

OPAL Community Land Trust
GREEN BUILDING GUIDELINES
Adopted March 10, 2005

INTRODUCTION

Goals and Purpose:

OPAL Community Land Trust is committed to developing land in a manner that provides for wildlife as well as human life, and to building attractive and affordable structures that are healthy for inhabitants, conserve natural resources, use well-established best-practices, minimize the use of fossil fuels, can be easily maintained by households with low incomes, and that if well maintained will last at least 200 years.

These Green Guidelines provide a checklist of methods and materials that OPAL shall adhere to. OPAL shall evaluate these guidelines¹ regularly and systematically and incorporate new methodologies when they are well-tested and affordable.

Definitions:

OPAL's Green Guidelines rank methods and materials into four categories:

1. *Standard Procedures* shall be those practices that are implemented in every circumstance.
2. *Alternative Procedures* shall be those practices that will be implemented when appropriate to a location or situation.
3. *Best Practices* shall be those practices that OPAL strives to achieve whenever possible, but that are not standard practices because of cost.
4. *Research and Development* shall be an appendix to this document and shall identify those items that OPAL does not yet understand enough, but which OPAL is interested in evaluating.

Guiding Principles for Community Development

OPAL shall follow the "Smart Growth" Principles as articulated by the National Neighborhood Coalition's Smart Growth Network www.neighborhoodcoalition.org. These are:

1. Create a range of housing opportunities and choices.
2. Create walkable neighborhoods.
3. Encourage community and shareholder collaboration.
4. Foster distinctive, attractive places with a strong sense of place.
5. Make development decisions predictable, fair, and cost effective.
6. Mix land uses.
7. Preserve open space, farmland, natural beauty, and critical environmental areas.
8. Provide a variety of transportation choices.
9. Strengthen and direct development towards existing communities.
10. Take advantage of compact building design.

¹ OPAL has incorporated many standards from the following organizations and shall continue to monitor these groups for their latest research findings: U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design), the National Association of Homebuilders' Model Green Building Guidelines, and the Master Builders Association of King and Snohomish County's Built Green.

SITE SELECTION

Standard Procedures:

1. Choose a site with appropriate density allowance designation, considering existing topographic conditions and existing neighborhood scale of development
2. Assure affordability by managing all costs of purchase and development
3. Do not locate buildings on wetlands, steep slopes, prime farmland, or parkland

Alternative Procedures:

1. Build on an infill lot within walking distance of community and retail facilities
2. Choose a site near existing utilities infrastructure
3. Choose a site in close proximity to jobs, services, etc

SITE DESIGN

Standard Procedures:

1. Cluster housing to provide common areas and green space
2. Minimize impervious surfaces (roadways, driveways, parking, etc)
3. Follow natural topography for roadways, house sites, drainage, etc.
4. Incorporate native (existing) vegetation in final design and installation
5. Orient houses whenever possible for daylight/solar gain, privacy, view, and community/neighborhood connection.
6. Locate utilities to preserve natural elements and to minimize disruption to the site
7. Provide “private” outdoor spaces for each house
8. Leave a portion of the site undisturbed to provide wildlife habitat and bio-diversity
9. Provide for garden spaces (shared) where possible
10. Conduct soils/engineering analysis to prevent water problems under houses, in drainfields, etc
11. Minimize impact of automobiles and prioritize pedestrian travel
12. Select landscape design appropriate to climate (drought tolerant, “native”)
13. Locate septic tanks for ease of maintenance and future alterations to building

Alternative Procedures:

1. Facilitate natural stormwater bio-detention (greenbelts, swales, etc)
2. Design spaces for multiple uses
3. Irrigate with rainwater (via catchment)
4. Integrate “constructed” or improved wetlands in the site for storm-water or grey-water detention/treatment

Best Practices:

None at this time

SITE WORK

Standard Procedures:

1. Protect trees (root structure) from heavy equipment damage
2. Selectively preserve existing vegetation (in disturbed areas) for later replanting
3. Install all necessary and required soil erosion control measures
4. Limit grading/excavation on site (minimize during winter/wet season)
5. Minimize tree work, such as cutting and limbing, yet take what's necessary for safety and to provide sunlight into homes
6. Stabilize disturbed slopes with compost and/or plantings
7. Remove topsoil from building footprints and roadways, protect relocated topsoil, and return to site for final grading as top cover
8. Establish and maintain single (minimal) construction entrance to the site
9. Assure adequate drainage away from house, off site or to appropriate on site detention or dispersal
10. Minimize heavy equipment traffic and "tramming" of materials on site
11. Maximize re-use/reclamation of materials on site for sub-grade/backfill

Alternative Procedures:

1. Chip all debris and use on pathways or as soil amendment
2. Sell/give away logs for firewood or value added product
3. Utilize pervious concrete where applicable (parking, etc) – but not as a means of increasing pervious surface coverage on site

Best Practices:

None at this time

GENERAL ARCHITECTURE/BUILDING DESIGN

Standard Procedures:

1. Design for passive (daylight) solar gain and protect against summer heat
2. Provide open/flexible floor plan and multi use spaces
3. Design with consideration of possible future adaptation/remodeling
4. Minimize footprint (smaller houses and/or second floor)
5. Provide adequate storage (inside and out)
6. Include covered porch/entry
7. Provide minimum insulation values of R-30 floor, R-21 wall, R-38 ceiling
8. Reduce "thermal bridging" with insulated headers
9. Provide adequate eaves to protect siding and for aesthetic appeal (18")
10. Install humidistats (low speed control or timer) in bath/laundry
11. Vent range hoods and exhaust to the outside
12. Install on-demand hot water heaters or circulate hot water from water tank and use insulated pipes
13. Maximize ventilation (whole house fans, window vents, etc)
14. Use standard dimensions (2' and 4' increments) to minimize waste

15. “Stack” floor plans (bath above bath) and cluster utility/service runs
16. Design for minimal maintenance requirements (systems, materials)
17. Have roof pitches of 5:12 or greater
18. Use local professionals, sub-contractors and suppliers who are affordable

Alternative Procedures:

1. Renovate/remodel/recycle older and existing buildings
2. Provide windows on 2 walls of room
3. Consider modular or panelized construction
4. Design for roof catchment of rainwater for secondary use (toilets, landscape irrigation)
5. Install metal roofing (life cycle cost savings, catchment)
6. Use truss roof construction while still allowing attic storage potential
7. Use “advanced wall framing” (24” OC w/ dbl top plate)
8. Incorporate 9’ or vaulted ceilings (to create more “space” in small areas)
9. Use local resources and locally produced materials

Best Practices:

1. Consider reclamation of greywater for future (re)use

MATERIALS/GENERAL DESIGN SPECS

Standard Procedures:

1. Use sustainably harvested floor coverings (linoleum, bamboo, recycled wood)
2. Maintain high level of indoor air-quality by minimizing off-gassing to interior spaces
3. If carpet is installed, specify CRI’s Green Label Certified
4. Use low VOC paints/ sealers
5. Install solid plywood box (or strawboard) cabinets (or seal all exposed particle board surfaces and edges)
6. Use materials w/ longer life-cycle and lower maintenance requirements (Hardie/cement board, metal roofing, etc)
7. Use “engineered” wood (TJI, glue-lam, OSB, LVL, etc)
8. Use “finger-jointed” wood where appropriate possible (trim, plates, non-bearing walls)
9. Install formaldehyde free product (insulation, foam)
10. Use crushed (recycled) glass as drain rock substitute in foundation backfill
11. Use water saving/efficient toilets and fixtures
12. Install compact fluorescent fixtures/bulbs
13. Minimize use of pressure treated lumber – do not use in play areas or food gardens
14. Use Energy Star rated appliances
15. Use daylight sensors or timers on all outdoor (security) lighting

Alternative Procedures:

1. Install electric radiant wall heaters plus one additional heat source, such as a wood or propane stoves with low emissions.

Best Practices:

1. Use recycled or salvaged materials

2. Use materials with recycled content (TREX, plastic “wood”, carpet)
3. Use FSC (certified sustainable) wood product
4. Install wood/composite windows
5. Use composite countertop materials (“paperstone”, etc.)
6. Use “Pex” plumbing lines instead of copper or PVC

CONSTRUCTION PROCESS

Standard Procedures:

1. Minimize construction waste (use cut-offs, etc)
2. Recycle (unusable) job waste (wood, GWB, cardboard, paint, etc)
3. Protect all on-site materials while stored
4. Protect all work-in-progress from weather deterioration/damage
5. Use silt fence/hay bales to prevent erosion
6. Limit disturbance to areas outside building footprint or roadways
7. Observe ALL “best practices” for on-the-job safety
8. Connect to electric power ASAP to minimize use of generators (and noise)
9. Coordinate scheduling of subs to avoid confusion/ delays
10. Be sensitive to impact on neighbors (noise, traffic, schedule, work lights) and keep them informed
11. Keep job site clean and orderly (dispose of “trash” regularly)
12. Secure site from unauthorized traffic (safety, security)
13. Provide adequate ventilation during construction to minimize health effects on workers
14. “Bake” house prior to occupancy for a minimum of 72 hours at 90 degrees in order to facilitate “off-gassing”

Alternative Procedures:

None at this time

Best Practices:

None at this time

RESEARCH AND DEVELOPMENT

These items have been proposed by a member of the OPAL team for evaluation. The OPAL Green Standards Committee, a standing committee of the board of trustees, shall undertake the evaluation in collaboration with OPAL's Project Manager.

SITE SELECTION:

None at this time

SITE DESIGN:

None at this time

SITE WORK:

None at this time

GENERAL ARCHITECTURE/BUILDING DESIGN:

None at this time

MATERIALS/GENERAL DESIGN SPECS:

1. Use of "No VOC" paints – concern for coverage – it takes many more coats of paint to cover a wall surface – advisability of that as compared with "low VOC" paints that have better coverage.
2. Heat Source – is electric really the "best" solution? What about operating costs?
3. Identify alternatives to vinyl windows
4. How and when to utilize solar or wind generated power
5. Understand issues of glues and resins

CONSTRUCTION PROCESS:

None at this time

COST-BENEFIT ANALYSIS:

In order to provide a systematic approach to evaluating the myriad options that exist, particularly in choices of materials, OPAL will use a cost-benefit analysis as part of its evaluation process. This chart and system are to be developed.