparable measures;
- ✓ Protect on-site sewer inlets, streams, and lakes with straw bales, silt fencing, silt sacks rock filters, or comparable measures;
- ✓ Provide swales to divert surface water from hillsides;
- ✓ If soils in a sloped area (25% or 4:1 slope) are disturbed during construction, use tiers, erosion blankets, compost blankets, filter socks and berms, or comparable approach to keep soil stabilized;
- ✓ No compaction inside the drip ring of existing trees and shrubs.

3-3	Landscaping MANDATORY
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Commit to proving a tree or plant list, to be certified by the Architect or Landscape Architect that the selection of new trees and plants are at least 50% native species, 100% appropriate to the site's soil and microclimate, and do not include invasive species. Limit application of non-native turf species.

3-4

**Surface Water Management
MANDATORY**

Provide a comprehensive surface water management plan which successfully captures, retains, infiltrates and/or harvests rainfall equivalent to up to 1.25" per rainfall event.

Iowa Stormwater Management Manual: www.ctre.iastate.edu/PUBS/stormwater/

3-5

**Storm Drain Labels
OPTIONAL**

(2 Points)

Assure the project plans specifications call for labeling of all storm drains or storm inlets to clearly indicate where the drain or inlet leads.

SECTION 4:

WATER CONSERVATION

4-1

Water-Conserving Fixtures MANDATORY

Install water-conserving fixtures with the following specifications:

- ✓ Toilets – 1.28 gallons per flush or better
- ✓ Showerheads – 1.75 GPM (gallons per minute) or better
- ✓ Kitchen faucets – 2.0 GPM or better
- ✓ Bathroom Faucets – 1.5 GPM or better
- ✓ No irrigation system

4-2

Energy Efficient Appliances MANDATORY

- ✓ Gas water heaters (up to 60 gallons) \geq 0.62 EF (energy factor)
- ✓ Gas water heaters (60-80 gallons) \geq 0.85 thermal efficiency
- ✓ Electric water heaters \geq 0.93 EF
- ✓ Energy Star[®] labeled ceiling fans (as applicable)

4-3

Water Efficient Design OPTIONAL

- ✓ Dual-flush Toilets (2 Points)
Install high-efficiency WaterSense qualifying dual flush toilets in all applications.
- ✓ Engineered Parallel Piping (3 Points)
Use parallel piping (manifold) system in all units using cross-linked polyethylene (PEX) pipe. Integrate the use of demand-controlled circulation loops.
- ✓ On-demand Water Heaters (2 Points)
Use on-demand portable water heaters in all applications.
- ✓ Central Core plumbing (3 Points)
Locate water heater within 15 feet (plan view) of all hot water fixtures in the unit.
- ✓ Rainwater Harvesting (4 Points)
Implement a rainwater harvesting system consisting of three elements: collection system, conveyance system and storage system. The system can be implemented for either roof or ground catchment and be used for source irrigation.

SECTION 5: ENERGY EFFICIENCY

5-1

Energy Efficient Use MANDATORY

Use a professionally certified third-party energy rater and Mortgage Industry National Home Energy Rating Standards to verify energy efficiency achievement of a HERS Index of 80. Prior to the start of construction plans must be reviewed and approved by a certified home energy rater to verify that the planned construction as per design and specification will meet or exceed the overall U-Value with a HERS Index of 80 or better established by the 2006 International Energy Conservation Code (IECC). An inspection must be completed pre-drywall by the energy rater to verify proper sealing and insulation practices.

An energy rating performed by a certified HERS rater is required on each building after it is completed to verify that actual construction meets the above listed requirements. In the event that the proposed construction does not meet the overall U-Value standards with a HERS Index of 80 or better, the rater will provide suggestions for corrections to plans and specifications that will ensure that IECC standards, overall U-Value standards and HERS Index of 80 or better will be met. An energy audit performed by a certified home energy rater is required on each building after it is completed to verify that actual construction meets the above listed requirements.

In addition, use a professionally certified third-party energy rater to document that the HVAC system was installed correctly by measuring and documenting that the actual BTU delivery is 90% or greater of the system's rated output capacity. Use of the installed efficiency testing standard, System Efficiency Ratio (SER), of the National Comfort Institution is recommended.

www.energystar.gov

5-2

Energy Star and Energy Efficient Appliances MANDATORY

If providing appliances, install Energy Star refrigerators, and washer/dryers with built in moisture sensors. When the energy performance of the home is modeled to produce a HERS Index for 5-1, the model should include the appliances and the HERS Index should reflect this.

If not providing appliances, provide information on purchasing Energy Star appliances in the occupant manual.

5-3

Efficient Lighting MANDATORY

Install the Energy Star® Advanced Lighting Package in all interior units, and the use of Energy Star® or high-efficiency commercial grade fixtures in all common areas and outdoors. Install daylight sensors or timers on all outdoor lighting. Design and install outdoor lighting to eliminate light trespass from the building and site and to minimize impact on nocturnal environments.

The following lighting types are exempt from this requirement: emergency lighting, lighting required by code for health and safety purposes; lighting used for eye adaptation near covered vehicle entrances and exits.

5-4	HVAC MANDATORY
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Size heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manual, Parts D, J and S, ASHRAE handbooks, or equivalent software to prevent short-cycling of heating or air conditioning and ensure adequate dehumidification. Seal all ductwork with mastic or UL 181 foil tape.

Minimum standards for HVAC System Equipment:

- ✓ Gas Furnaces \geq 92% AFUE
- ✓ Electric furnaces (forced air, air-source heat pumps) \geq 8.5 HSPF
- ✓ Electric furnaces (ground source heat pumps) \geq 3.3 COP
- ✓ Air conditioning units (forced air, air-source heat pumps) \geq 14 SEER
- ✓ Closed loop geothermal = EER 14.1 and COP 3.3
- ✓ Open loop geothermal = EER 16.2 and COP 3.6
- ✓ Energy Star[®] labeled ventilation fan units in all bathrooms.

5-5	Energy Efficient Building Components MANDATORY
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- ✓ Attic insulation \geq R-49
- ✓ Exterior Walls \geq R-19 or R-13+5
- ✓ Floor (above unheated space) \geq R-30
- ✓ Rim joist \geq R-19
- ✓ Slab \geq R-10 or greater under edge
- ✓ Low-E Energy Star[®] labeled windows for Northern climate with 0.35 U-Factor rating or less.
- ✓ Energy-heel (raised heel) roof truss systems
- ✓ Roofing Products \geq 30 year life

5-6**Electric and Gas Meters
OPTIONAL**

(2 Points)

Install individual or sub-metered electric and gas meters. Provide energy use analysis to tenants to promote awareness of energy use and methods of decreased energy use.

5-7**Additional Reductions in Energy Use
OPTIONAL**

(1 Point per percent increase)

Exceed the relevant Energy Star HERS Index of 80 for low-rise residential buildings or ASHRAE 90.1-2004 by more than 20 percent.

5-8**Renewable Energy
OPTIONAL**

- ✓ Photovoltaic Panels (5-15 Points; 5 points are given for each additional 10 percent)
Install photovoltaic (PV) panels, solar assisted hot water heating or domestic hot water or other renewable source to provide at least 10 percent of the project's estimated energy demand. Describe whether the installed renewable energy system will benefit common space, occupant space, or both and how the renewable energy system will benefit the owner and occupants.
- ✓ PV Ready (2 Points)
Site, design, engineer and wire the development to accommodate installation of PV in the future. General contractor and PV contractor must document the following: 1) information on the roof load; 2) location of conduit and 3) the potential location of the dash box. General contractor and PV contractor must provide documentation to the building owner and manager.

5-9**Energy Efficient Building Design
OPTIONAL**

- ✓ Advanced Framing (5 Points)
Incorporate the use of Optimum Value Engineering (OVE) advanced framing techniques that meet all applicable codes.
- ✓ SIPS Wall Systems (4 Points)
Use structural insulated panel system (SIPS) in exterior wall applications.
- ✓ Post-occupancy Sensors (3 Points)
Use post-occupancy sensors in all livable room lighting fixtures.

- ✓ Use non-HCFC refrigerant (3 Points)
Use advanced refrigerant such as R-410A in all air conditioning units.
- ✓ 16 SEER Units (5 Points)
Use 16 SEER Air Conditioning units or greater in all air conditioning units.
- ✓ Radiant Hydronic Space Heating (5 Points)
Combine domestic water heating with high efficiency radiant hydronic system for space heating.
Installations include: slab-on-grade, thin-slab, and baseboard applications.

SECTION 6: MATERIALS BENEFICIAL TO THE ENVIRONMENT

6-1	Construction Waste Management MANDATORY
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Reduce the amount of construction waste sent to the landfill. Investigate and document local options for diversion (recycling, reuse, etc) of all anticipated major constituents of the project waste stream, including cardboard packaging and “household” recyclables (e.g. beverage containers). Commit to following a waste management plan that is appropriate for the site and local conditions, and that prevents, cycles or salvages at least 25 percent of non-hazardous construction debris. Projects may base their prevention and recycling amounts on the National Association of Home Builders’ Research Center’s industry average of 4.2 pounds of waste per conditioned square foot. See the table below to calculate debris prevention and recycling for home projects.

AMOUNT TO LANDFILLS AND INCENERATORS			
Reduced Construction Waste		Increased Waste Diversion	
Pounds/ft²	Cubic Yards/1,000 ft²	Percentage Waste	Percentage Diverted
4.0	25.5	100	0
3.5	22.3	88	12
3.0	19.1	75	25
2.5	15.9	63	37
2.0	12.8	50	50
1.5	9.6	38	62
1.0	6.4	25	75
0.5	3.2	13	87

(Source: “Table 27: Waste Diversion,” *LEED for Homes Rating System*, pg. 84)

6-2	Durable and Low Maintenance Exteriors MANDATORY
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Specify durable siding materials such as masonry or fiber-cement to reduce or eliminate rot and reduce need for painting. Use at least 25% reclaimed materials or recycled content materials such as brick, framing lumber, recycled concrete and aggregates, and fly as concrete OR select long lived non-toxic materials such as brick or cement fiber siding.

6-3	Reducing Heat-Island Effect OPTIONAL
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- ✓ Roofing (5 Points)
Use Energy Star®-compliant (reflectivity of greater than 0.65) and high-emissive roofing (with an emissivity of at least 0.8 when tested in accordance with ASTM 408).
- ✓ Vegetative Roof (5 Points)

Install a “green” (vegetative) roof for at least 50 percent (50%) of the roof area. Combinations of high-albedo and vegetated roof can be used, providing they collectively cover 75 percent (75%) of the roof area.

✓ **Paving** (5 Points)

Use light-colored, high-albedo materials, and/or an open-grid pavement, with a minimum Solar Reflective Index of 0.6, over at least 30 percent (30%) of the site’s hardscaped area.

6-4

**Construction Waste Management: Additional Diversion
OPTIONAL**

(5 points per 25%)

Reduce the amount of construction waste sent to the landfill by an additional 25 percent or more

6-5

**Recycled Content Material
OPTIONAL**

(2 Points, plus 2 points for each additional 5% increment, not to exceed 14 points)

The percentage of recycled-content building material is based on cost or value (if using salvaged/reused materials) and does not include mechanical and electrical equipment. Provide calculations for recycled content percentages as follows:

- ✓ For a given material or furnishing, multiply the recycled-content percentage by weight (post-consumer or post-industrial) by the value of the product to find the value of the recycled content for that item.
- ✓ Add up the values of the recycled content of all the materials and furnishings.
- ✓ Divide this sum by the total value of the materials for the project.

6-6

**Certified, Salvaged and Engineered Wood
OPTIONAL6.5**

(5 Points)

Commit to using at least 25% (by cost) wood products and materials that are certified in accordance with the Forest Stewardship Council, salvaged wood, or engineered framing lumber. The percentage of certified, salvaged and engineered wood products is based on cost value. The project architect or designer must complete and submit the following calculation: divide the sum of the value of all certified wood, salvaged or engineered wood products by the value of all wood products.

SECTION 7: HEALTHY LIVING ENVIRONMENT

7-1	Low/No VOC's MANDATORY
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- ✓ Specify that all interior paints and primers must comply with current Green Seal Standards for low VOC limits (in grams/Liter):
 - Flats50
 - Non-Flats50
- ✓ Specify pre-finished products or low VOC stains, varnishes and lacquers.
- ✓ Specify that all adhesives must comply with Rule 1168 of the South Coast Air Quality Management District VOC limits (in grams/Liter):
 - Indoor Carpet Adhesives50
 - Carpet Pad Adhesives50
 - Outdoor Carpet Adhesives 150
 - Wood Flooring Adhesive 100
 - Rubber Floor Adhesives60
 - Subfloor Adhesives50
 - Ceramic Tile Adhesives65
 - VCT and Asphalt Tile Adhesives50
 - Dry Wall and Panel Adhesives50
 - Cove Base Adhesives50
 - Multipurpose Construction Adhesives 70
 - Structural Glazing Adhesives 100
 - Single Ply Roof Membrane Adhesives250

7-2	Urea Formaldehyde-free Composite Wood MANDATORY
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Use Particleboard and MDF that is certified compliant with the ANSI A208.1 and A208.2. If using composite wood that does not comply with ANSI, all edges and sides must be sealed with low-VOC sealants.

7-3	Green Label Certified Floor Coverings MANDATORY
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Do not install carpets in entryways, laundry rooms, bathrooms, kitchens or utility rooms. If using carpet in other rooms, use products that meet the Carpet and Rug Institute's Green Label certified carpet, pad and carpet adhesives. Green Label Plus certified carpet, pad, and carpet adhesives also meet this criterion and are encouraged.

7-4**Ventilation
MANDATORY**

- ✓ Install Energy Star® labeled bathroom fans that exhaust to the outdoors and are connected to a light switch and are equipped with a humidistat sensor or timer, or operate continuously. If using a heat recovery ventilator or energy recovery ventilator connect the exhaust fan to the heat recovery or energy recovery ventilator system.
- ✓ Install Energy Star® power vented fans or range hoods that exhaust to the exterior.
- ✓ Install a ventilation system for the dwelling unit providing adequate fresh air per ASHRAE 62.1 – 2007 for buildings above 3 stories or ASHRAE 62.2 for low-rise multi-family dwellings.

7-5**Mold Prevention
MANDATORY**

- ✓ Install conventional hot water heaters in rooms with drains or catch pans with drains piped to the exterior of the dwelling and with non-water sensitive floor coverings or use tankless water heaters. Drain pans shall be sloped and corrosion resistant with drains at the lowest point. Condensation lines shall be drained into the drainage system – not deposited under the slab.
- ✓ Insulate exposed cold and water pipes in climates and building conditions susceptible to moisture condensation.
- ✓ In wet areas, use materials that have smooth, durable, cleanable surfaces. Do not use mold propagating materials such as vinyl wallpaper and unsealed grout.
- ✓ Use fiberglass or similar tub/shower enclosure, if using any form of grouted material, use backing materials such as cement board, fiber cement board or equivalent (i.e. non paper faced).

7-6**Basements and Concrete Slabs – Vapor Barrier
MANDATORY**

- ✓ Provide vapor barriers under all slabs
- ✓ For concrete floors either in basements or the on-grade slab, install a capillary break of 4 inches of clean or washed gravel placed over soil.
- ✓ Cover all gravel with a 6 millimeter polyethylene sheeting moisture barrier, with joints lapped 1 foot or more to prevent moisture from migrating through the slab.
- ✓ Install at least 1” of extruded polystyrene below the slab in addition to the vapor barrier to control mold growth.
- ✓ On interior below-grade walls, avoid using separate vapor barrier or a below-grade vertical insulation that can trap moisture inside wall systems. Semi-vapor permeable rigid insulation is not considered a vapor barrier.

7-7**Radon Mitigation
MANDATORY**

Install appropriate radon mitigation system appropriate for the size and scale of the project per local codes or those found in 2006 International Residential Code “Radon Control Methods.”

7-8**Water Drainage
MANDATORY**

Provide drainage of water away from walls, windows and foundations using the following methods:

✓ Water Management – Walls

Provide housewrap/weather resistive barrier with sheets lapped, shingle style, especially over windows, doors and other penetrations to prevent infiltration of water from behind cladding system.

Provides a pathway for liquid water that has penetrated the cladding system or accumulates due to daily or seasonal changes in thermal and humidity levels behind the cladding system to safely exit the exterior wall assembly

Flashing and/or weather-resistive barriers installed in rough window and door openings must integrate with window and door unit flashings, particularly at the sill and head OR

Install pan flashing, side flashing that extends over pan flashing, and Head Flashing (top flashing) that extends over side flashing on windows and exterior door openings. Apply window pan flashing over building paper at sill and corner patches.

Flashings at roofs wall intersections and at penetrations through the wall (i.e. plumbing, electrical, vents, HVAC refrigerant lines, etc.) that are provided by other trades must be integrated with the drainage plane to keep water from entering the wall assembly.

✓ Water Management - Roof Systems

Installation of drip edge at entire perimeter of roof

Flashing where sloped roofs meet gable wall end/all vertical wall integrated into building drainage plane

Use of kick-out flashings at all wall eave intersections integrated into drainage plane

At wall/roof intersections maintain ≥ 2 " clearance between wall cladding and roofing materials

✓ Integrity and Continuity of the Thermal Barrier

The drainage plane, when properly sealed, can also reduce airflow through the wall assembly, which improves the thermal performance of the cavity insulation.

7-9**Garage Isolation
MANDATORY**

- ✓ Provide a continuous air barrier between the conditioned (living) space and any unconditioned garage space to prevent the migration of any contaminants into the living space.
- ✓ Do not install HVAC equipment in a garage unless required by code.
- ✓ All connecting doors between living space and garage shall include an automatic closer, and shall be fixed with gaskets or otherwise made substantially air-tight with weather stripping.
- ✓ In single-family houses install a CO alarm inside the house on the wall that is attached to the garage and outside the sleeping area.

7-10**Clothes-Dryer Exhaust
MANDATORY**

Clothes dryers must be exhausted directly to the outdoors with a rigid type vent or via a heat or energy recovery ventilation system if applicable and appropriate.

7-11**Integrated Pest Management
MANDATORY**

Seal all wall, floor and joint penetrations with low VOC caulking to prevent pest entry. Provide rodent and corrosion proof screens (e.g., copper or stainless steel mesh) for large openings.

7-12**Combustion Equipment
MANDATORY**

Specify power vented or combustion sealed equipment. One hard-wired carbon monoxide (CO) detector shall be installed for each sleeping area, minimum one per floor.

7-13**Air Quality
OPTIONAL**

- ✓ Non-vinyl, non-carpet (5 Points)
Use non-vinyl, non-carpet flooring in all rooms of each unit. Alternative flooring might include: linoleum, laminate, ceramic tile, bamboo, cork, wood, or rubber
- ✓ Smoke-free Building (2 Points)
Implement and enforce a “no smoking” policy in all common and individual living areas of the building. Common areas include rental or sales offices, entrances, hallways, resident services areas, and laundry rooms.

SECTION 8:

OPERATIONS AND MAINTENANCE

8-1

Owner's Manual MANDATORY

Provide a manual that includes the following: a routine maintenance plan, operations and maintenance guidance for all appliances, HVAC operation, water-system turnoffs, lighting equipment, paving materials and landscaping, pest control, and other systems that are part of each occupancy unit. Also include an occupancy turnover plan that describes in detail the process of educating the tenant about proper use and maintenance of all building systems.

8-2

Occupant's Manual MANDATORY

Provide a guide for renters that explains the intent, benefits, use and maintenance of green building features and native landscaping along with the location of transit stops and other neighborhood conveniences and features, and encourages additional green activities such as recycling, gardening, use of healthy cleaning materials, alternative measures to pest control, and purchase of green (renewable) power from their local energy provider.

8-3

New Resident Orientation MANDATORY

Provide a comprehensive walk-through and orientation to the new resident using the Occupant Manual listed in 7-2 reviewing the building's green features, operations and maintenance, along with neighborhood conveniences that may facilitate a healthy lifestyle.

8-4

Recycling Program MANDATORY

Provide a comprehensive recycling program consistent with the City's recycling and solid waste ordinances. The comprehensive plan to include one of the following options:

- ✓ Recycling containers adjacent to garbage bins located outside the building that are clearly labeled and easily accessible for collection
- ✓ Collection containers inside the units providing a single disposal area for garbage and recyclables. Provide easily cleanable surfaces and keep the areas maintained, dirty or unsightly recycling and trash discourage people from using them and attract vermin.
- ✓ Provide recycling bins inside each unit that are clearly labeled easily accessible
- ✓ Incorporate trash and recycling chutes in an easily accessible common area and are clearly labeled. Specify round chutes to avoid materials jamming and creating backup. The bins in the trash room are either rolled to a pick-up point by maintenance staff or to the collection truck by the driver. Use durable, easy-to-clean wall and floor finishes in the collection area.

REFERENCES

- ✓ Build it Green: Multi-family Green Building Guidelines 2008-2011 Edition -
http://www.builditgreen.org/system/files/uploads/GreenPoint%20Rated/Guidelines_checklists/2008%20Multifamily_Guide%20Low%20Part%201.pdf

- ✓ Energy Star: www.energystar.gov

- ✓ Green Communities Criteria 2008 -
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