

2010 CALGreen Residential Mandatory Measures Checklist

January 3, 2010

| Feature or Measure | Required |
|--|----------|
| PLANNING AND DESIGN | |
| Site Development (4.106) | |
| Storm water drainage management shall be implemented during construction. | |
| Outdoor Water Use (4.304) | |
| Automatic irrigation systems controllers installed at the time of final inspection shall be weather-based. | |
| MATERIAL CONSERVATION AND RESOURCE | |
| Enhanced Durability and reduced Maintenance (4.406) | |
| Joints and openings. Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency. | |
| Construction Waste Reduction, Disposal and Recycling (4.408) | |
| A minimum of 60% of the construction waste generated at the site is diverted to recycle or salvage. This is achieved either by using City pre-certified landfills or implementation of a waste management plan. Waste management plan shall be pre-approved by Environmental Services Department. | |
| Building Maintenance and Operation (4.410) | |
| An operation and maintenance manual shall be provided to the building occupant or owner. | |
| ENVIRONMENTAL QUALITY | |
| Pollutant Control (4.504) | |
| Duct openings and other related air distribution component openings shall be covered during construction. | |
| Adhesives, sealants and caulks shall be compliant with VOC and other toxic compound limits. | |
| Paints, stains and other coatings shall be compliant with VOC limits. | |
| Aerosol paints and coatings shall be compliant with product weighted MIR limits for VOC and other toxic compounds. | |
| Carpet and carpet systems shall be compliant with VOC limits. | |
| Documentation shall be provided to the City building inspector verifying that compliant VOC limit finish materials have been used. | |
| 50% of floor area receiving resilient flooring, shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or be certified under the Resilient Floor Covering Institute (RCFI) FloorScore program. | |
| Particleboard, medium density fiberboard (MDF), and hardwood plywood used in interior finish systems shall comply with low formaldehyde emission standards. | |
| Interior Moisture Control (4.505) | |
| Vapor retarder and capillary break is installed at slab on grade foundations. | |
| Moisture content of building materials used in wall and floor framing is checked before enclosure. | |
| Environmental Comfort (4.507) | |
| Whole house exhaust fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2. | |
| <p>Duct systems are sized, designed, and equipment is selected using the following methods:</p> <ol style="list-style-type: none"> 1. Establish heat loss and heat gain values according to Air Conditioning Contractors of America (ACCA) Manual J or equivalent. 2. Size duct systems according to ACCA 29-D (Manual D) or equivalent. 3. Select heating and cooling equipment according to ACCA 36-S (Manual S) or equivalent. | |

2010 CALGreen Residential Mandatory Measures Checklist (Cont'd)

1/3/2010

| Feature or Measure | Required |
|--|----------|
| INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS | |
| Qualifications (702) | |
| HVAC system installers are trained and certified in the proper installation of HVAC systems. | |
| Verifications (703) | |
| Verification of compliance with this code may include construction documents, plans specifications builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which show substantial conformance. | |

2010 CALGreen Non-Residential Mandatory Measures Checklist January 3, 2010

| Feature or Measure | Required |
|---|----------|
| SITE DEVELOPMENT (5.106) | |
| <p>Bicycle parking and changing rooms. Comply with Sections 5.106.4.1 and 5.106.4.2; or meet local ordinance, whichever is stricter.</p> <p>Short-term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.</p> <p>Long-term bicycle parking. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5% of tenant-occupied motorized vehicle parking capacity, with a minimum of one space.</p> | |
| <p>Designated parking. Provide designated parking for any combination of low-emitting, fuel efficient, and carpool/van pool vehicles as shown on Table 5.106.6.2.</p> | |
| <p>Light pollution reduction. Comply with lighting power requirements in the California Energy Code and design interior and exterior lighting such that zero direct-beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the California Administrative Code, using the following strategies:</p> <ol style="list-style-type: none"> 1. Shield all exterior luminaries or use cutoff luminaries. 2. Contain interior lighting within each source. 3. Allow no more than .01 horizontal fc 15 ft. beyond the site. 4. Contain all exterior lighting within property boundaries. <p>Exception: See Part 2, Chapter 12, Section 1205.6 for campus lighting requirements for parking facilities and walkways.</p> | |
| WATER EFFICIENCY AND CONSERVATION | |
| INDOOR WATER USE (5.303) | |
| <p>Meters. Separate meters shall be installed for the uses described in Sections 503.1.1 through 503.1.3.</p> <p>Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:</p> <ol style="list-style-type: none"> 1. For each individual leased, rented, or other tenant space within the building projected to consume more than 100 gal/day. 2. For spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop projected to consume more than 100 gal/day. <p>Excess consumption. Any building within a project or space within a building that is projected to consume more than 1,000 gal/day.</p> | |
| <p>% Savings. A schedule of plumbing fixtures and fixture fitting that will reduce the overall use of potable water within the building by 20% shall be provided. (Calculate savings by Water Use Worksheets.)</p> <p>Multiple showerheads serving one shower. When single shower fixtures are served by more than one showerhead, the combined flow rate of all the showerheads shall not exceed the maximum flow rates specified in the 20% reduction column contained in Table 5.303.2.2 or the shower shall be designed to only allow one showerhead to be in operation at a time.</p> | |
| <p>Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:</p> <ol style="list-style-type: none"> 1. The installation of water-conserving fixtures or 2. Utilizing non-potable water systems | |

2010 CALGreen Non-Residential Mandatory Measures Checklist (Cont'd)

1/3/2010

| Feature or Measure | Required |
|--|----------|
| <p>Plumbing Fixtures and Fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the requirements listed for each type in items listed on Table 5.303.6.</p> <ol style="list-style-type: none"> 1. Water closets (toilets) - flushometer type 2. Water closets (toilets) - tank type 3. Urinals 4. Public lavatory faucets 5. Public metering self-closing faucets 6. Residential bathroom lavatory sink faucets 7. Residential kitchen faucets 8. Residential shower heads 9. Single shower fixtures served by more than one showerhead | |
| OUTDOOR WATER USE (5.304) | |
| <p>Water budget. A water budget shall be developed for landscape irrigation use.</p> | |
| <p>Outdoor potable water use. For new water service, separate meters or submeters shall be installed for indoor and outdoor potable water use for landscaped areas between 1000 square feet and 5000 square feet.</p> | |
| <p>Irrigation design. In new nonresidential projects with between 1000 and 2500 square feet of landscaped area (the level at which the MLO applies), install irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.</p> <p>5.304.3.1 Irrigation controllers. Automatic irrigation system controllers installed at the time of final inspection shall comply with the following:</p> <ol style="list-style-type: none"> 1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change. 2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input. | |
| WEATHER RESISTANCE AND MOISTURE MANAGEMENT (5.407) | |
| <p>Weather protection. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 and California Energy Code Section 150, manufacturer's installation instructions, or local ordinance, whichever is more stringent.</p> | |
| <p>Moisture control. Employ moisture control measures by the following methods;</p> <p>Sprinklers. Prevent irrigation spray on structures.</p> <p>Entries and openings. Design exterior entries and openings to prevent water intrusion into buildings.</p> | |
| CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING (5.408) | |
| <p>A minimum of 60% of the construction waste generated at the site is diverted to recycle or salvage. This is achieved either by using City pre-certified landfills or implementation of a waste management plan. Waste management plan shall be pre-approved by Environmental Services Department.</p> | |
| <p>100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.</p> | |

| Feature or Measure | Required |
|---|----------|
| BUILDING MAINTENANCE AND OPERATION (5.410) | |
| <p>Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling.</p> | |
| <p>Commissioning. For new buildings 10,000 square feet and over, building commissioning for all building systems covered by T24, Part 6, process systems, and renewable energy systems shall be included in the design and construction processes of the building project. Commissioning requirements shall include items listed in 5.410.2.</p> <p>Owner's Project Requirements (OPR). Documented before the design phase of the project begins the OPR shall include items listed in 5.410.4.</p> <p>Basis of Design (BOD). A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project and updated periodically to cover the systems listed in 5.410.2.2.</p> <p>Commissioning plan. A commissioning plan describing how the project will be commissioned shall be started during the design phase of the building project and shall include items listed in 5.410.2.3.</p> <p>Functional performance testing shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications.</p> <p>Documentation and training. A Systems Manual and Systems Operations Training are required.</p> <p>Systems manual. The Systems Manual shall be delivered to the building owner or representative and facilities operator and shall include the items listed in 5.410.2.5.1.</p> <p>Systems operations training. The training of the appropriate maintenance staff for each equipment type and/or system shall include items listed in 5.410.2.5.2.</p> <p>Commissioning report. A complete report of commissioning process activities undertaken through the design, construction and reporting recommendations for post-construction phases of the building project shall be completed and provided to the owner or representative.</p> | |
| <p>Testing and adjusting. Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.</p> <p>Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include, as applicable to the project, the systems listed in 5.4.10.3.2.</p> <p>Procedures. Perform testing and adjusting procedures in accordance with industry best practices and applicable national standards on each system.</p> <p>HVAC balancing. Before a new space-conditioning system serving a building or space is operated for normal use, the system should be balanced in accordance with the procedures defined by national standards listed in 5.410.3.3.1.</p> <p>Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.</p> <p>Operation and maintenance manual. Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.</p> <p>Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.</p> | |

| Feature or Measure | Required |
|---|----------|
| ENVIRONMENTAL QUALITY | |
| POLLUTANT CONTROL (5.504) | |
| <p>Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation, or during storage on the construction site and until final startup if the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or reduce the amount of dust or debris which may collect in the system.</p> | |
| <p>Finish material pollutant control. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.4.</p> <p>Adhesives, sealants, caulks. Adhesives and sealants used on the project shall meet the requirements of the following standards.</p> <ol style="list-style-type: none"> 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. 2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507. | |
| <p>Paints and coatings. Architectural paints and coatings shall comply with Table 5.504.4.2 unless more stringent local limits apply.</p> <p>Aerosol Paints and Coatings. Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for ROC in section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances (CCR, Title 17, Section 94520 et seq).</p> <p>Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency.</p> <p>Carpet systems. All carpet cushion installed in the building interior shall meet the testing and product requirements of one of the standards listed in 5.504.4.4.</p> <p>Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</p> <p>Carpet adhesive. All carpet adhesive shall meet the requirements of Table 804.4.1.</p> <p>Composite wood products. Hardware plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Table 5.504.4.</p> <p>Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:</p> <ol style="list-style-type: none"> 1. Product certifications and specifications. 2. Chain of custody certifications. 3. Other methods acceptable to the enforcing agency. | |
| <p>Resilient flooring systems. Comply with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its Low-emitting Materials List (or Product Registry), or certified under the FloorScore program of the Resilient Floor Covering Institute.</p> <p>Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.</p> | |
| <p>Hazardous particulates and chemical pollutants.</p> <p>Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.</p> <p>Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a MERV of 8.</p> | |



GREEN BUILDING APPLICATION NR1

This application is intended to explain the requirements, and review and enforcement procedures for Palo Alto Municipal Code Chapter 16.14, California Green Building Code with local amendments. The City of Palo Alto has expanded the types and scopes of projects covered by the California Green Building Code, and the level of green building required to incorporate City environmental goals and existing ordinances. Applicants should download the Code with local amendments from the City's Green Building Website referenced below. Applicants may use the US Green Building Council LEED rating system instead of the Code with local amendments so long as the applicant shows equivalency. The program goal is to design, build and operate a new generation of efficient, environmentally responsible, and healthy buildings in the City of Palo Alto.

For questions about the Palo Alto Green Building Program contact:

Kristin Parineh Sustainability Planner

250 Hamilton Ave Palo Alto, CA 94303

P 650.329.2189 F 650.329.2240

kristin.parineh@cityofpaloalto.org

visit: http://www.cityofpaloalto.org/depts/pln/sustainability_green_building/green_building

| Project Types Covered By This Application | | | |
|--|---|---|--|
| Project Types Covered | Project Scope | Green Building Standard | Requirement |
| Nonresidential | New construction and rebuilds \geq 1,000 sf, and additions \geq 1,000 sf that include a new HVAC system. | California Green Building Code (CALGreen) with Local Amendments | CALGreen Mandatory Measures and Tier 2 |
| Nonresidential | Tenant improvements, renovations, or alterations \geq 5,000 SF that include replacement or alteration of at least two of the following: HVAC system, building envelope, hot water system, or lighting system. | California Green Building Code (CALGreen) with Local Amendments | CALGreen Mandatory Measures and Tier 1 |

It is essential that all applicants have the following in addition to this application:

1. Title 24, Part 11, 2010 California Green Building Standards Code (CALGreen) <http://www.bsc.ca.gov/CALGreen/default.htm>
2. California Building Standards Commission Guide to the (Non-Residential) California Green Building Standards Code <http://www.bsc.ca.gov/CALGreen/default.htm>
3. City of Palo Alto Ordinance Adopting CALGreen with Local Amendments http://www.cityofpaloalto.org/depts/pln/sustainability_green_building/green_building/history_and_ordinance

The following resources are useful for projects selecting to show equivalency using LEED:

4. StopWaste.Org CALGreen Compliance Guide for LEED Projects <http://www.stopwaste.org/home/index.asp?page=1149>

APPLICATION SUBMITTAL AND REVIEW INSTRUCTIONS

A complete green building application can ensure efficient review of your project. Below you will find what is expected at the various phases of design and construction.

| Building Phase | Check | Required Documentation |
|--|--------------------------|---|
| Prior to Building Permit Issuance | | A copy of the projects CALGreen Checklist (found in T24, Part 11, Division A5.7 – NONRESIDENTIAL CHECKLISTS) must be in all plan sets. For each mandatory measure and Tier 1 or 2 measure claimed on the checklist, the applicant must show compliance following the Building Standards Commission Guide to the (Non-Residential) California Green Building Standards Code, unless otherwise noted. Applicants who are more familiar with using LEED documentation requirements may do so for complimentary measures. |
| | <input type="checkbox"/> | Plan Sets Shall Include: <ul style="list-style-type: none"> • Title 24 Energy Efficiency Reports that include the PERF-1C Forms, AND if using EnergyPro, provide the ECON-1 form. If using Micropas, provide the “summary” table that shows each end use (heating, cooling, ventilation fans, water heating) by fuel type (kBtu and kWh) by month. • Completed Nonresidential Checklist found in T24, Part 11, Division A5.7 – Nonresidential Checklist. • Mandatory and Tier 2 measures claimed where compliance may be shown in the plan sets. For example, 5.106.4 Bicycle Parking and 5.106.5.2 Designated Parking. • Landscaping plans for all projects with landscapes greater than 1,000sf. |
| | <input type="checkbox"/> | Green Building Binder - A binder shall be submitted that includes: <ul style="list-style-type: none"> • The project application (page 3). • Completed Nonresidential Checklist found in T24, Part 11, Division A5.7 – Nonresidential Checklist. • Any additional documentation necessary in order to show compliance with Mandatory and Tier 2 measures claimed as indicated in the BSC Guide to the Non-Residential California Green Building Standards Code. Including, but not limited to: <ul style="list-style-type: none"> • Construction Debris Estimation (page 3) • Landscape Water Use Statement and Calculations (pages 6-9) • Commissioning Plan • Indoor Water Calculations • IAQ Management Plan • Stormwater Management Plan (SWMP) • Specifications or cut sheets for materials / products that meet measures claimed. |
| During Construction and Prior to Final Inspection | <input type="checkbox"/> | Throughout construction green building inspections will occur to review compliance with measures claimed. Prior to scheduling a final inspection the applicant must arrange a final inspection with the Sustainability Planner and submit the Green Building Post Construction Acknowledgement Form and Attachments (Page 5). |
| Within 6 Months from the Date of Final Inspection | <input type="checkbox"/> | Commissioning Report |
| | | An inspection of landscape features if not completed at the time of final inspection. |

Notice: The City of Palo Alto Utilities Department offers rebates for projects that exceed their energy performance, Title 24, Part 6, by more than 15%. More information can be found here: <http://www.cityofpaloalto.org/depts/utl/news/details.asp?NewsID=1102&TargetID=223>

GREEN BUILDING APPLICATION FOR BUILDING PERMIT



Nonresidential Green Building Application Type 1

| | |
|------------------------------|--|
| Permit Number: <u>11-</u> | Permit Address: _____ |
| Project Valuation: <u>\$</u> | Estimated # of Occupants: _____ |
| Project Sqft: _____ | Landscape Sqft: _____ |
| | Estimated Project Completion (Month/Yr): _____ |

ACKNOWLEDGEMENT

I, the property owner / legal representative, acknowledge and understand the green building program requirements, obligations, and penalties (PAMC Chapter 16.14). I am ultimately responsible for meeting the program requirements, including all activities performed by design team members, contractors and subcontractors. If the requirements of this program are not met, I am subject to fines starting at \$50 per ton or \$1000, whichever is greater for waste not diverted, and \$500 per day for green building non compliance. I understand that any projects conducted on a single parcel within a two year period are considered cumulative, a single project under the City’s green building regulations, and combined are subject to the most stringent requirements. I also understand that my project may be subject to an energy or water performance review under PAMC Chapter 16.14 to assess compliance with the program after construction and during operation.

| | |
|------------------|-----------------------------|
| Signature _____ | Date _____ |
| Print Name _____ | OWNER Title _____ |
| Email _____ | Phone _____ |
| Address _____ | |

PALO ALTO C&D DEBRIS ESTIMATION

Estimate below the projects debris based on a national conversion factor from the US EPA for the amount of construction and demolition debris typically generated from residential new construction. If you disagree with the amount calculated, you may submit an alternative debris estimate for review and approval. The alternative estimate must include a breakdown of materials by weight. Spreadsheets are available at the City’s Development Center for assistance in calculating debris.

$$\frac{\text{Project Sqft.}}{\text{Conversion Factor}} \times \frac{3.89^*}{2000 \text{ lbs}} = \text{Estimated C\&D debris (Tons)}$$

Source: <http://www.epa.gov/epaoswer/hazwaste/sqg/c&d-rpt.pdf>

ALL DEBRIS MUST BE TAKEN TO A CITY APPROVED FACILITY (PAGE 4). RETAIN RECEIPTS, INDICATING WASTE TYPE AND WEIGHT, FOR COMPLIANCE AFTER CONSTRUCTION.

PALO ALTO APPROVED FACILITY LIST FOR C&D DEBRIS

Only take non-hazardous debris to one of these facilities. DO NOT put hazardous materials (asbestos, solvents, paint, mercury, and pressure treated wood) in mixed C&D debris boxes. Hazardous materials are not recyclable or salvageable. DO ask these facilities to give you receipts with material disposed of by weight.

For mixed debris boxes it is required to use the City hauler GreenWaste.

| | | | |
|-------------------|---------------|-----------|--------------|
| GreenWaste | 2000 Geng Rd. | Palo Alto | 650-493-4894 |
|-------------------|---------------|-----------|--------------|

For on-site sorting and hauling, it is required to bring the waste to one of the following facilities, or a facility listed on San Francisco or San Jose's approved lists.

| | | | |
|--|---|----------------------------------|--------------|
| American Metal and Iron Ferrous metal. Non-ferrous metals (aluminum, copper, brass, stainless, tin, iron). | 11665 Berryessa Road | San José | 408-452-0777 |
| Bio Fuel Systems Clean wood, green waste, tree stumps, and shingles (no tar paper). | 30 Greenville Road | Livermore | 925-455-5908 |
| Blue Line Transfer, Inc. Mixed C&D materials. | 500 East Jamie Court | South SF | 650.589.4020 |
| Curtner Quarry Concrete, asphalt and dirt. | 2000 Scott Creek Road | Fremont | 408-942-1230 |
| Danny's Pad and Foam Recycling Cushion foam, scrap aluminum, scrap electrical wire, CRV beverage containers, and carpet padding and wood. | 1745 Walsh Avenue | Santa Clara | 408-492-9033 |
| Davis Street Transfer Station Asphalt, carpet padding, concrete, dirt, green waste, ferrous metals, mixed c&d, paper, roofing, gypsum. | 2615 Davis Street | San Leandro | 510-638-2303 |
| Graniterock Company Concrete, asphalt, AC grindings, and concrete with rebar. | 100 Graniterock Way | San José | 408-574-3000 |
| Guadalupe Landfill Mixed C&D materials. Separated wood, metal, dirt, concrete, asphalt, gypsum, cardboard, roofing and green waste. | 15999 Guadalupe Mines Road | San José | 408-268-1670 |
| Mission Trail Waste Systems Mixed C&D materials. Separated wood and green waste. | 1060 Richard Avenue | Santa Clara | 408-727-5365 |
| Newby Island Landfill Mixed C&D materials. Separated wood, metal, concrete, asphalt, gypsum, cardboard, roofing, carpet, block foam and green waste. | 1601 Dixon Landing Road | San José | 408-262-1401 |
| Pacific Coast Recycling Mixed C&D materials, wood, metal, concrete, asphalt, gypsum, cardboard, roofing, green waste, carpet, plastic, dirt, brick, porcelain, and green waste. | 5895 Obata Way | Gilroy | 408.848.6811 |
| Premier Recycling Mixed C&D materials accepted from Premier debris boxes. Separated wood, metal, concrete, asphalt, cardboard, carpet, and appliances. | 260 Leo Ave. | San José | 408-297-7910 |
| Raisch Products Concrete, concrete with steel, concrete block, asphalt, brick, roofing tiles (clay and concrete only), dirt (not in Sunnyvale), ceramics, porcelain (with hardware removed). | 55 Hillsdale Ave. 144 Borregas Ave. 7010 Auto Mall Pkwy | San José Sunnyvale Fremont | 408-227-9222 |
| Recology San Francisco Mixed C&D materials. | 501 Tunnel Ave. | San Francisco | 415.330.1400 |
| Reed & Graham, Inc. Asphalt grindings, asphalt with Petromat (contact for prior approval), broken asphalt from roads or parking lots, base rock, broken cement sidewalks (contact for prior approval). | 690 Sunol Street | San José | 408-287-1400 |
| Sims Metal Ferrous metal. Non-ferrous metals including aluminum, copper, brass, stainless, alloys and insulated wire. | 1800 Monterey Road | San José | 408-494-4200 |
| SRDC Recycling Wood, metal, concrete, asphalt, sheetrock, cardboard, yard trimmings, roofing, bricks, ceramic tile and soil. | 475 Seaport Boulevard 11740 Berryessa Rd. | Redwood City San Jose | 650-298-9228 |
| Stevens Creek Quarry Concrete, asphalt, and clean fill. | 12100 Stevens Canyon Road | Cupertino | 408-253-2512 |
| Valley Recycling Mixed C&D materials. Separate metal, wood, concrete, cardboard, and roofing. | 1615B South Seventh Street | San José | 408-297-5352 |
| Whole House Building Supply Call first to confirm acceptable materials. | 1955 Pulgas Ave. | East Palo Alto | 650-328-8731 |
| Zanker Materials Landfill & Processing Facility Mixed C&D materials. Separated wood, metal, concrete, asphalt, gypsum, cardboard, roofing and soil. | 675 and 705 Los Esteros Road | San José | 408-263-2384 |

Updated January 2011

PALO ALTO GREEN BUILDING POST CONSTRUCTION ACKNOWLEDGMENT FORM

This form must be completed after construction in order to receive a final inspection from the building department. In addition, the applicant is required to schedule a final green building inspection with the City Sustainability Planner. 650.329.2189 or kristin.parineh@cityofpaloalto.org.

| | |
|------------------------|----------|
| Project Permit Number: | Address: |
|------------------------|----------|

| Check | Attachments Required |
|--------------------------|---|
| <input type="checkbox"/> | If HERS testing was selected per the projects energy report (PERF-1C's), attach the CF-4R (s). |
| <input type="checkbox"/> | If there were alterations during construction that impacted the energy report (i.e. R values, U factors or SEER values) rerun the report and attach it. |
| <input type="checkbox"/> | Construction debris receipts from an approved facility. |

I certify that:

- there have been no alterations that impacted the energy reports (PERF-1C's) for the project, unless the new report is provided as an attachment;
- the Indoor Air Quality management measures were implemented throughout construction;
- all CALGreen Mandatory and Tier 1 or 2 measures claimed in accordance with PAMC Chapter 16.14 have been implemented, unless the new checklist has been provided along with support for new measures claimed; and that
- within six months (6) from the date of final inspection I will provide the City with the projects Commissioning Report and execute compliance with landscaping measures, unless completed at the time of final inspection.

Signature

Date

Print Name

OWNER

Title

Email

Phone

Signature

Date

Print Name

CONTRACTOR

Title

Email

Phone

EVALUATING LANDSCAPE PROJECT WATER USE

The following instructions are provided to assist with completion of the required landscape efficiency forms and water use calculations.

1. Landscape Water Use Statement – Enter the project landscape area and ET adjustment factor into the MAWA formula to determine the site water budget. Calculate the ETWU for the project based on the *Estimated Landscape Irrigation Water Required* from the **Water Use Calculations** form as well as the *Estimated Non-Irrigation Water Required* (e.g. water features)
2. Water Use Calculations - The **Water Use Calculations** form provides a convenient format for summarizing and deriving values for hydrozones, plant factors, and irrigation efficiency factors that determine ETWU. Landscape professionals may wish to use another format or software application with which they are already familiar.
3. Water Features - Water use is calculated as 100% of ETo per square foot of surface area. This is included in Non-Irrigation landscape water in the **Landscape Water Use Statement**.
4. Effective Precipitation - Up to 25% of local annual mean precipitation may be used. The 30-year mean in Palo Alto from 1961 - 1990 is 15.07 inches. If used, the 25% of local mean annual precipitation will be entered in the *Plant Water Requirement* formula in column (F) of the **Water Use Calculations** form.
5. Landscape Coefficient (K_L) – Estimated water loss from a plant relative to ETo. $K_L = K_s \times K_d \times K_{mc}$
The K_L derived from this formula may be used in the **Water Use Calculations**.

TABLE 1: ESTIMATED VALUES USED TO DETERMINE K_L FOR SELECTED VEGETATION TYPES.

| Vegetation Type | Species factor (Ks) | | | Density factor (Kd) | | | Microclimate factor (Kmc) | | |
|-----------------|---------------------|-----|-----|---------------------|-----|------|---------------------------|-----|-----|
| | high | avg | low | high | avg | low | high | avg | low |
| Trees | 0.9 | 0.5 | 0.2 | 1.3 | 1 | 0.5 | 1.4 | 1 | 0.5 |
| Shrubs | 0.7 | 0.5 | 0.2 | 1.1 | 1 | 0.5 | 1.3 | 1 | 0.5 |
| Groundcover | 0.7 | 0.5 | 0.2 | 1.1 | 1 | 0.5 | 1.2 | 1 | 0.5 |
| Mixed: | 0.9 | 0.5 | 0.2 | 1.3 | 1.1 | 0.06 | 1.4 | 1 | 0.5 |
| Turfgrass | 0.8 | 0.7 | na | 1 | 1 | 0.6 | 1.2 | 1 | 0.8 |

**Species factor values are based on the WUCOLS list.*
**NOTE: It is assumed that there is no bare soil surface within the landscape planting. Otherwise, Kd should be increased 10 to 20%, especially for trees and shrubs, due to soil surface evaporation.*

6. Irrigation Design Efficiency - The percent efficiency for an application device used in a station or zone may be inserted in column (H) of the **Water Use Calculations** sheet. This assumes: infiltration uniformity equals distribution uniformity, optimum and consistent operating pressure, and irrigation zone pressure differential maximum 10%.

TABLE 2: AVERAGE DESIGN EFFICIENCIES OF VARIOUS APPLICATION DEVICES

| N.B. | APPLICATION DEVICE | RANGE PERCENT | AVERAGE PERCENT |
|-------|---|---------------|-----------------|
| A | Multiple Stream & Impact Rotors | 60 - 80 | 70 |
| A | Single Stream Rotors | 60 - 80 | 70 |
| A | Spray Heads in turf | 40 - 60 | 50 |
| A & B | Spray Heads in ground covers and shrubs | 60 - 80 | 70 |
| B | Micro Spray - 6 Ft. Radius or less | 60 - 80 | 70 |
| B | Micro Spray - 6 Ft. Radius or more | 40 - 60 | 50 |
| C | Bubblers | 60 - 90 | 85 |
| D | Drip Emitters | 50 - 90 | 80 |
| F | Multi-port Emitters | 50 - 90 | 80 |

(A) *Symmetrical patterns, head-to-head spacing, matched precipitation, wind < 5mph*
 (B) *No plant deflection, wind < 5 mph*
 (C) *Bubblers placed in watering basins to prevent runoff*
 (D) *Efficiency drops with age (i.e., clogging, no provisions for expanding root zones)*
 (F) *Efficiency is highly variable*

City of Palo Alto Outdoor Water Efficiency Requirements and Calculations – Non-Residential
LANDSCAPE WATER USE STATEMENT

Complete this form using the values derived from the City of Palo Alto Water Use Calculations worksheet or similar format in which the same information is provided and calculations shown.

Applicant or Project Name _____ Date _____

Address of Project _____

Total Landscaped Area _____ (square feet)

Maximum Applied Water Allowance (MAWA):

Maximum water use for projects in Palo Alto is based on the formula below. Annual historical ETo is 43.1 inches per year. In the formula below, the ET adjustment factor (ETAF) is either 60% or 55%, depending upon the project scope, and the number 0.62 converts inches per year into gallons.

$$\begin{matrix} 43.1 & \times & 0.62 & \times & \text{ETAF} & \times & \underline{\hspace{2cm}} & = & \underline{\hspace{2cm}} & \text{gallons} \\ \text{(ETo)} & & \text{(Conversion} & & \text{Adj. Factor)} & & \text{(Area)} & & \text{(Annual Total)} \\ & & \text{To gallons)} & & & & & & & \end{matrix}$$

$$\begin{matrix} 43.1 & \times & 0.62 & \times & [(\text{ETAF} & \times & \underline{\hspace{2cm}}) & + & (0.3 & \times & \underline{\hspace{2cm}})] & = & \underline{\hspace{2cm}} & \text{gallons} \\ \text{(ETo)} & & \text{(Conversion} & & \text{Adj. Factor)} & & \text{(Area)} & & \text{Adj. Factor)} & & \text{(Special Landscape Area)} & & \text{(Annual Total)} \\ & & \text{To gallons)} & & & & & & & & & & & \end{matrix}$$

Landscape Water Requirements:

Enter the landscape water required from a water use calculations form. The estimated total water use may not exceed the Maximum Applied Water Allowance.

Estimated Landscape Irrigation Water Required: _____ gallons (P)

Estimated Non-irrigation Landscape Water Required: _____ gallons

Estimated Total Water Use – ETWU (Irrigation and Non-Irrigation Water): _____ gallons

Certification:

I certify that the **Landscape Water Use Statement, Water Use Calculations** and associated landscape and irrigation plans have been developed according to the Outdoor Water Use Efficiency requirements of the City of Palo Alto Green Building Program and that this statement represents the landscape water allowance and estimated water requirements of this project.

 Name of Landscape Architect or Irrigation Designer

 Signature

 Mailing Address

 Telephone

 Email Address

City of Palo Alto Outdoor Water Efficiency Requirements and Calculations – Non-Residential

SAMPLE - WATER USE CALCULATIONS

To be used as a reference when completing site-specific landscape water use calculations.

Project Address _____ Date: _____ Total Planted Area (sf) _____ ETo: 43.1*
 (J) (A)

Effective Precipitation

Total mean local precipitation (in./year) 15.07 in. (Q) (30 year mean for Palo Alto, 1961 - 1990)
 Effective Precipitation (q x 25%): 3.77 in. (R) Net ETo (A - R): 39.33 in. (S)

Irrigation System Design Factors

| VALVE/ HYDROZONE NUMBER (B) | PLANT MATERIAL (C) | Species Factor (K _s) | Density Factor (K _d) | Micro- climate Factor (K _{mc}) | AVG LANDSCAPE COEFFICIENT (K _L) (D) | AREA SQUARE FEET (E) | PLANT WATER REQUIREMENT GALLONS (F) | SYSTEM TYPE (G) | ESTIMATED DESIGN EFFICIENCY (H) | VALVE OR HYDROZONE WATER REQUIREMENT GALLONS (L) |
|--------------------------------------|--------------------------|--|--|---|---|---|--|------------------------|--|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| (from irrigation plan) | (from planting plan) | (From <i>Estimating Irrigation Water Needs of Landscape Plantings in California - WUCOLS</i>) | | | (K _s x K _d x K _{mc} = K _L) | (individual hydrozone areas from planting plan) | [Option 1: plant water requirement: (A) x (D) x (E) x (.62)] Or [Option 2: plant water requirement: (S) x (D) x (E) x (.62)] | (from irrigation plan) | (from Table 2) | (plant water requirement, (F) divided by (H)) |
| | | | | | | | | | | |
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*Real-time CIMIS data may be used.

Totals: _____
 (Total sf) (J) (Total gallons) (K) (System Total, All zones) (L)

Average Irrigation Design Efficiency: _____ (M)
 Total Plant Water Requirement, (K), divided by System Total, (L)

Total Estimated Irrigation Requirement: _____ gallons (P)
 Total Plant Water Requirement, (K), divided by Irrigation Efficiency, (M)

City of Palo Alto Outdoor Water Efficiency Requirements and Calculations – Non-Residential

WATER USE CALCULATIONS

Use as many forms as necessary to provide calculations for every valve/hydrozone in the project.

Project Address _____ Date: _____ Total Planted Area (sf) _____ ETo: 43.1*
 (J) (A)

Effective Precipitation

Total mean local precipitation (in./year) 15.07 in. (Q) (30 year mean for Palo Alto, 1961 - 1990)
 Effective Precipitation (q x 25%): 3.77 in. (R) Net ETo (A - R): 39.33 in. (S)

Irrigation System Design Factors

| VALVE/ HYDROZONE NUMBER (B) | PLANT MATERIAL (C) | Species Factor (K _s) | Density Factor (K _d) | Micro- climate Factor (K _{mc}) | AVG LANDSCAPE COEFFICIENT (K _L) (D) | AREA SQUARE FEET (E) | PLANT WATER REQUIREMENT GALLONS (F) | SYSTEM TYPE (G) | ESTIMATED DESIGN EFFICIENCY (H) | VALVE OR HYDROZONE WATER REQUIREMENT GALLONS (L) |
|--------------------------------------|--------------------------|--|--|---|---|----------------------------|--|-----------------------|--|---|
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*Real-time CIMIS data may be used.

Totals: _____
 (Total sf) (J) (Total gallons) (K) (System Total, All zones) (L)

Average Irrigation Design Efficiency: _____ (M)
 Total Plant Water Requirement, (K), divided by System Total, (L)

Total Estimated Irrigation Requirement: _____ gallons (P)
 Total Plant Water Requirement, (K), divided by Irrigation Efficiency, (M)



**2010 California Green Building Standards Code
 Requirements Checklist**

BUILDING PERMIT NO. _____
ADDRESS: _____

**MANDATORY
 REQUIREMENTS
 COMPLETED**
 (Please Check
 Box Below)

**ENFORCING AGENCY
 TO SPECIFY
 VERIFICATION
 METHOD**

| Feature or Measure | Yes | No | Enforcing Agency | Installer or Designer |
|---|-----|----|------------------|-----------------------|
| SITE DEVELOPMENT | | | | |
| A plan has been developed and will be implemented to manage storm drain water drainage during construction. CGC 4.106.2 | | | | |
| The site has been planned and developed to keep surface water away from buildings. CGC 4.106.3 | | | | |
| Construction plans indicate how the site grading or a drainage system will manage all surface flows. CGC 4.106.3 | | | | |
| ENERGY EFFICIENCY | | | | |
| This Low-rise residential building(s) meets or exceeds the minimum standards required by the California Energy Standards. CGC 4.201.1 | | | | |
| WATER EFFICIENCY AND CONSERVATION | | | | |
| Per CGC 4.303.1, Indoor water use will be reduced by at least 20% using one of the following methods: | | | | |
| (A) Water saving fixtures or flow restrictors are used and listed on plan per CGC table 4.303.2 | | | | |
| (B) A 20% reduction in baseline water use has been calculated in accordance to "Baseline Water Use" worksheet. (Attached) | | | | |
| Water closet(s), urinal(s), faucet(s), and showerhead(s) have all required standards listed on plans and are in accordance to CGC table 4303.3. | | | | |
| Automatic irrigation system controllers, if provided, will be weather based. CGC 4.304.1 | | | | |
| ENHANCED DURABILITY AND REDUCED MAINTENANCE | | | | |
| Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls will be rodent proofed by closing such openings with cement mortar, concrete masonry, or similar methods acceptable to the Building Official. Per CGC 4.406.1 | | | | |
| CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING | | | | |
| A minimum of 50% of the non-hazardous construction waste generated at the site will be diverted to an offsite recycle, diversion, or salvage facility. OR; | | | | |
| Waste Management Plan is provided and includes the following: 1. Identifies the materials to be diverted from disposal by recycling, reuse on the project, or salvage for future use or sale; 2. Specifies if materials will be sorted on-site or transported to a specified diversion facility; 3. Identifies the construction methods employed to reduce the amount of waste generated; 4. Specifies that the amount of materials diverted shall be calculated by weight or by volume, but not by both. | | | | |
| BUILDING MAINTENANCE AND OPERATION | | | | |
| An operation and maintenance manual will be provided to the building occupant or owner. Per CGC 4.410.1 | | | | |
| ENVIRONMENTAL QUALITY | | | | |
| Any gas fireplace will be a direct-vent sealed-combustion type. | | | | |
| Any wood stove or pellet stove will comply with US EPA Phase II emission limits. Per CGC 4.503.1 | | | | |

| Feature or Measure | Yes | No | Enforcing Agency | Installer or Designer |
|--|-----|----|------------------|-----------------------|
| POLLUTANT CONTROL | | | | |
| At the time of rough installation or during storage, Duct components and plenum openings will be covered with tape, plastic, sheetmetal, or other methods that will reduce the amount of dust or debris, which may collect in the system prior to final. Per CGC 4.504.1 | | | | |
| Adhesives, sealants and caulking will be compliant with VOC or other toxic compound limits. Per 4.504.2.1 | | | | |
| Paints, stains and other coatings will be compliant with VOC limits. Per 4.504.2.2 | | | | |
| Aerosol paints and coatings will be compliant with product weighted MIR limits for ROC and other toxic compounds. Per CGC 4.504.2.2 | | | | |
| Documentation will be provided, at the request of the building department, to verify compliance with VOC finish materials. Per CGC 4.504.2.4 | | | | |
| Carpet and the carpet system will be compliant with VOC limits. Per CGC 4.504.3 | | | | |
| Where resilient flooring is installed, at least 50% of the floor area receiving resilient flooring will comply with VOC emission limits. Per CGC 4.504.4 | | | | |
| Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior and exterior of the building will comply with the low formaldehyde emission standards. Per CGC 4.504.5 | | | | |
| INTERIOR MOISTURE CONTROL | | | | |
| A capillary break will be installed if a slab on grade foundation system is used. The use of a 4 inch thick base of ½ inch or larger clean aggregate under a 6 mil vapor retarder with joints lapped not less than 6 inches will be provided. Per CGC 4.505.2 and CRC R506.2.3. OR; | | | | |
| A slab design specified by a licensed professional is provided. | | | | |
| Moisture content of building materials used in walls and flooring will be checked prior to finish material is applied. Per CGC 4.505.3 | | | | |
| INDOOR AIR QUALITY AND EXHAUST | | | | |
| Bathroom exhaust fans are ENERGY STAR compliant and are controlled by a readily accessible humidistat. Humidistat controls shall be capable of adjustment between a relative humidity range of 50 to 80%. Per CGC 4.506.1 | | | | |
| ENVIRONMENTAL COMFORT | | | | |
| Installed whole house exhaust fans will have insulated louvers or covers with a minimum insulation value of 4.2, which will close when the fan is off. | | | | |
| The duct system has been sized, designed, and provided with equipment in accordance with one of the following: <ol style="list-style-type: none"> 1. Heat Loss/Heat Gain values in accordance with ACCA Manual J or equivalent; 2. Size the duct system in accordance to ACCA 29-D, Manual D or equivalent; 3. Select heating and cooling equipment in accordance with ACCA 36-S, Manual S. | | | | |
| INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS | | | | |
| HVAC system installers are trained and certified in the proper installation of HVAC systems. Per CGC 702.1 | | | | |
| VERIFICATION | | | | |
| Upon request, verification of compliance with this code may include construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the building department in which will show substantial conformance. | | | | |

I hereby certify, as the builder or installer of the permit listed herein, that this project has been designed and will be constructed to meet the requirements of the California Green Building Standards Code.

Signature

Date