

 <b>Building Division</b>	<b>GREEN BUILDING INSPECTIONS</b> <b>Non-Residential</b> <b>Submittals and Guidelines</b> City of Palo Alto (CPA) Building Inspection Division 285 Hamilton Ave. Inspection Request: 650 329-2496	Revision Date: 11/10/14
	<b>IVR# 111, 112, 974</b>	General Requirements/Checklist for: Codes Enforced: 2013 California Green Building Code Palo Alto Municipal Code 16.14 (PAMC)
The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.		

**GREEN BUILDING INSPECTION PROCEDURES:**

**Pre-Construction Green Building Meeting (#111):**

- Contact the Building Department to schedule the Green Building Pre-Construction Meeting (#111).
- Pre-Construction Meeting Agenda:
  1. Inspector shall request to see a copy of the “GB-1” sheet in the approved permit plan set.
  2. Overview of the construction phase requirements applicable to the project. Confirm if the project requires Mandatory, Tier 1, or Tier 2 Inspection.
  3. Review Green Building Inspection Checklist (this document).
  4. Discuss compliance expectations throughout construction and during the Green Building Incremental Verification (#112) and the Green Building Final Inspection (#974).
  5. Review resources available to the construction team.
  6. Questions and Answers.

**Green Building Incremental Verification (#112):**

- Contact the Building Department to schedule the Green Building Incremental Verification (#974) prior to the installation of drywall.
- Green Building Incremental Verification - Inspection Procedures:
  1. Inspector shall request to see a copy of the “GB-1” sheet in the approved permit plan set.
  2. Review Green Building Inspection Checklist (this document) and inspect all items listed as “*Green Building Incremental Verification*”.
  3. Request submittals or supplemental documentation as listed.

**Green Building Final Inspection (#974):**

- Contact the Building Department to schedule the Green Building Final Inspection (#974). This step must be completed prior to scheduling the Building Final Inspection.
- Green Building Final Inspection Procedures:
  1. **Part 1 – Counter Final Inspection: Palo Alto Development Center**  
Inspect compliance of project submittals and supplemental documentation. (See pages that follow) After Counter Inspection, Inspector shall scan a copy of the GB-1 sheet with comments and return the sheet to the applicant. Schedule on-site inspection with applicant.

*Instructions to General Contractor:*

Prepare the following items for the Green Building Final. Bring a CD or Flash Drive (for our records) containing these items for the Green Building Final Counter Appointment. *Isolate all relevant submittals for and omit all submittals un-related to Green Building.*

- Sign and scan a copy of the GB-1 Sheet in your approved plan set for our records. GB-1 sheet must have the Permit Number shown. **Bring a full-size paper copy of the GB-1 sheet.**
  - Submittals and supporting documentation on a CD or Flash drive (for our records) showing installation details for all provisions that were identified as “Y” on the GB-1 sheet. Label CD or Flash drive with the permit number. **Highlight applicable requirements on the submittals.**
  - After inspection, re-submit any outstanding submittal documentation to the Inspector on a separate CD or Flash Drive, as applicable.
2. **Part 2 – On-Site Final Inspection: Project Site**  
Inspect compliance of field related green building requirements. (See pages that follow). After the On-Site Inspection, Inspector shall take the final GB-1 sheet with comments and scan at the Development Center. The applicant may pick the sheet up at the Development Center after it has been scanned.

*Instructions to General Contractor:*

Have a completed digital copy of the Part 1 Final Inspection available at the project site. Prepare to review the compliance provisions on the pages that follow.

**Green Building Inspection Requirements:**

**5.106 Planning and Design – (Stormwater)**

*Enforcement is managed through the Public Works department.*

**5.106.4 Bicycle parking**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the permit set of plans and count the number of bike parking spot. Request to see the bike parking submittal if the bike parking configuration is unclear. Note the number of bike parking spaces to review in the field.
- Green Building Final Inspection – Part 2 On-Site Inspection:* Verify that that the amount of bike parking shown on the plans has been provided and installed.

**5.106.5.2 Designated parking**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the permit set of plans and count the number of “clean air vehicles” shown. Note the number of spaces to be verified in the field. Verify with contractor that the striping has been completed. Do not schedule on-site inspection until striping is completed.
- Green Building Final Inspection – Part 2 On-Site Inspection:* Verify that the correct number of clear air vehicle parking stalls have been provided and marked. Verify that the markings read “CLEAN AIR/VANPOOL/EV” and that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle.

**5.106.8 Light pollution reduction**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the permit set of plans to count the exterior light fixtures. Verify that all light fixtures meet the required Backlight, Uplight, and Glare (BUG) Ratings by reviewing the Lighting Submittals compared the figures listed in Table 5.106.8. The requirement for a specific fixture is based on the 1) Mounting height (MH) of the fixture, and 2) The linear distance between the fixtures location compared to the location of the property line. Palo Alto is in lighting zone LZ3.
- Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall visually verify that the fixture installed matches the fixture on the cutsheet.

Table 5.106.8

Maximum Allowable Backlight, Uplight, and Glare (BUG) Ratings for Palo Alto

Allowable Rating	Lighting Zone 3
Maximum Allowable Backlight Rating	
Luminaire greater than 2 mounting heights (MH) from property line	No Limit
Luminaire back hemisphere is 1-2 mounting heights (MH) from property line	B4
Luminaire back hemisphere is 0.5-1 mounting heights (MH) from property line	B3
Luminaire back hemisphere is less than 0.5 mounting heights (MH) from property line	B2

Maximum Allowable Uplight Rating	
For area lighting	U0
For all other outdoor lighting, including decorative luminaires	U3
Maximum Allowable Glare Rating	
Luminaire greater than 2 mounting heights (MH) from property line	G3
Luminaire back hemisphere is 1-2 mounting heights (MH) from property line	G2
Luminaire back hemisphere is 0.5-1 mounting heights (MH) from property line	G1
Luminaire back hemisphere is less than 0.5 mounting heights (MH) from property line	G1

**Division A5.1 - Planning and Design – Tier 1 & Tier 2 Measures**

**A5.106.5.3 Electric Vehicle Charging**

See Electric Vehicle Supply Equipment (EVSE) Inspection Checklist.

**A5.106.11.2 Cool Roof for Reduction of Heat Island Effect**

- Green Building Final Inspection – Part 1 Counter Appointment:* Inspector shall request a copy of the Roofing Submittal and shall verify that the SRI values meet the minimum requirements listed below. A higher SRI is most desirable.

Roof Slope	Minimum SRI
≤ 2:12 (Low-Slope)	78
> 2:12 (Steep Slope)	30

**Division 5.2 – Energy Efficiency – Mandatory Measures**

**Division A5.2 – Energy Efficiency – Tier 1 & Tier 2 Measures**

See Energy Ace Checklists.

**Division 5.3 – Water Efficiency and Conservation – Mandatory Measures**

**Division A5.3 – Water Efficiency and Conservation - Tier 1 & Tier 2 Measures**

**5.303 & A5.303 Indoor Water Use**

**Note:** The required flow and flush rates for will vary from project to project. Therefore, the flow and flush rates shown on the plumbing fixture schedule (and water use calculations) shall govern the inspection.

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify that the specified flow and flush rates specified have been installed. First, review the Plumbing Fixture Schedule and associated water use rates. The fixtures are measured in Gallons Per Minute (GPM) for lavatories and kitchen sinks, and Gallons Per Flush (GPF) for toilets and urinals. Janitor’s closets are excluded. Second, review each fixture specification cut sheet and verify that the GPM/GPF shown on the Plumbing Fixture Schedule matches the fixture cut sheet. Plumbing Fixtures and Fittings shall not exceed the following minimums:

- Water Closets, 1.28 GPF
  - Urinals, 0.5 GPF
  - Single Showerhead, 2.0 GPF at 80 psi
  - Multiple Showerheads Serving One Shower, 2.0 GPF at 80 psi (max. flow rate of all showerheads combined if controlled by a single value)
  - Kitchen faucets, 1.8 GPM @ 60 psi
  - Wash fountains, 1.8 [rim space (in.)/20 gpm @60psi]
  - Metering faucets, 0.20 gallons/cycle
  - Metering faucets for wash fountains, 0.20 [rim space (in.)/20 gpm @60psi]
- Green Building Final Inspection – Part 2 On-Site Inspection:* Field verify that the fixture cut sheet matches the fixture that was installed. Make sure to have the cut sheets on-site to verify installation.

**A5.303.3 Appliances and fixtures for commercial application**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the permit set of plans to verify that the specified water-using appliances are installed. The inspector may review the fixture specifications or approved substitutions to verify compliance with the following:
- Clothes Washers – 10% Reduction in Maximum Water Factor shown in Title 20
  - Residential Grade Dishwashers – Check for Energy Star Label
  - Commercial Grade Dishwashers – Check the cut sheet showing that that the Maximum Gallons Per Rack in Table A5.303.3 are not exceeded:

**Table A5.303.3 Commercial Dishwasher Water Use**

TYPE	High Temperature – Max Gallons Per Rack	Chemical – Max Gallons Per Rack
Conveyer	0.70 (2.6L)	0.62 (4.4L)
Door	0.95 (3.6L)	1.16 (2.6L)
Undercounter	0.90 (3.4L)	0.98 (3.7L)

- Green Building Final Inspection – Part 2 On-Site Inspection:* Field verify that the fixture cut sheet matches the fixture that was installed. Make sure to have the cut sheets on-site to verify installation.

**A5.303.5 Dual plumbing**

- Green Building Incremental Verification:* The inspector shall review the permit set of plans to verify that the dual piping is installed and labeled as specified in accordance with the plumbing code. If recycled water is immediately intended for use in the project, and not just pre-plumbed, the inspector should witness any testing of the system as required by the *California Plumbing Code* and collect the results of any tests.

**A5.304 Outdoor Water Use**

- Green Building Final Inspection – Part 2 On-Site Inspection:* For landscape projects over 1,000 sq. ft., the inspector verify that a separate irrigation meter has been installed and/or verified by the Utilities department. *Applicant should contact Utilities for any questions related to installation.*

**5.304.3.1 Irrigation controllers**

- *Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the landscape submittals to verify that the controller contains either a weather or soil moisture based system. Review irrigation schedule to verify that the irrigation has been scheduled for times between 8:00 p.m. and 10:00 a.m. only. For above-ground irrigation only (non-drip system), note the duration “run-time” on irrigation schedule for the field inspection. Note that run-times vary throughout the year. Locate the run-time specified for the month that the inspection occurs within.
- *Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall field verify that a weather or soil moisture based controller has been installed (as shown in the landscape submittal). For above-ground irrigation, the inspector shall request that the irrigation be turned on for the length of the longest duration run-time. Inspector shall verify that water *does not run-off* or *does not spray on buildings or hardscapes*. If run-off or spray on building/hardscape occurs, the General Contractor shall re-calibrate the controller to prevent this occurrence. (Note to General Contractor: Consider having the landscape contractor present on site)

**Division 5.4 – Material Conservation and Resource Efficiency – Mandatory Measures****5.410.2 Commissioning (New Construction 10,000 sf or more only)**

- *Green Building Incremental Verification:* The inspector shall request to see a commissioning schedule to verify that the Commissioning activities are planned.
- *Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review that the following were completed:
  - The inspector shall confirm that the Functional Performance Testing was completed by the Commissioning Agent.
  - The inspector shall confirm that the Systems Manual has been reviewed by the Commissioning Agent.
  - The inspector shall verify that the Systems Training has been verified as complete by the Commissioning Agent.
  - The inspector shall verify that the Commissioning Report is complete.

Note: If any of the above are in progress, the inspector shall verify that a contract is in place to complete the Commissioning Report by reviewing a signed copy of the commissioning agent’s contract.

**5.410.4 Testing and Adjusting (New Construction less than 10,000 sf or new systems to serve an addition or alteration.)**

- *Green Building Incremental Verification:* The inspector shall request to see a testing and adjusting schedule to verify that these activities are planned.
- *Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify that the Testing and Adjusting report is completed. The inspector shall verify that the Operations and Maintenance (O&M) Manual is completed.

## **Division A5.4 – Material Conservation and Resource Efficiency - Tier 1 & Tier 2 Measures**

### **A5.405.1 Regional Materials**

- Green Building Final Inspection – Part 1 Counter Appointment:* Using receipts and records supplied by the building contractor, the inspector shall verify that 10 percent of the materials' value has been acquired from a source within 500 miles of project location.

### **A5.405.2.2 Rapidly Renewable Materials**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify, using receipts and certifications provided by the contractor, that that project has used rapidly renewable materials for 2.5% of the materials value based on the project cost.

### **A5.405.3 Reused materials**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify through receipts and other product purchase documentation that the percentage of building materials that have been reused replacing the need for those additional “new materials” is 5 percent or greater of the overall material usage.

### **A5.405.4 Recycled Content**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify through receipts and other product purchase documentation that the percentage of building materials containing recycled content meet the minimum thresholds:
  - Tier 1 = 10% Recycled Content
  - Tier 2 = 20% Recycled Content

## **Division 5.5 – Environmental Quality – Mandatory Measures**

### **5.404.1.3 Temporary Ventilation**

- Green Building Incremental Verification:* The inspector shall field verify if the HVAC system is being used during construction. If yes, the inspector shall review the filter cut sheet to confirm that its meets a minimum of MERV 8.

### **5.504.3 Covering of duct openings and protection of mechanical equipment during construction**

- Green Building Incremental Verification:* The inspector shall verify that all duct and other related air distribution component openings are covered to reduce the amount of dust, water, and debris which may enter the building.
- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify, by reviewing (3) photos, that all duct and other related air distribution component openings were covered to reduce the amount of dust, water and debris which may enter the building.

### **5.504.4 Finish material pollutant control**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall verify compliance with required VOC levels by reviewing the VOC Compliance Spreadsheet and associated product cut sheets.

### 5.506.2 Carbon Dioxide Monitoring

- Green Building Final Inspection – Part 1 Counter Appointment:* If shown on the project plans, the inspector shall review the Carbon Dioxide Monitor submittal to verify installation in the field. Typically, these are shown in areas with higher occupancy (i.e. Conference room, areas of assembly).
- Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall review the Carbon Dioxide Monitor submittal and verify that Carbon Dioxide Monitors are installed (if shown on plans).

## Division 5.5 – Environmental Quality – Tier 1 & Tier 2 Measures

### A5.504.2 IAQ Post Construction

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the permit set of plans to verify which flush-out practices the contractor is to use on the project and ask for documentation showing compliance at the conclusion of the construction process. Compliance shall indicate a flush-out summary showing the calculation for the required flush-out period. Beginning and end dates, temperature and humidity readings (shall remain at a minimum of 60 degrees F and relative humidity no higher than 60 percent).

#### A5.504.2.1 IAQ Testing

- Green Building Final Inspection – Part 1 Counter Appointment:* If testing is completed on the project, review the IAQ Testing Report to verify that results *do not exceed the following*:
  1. Carbon Monoxide (CO), maximum 9 parts per million, not to exceed outdoor levels by 2 parts per million.
  2. Formaldehyde: 27 parts per billion
  3. Particulates (PM10): 50 micrograms per cubic meter
  4. 4-Phenylclohexene (4-PCH), if fabrics and carpets with styrene butadiene rubber (SBR) latex backing are installed: 6.5 micrograms per cubic meter; and
  5. Total Volatile Organic Compounds (TVOC): 300 micrograms per cubic meter.

#### A5.504.4.5.1 No added formaldehyde for Composite Wood (MDF, particle board) Tier 1

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the Material Safety Data Sheets (MSDS) for all composite wood products. Composite wood is a material that is a mixture of wood fiber, plastic, and some type of binding agent (i.e. MDF, particle board). Verify that all data sheets are labeled as either “Approved by CARB” or “CARB Compliant” for either “No-added formaldehyde (NAF) or “Ultra-low emitting formaldehyde”.

#### A5.504.4.7 Resilient flooring systems, Tier 1

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the Material Safety Data Sheets (MSDS) for at least 90% of resilient flooring material (i.e. Vinyl, VCT, linoleum). Each MSDS should show one of the following:
  1. RFCI “Floorscore Certified”
  2. “Compliant with California Department of Public Health VOC Requirements” or “1350 Standard Compliant”
  3. “2009 CHPS Product Database listed”



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4. “Greengaurd Children’s & School Program Certified”

**A5.504.5.1 Entryway Systems**

- Green Building Final Inspection – Part 1 Counter Appointment:* The inspector shall review the flooring submittal or product cut sheet to verify that “walk-off” mats, at least 6 feet in length, have been installed.
- Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall verify the installation of the specified “walk-off” mats.

**A5.504.5.2 Isolation of pollutant sources**

- Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall confirm that all janitor closets or high-volume copy rooms are installed with self-closing hardware.

**A5.504.5.3.1.1 Filters**

- Green Building Final Inspection – Part 2 On-Site Inspection:* The inspector shall review the product data sheets maintained by the contractor to verify that HVAC filtration specified on the approved plans and specifications installed, or is stored on site with the ability to be verified. The inspector may check a sample of installed filters to verify the MERV rating.
  - Tier 1 = MERV 11 Rating
  - Tier 2 = MERV 13 Rating

**Compliance Resources:**

The following resources are available to the construction team:

1. City of Palo Alto – Green Building Website  
[http://www.cityofpaloalto.org/gov/depts/ds/green\\_building/default.asp](http://www.cityofpaloalto.org/gov/depts/ds/green_building/default.asp)
  - *Green Building Requirements listed by project type and size*
  - *Green Building Compliance Process*
2. Building Standards Commission Resources located on the following website:  
<http://www.bsc.ca.gov/Home/CALGreen.aspx>
  - *2013 California Green Building Standards Code*
  - *A Guide to the California Green Building Standards Code*
  - *Guide to the Non-Residential Commissioning of the Calgreen Code*
  - *Sample Commissioning Project*
  - *Sample Functional Performance Test, FPT Template*