

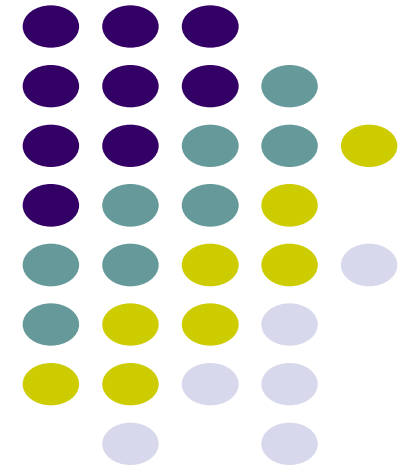
# City of Scottsdale Green Construction Code



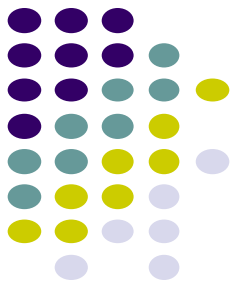
## Commercial/Multifamily Construction 2021 International Green Construction Code

rev. February 7, 2025

Anthony Floyd, FAIA, LEED BD+C, NOMA  
Office of Environmental Initiatives  
Planning and Development  
Community and Economic Development  
City of Scottsdale



# IgCC Adoption as Mandatory Code Commercial and Multifamily



- **IgCC Categories**
  - Site Sustainability
  - Water Use Efficiency
  - Energy Efficiency (IECC)
  - Indoor Environmental Quality
  - Materials and Resources



Scottsdale is the first jurisdiction in the state to adopt a mandatory green construction code and one of the first in the nation.

# International Green Construction Code

## Application

- New commercial, multifamily, remodels and TIs
- LEED rating is an alternative compliance path

## Scope

- Heat Island Mitigation
- Indoor and outdoor water efficiency
- On-site renewable energy
- Indoor environmental quality
- Construction waste management
- Recycling infrastructure
- Reduced impact building materials



# Above Code Programs

(amended IgCC Section 101.3.2)

- Buildings registered for certification or designation under the following national or regionally recognized green building programs shall be deemed to comply with this code.
  1. LEED green building certification
  2. Green Globes green building certification
  3. Living Building Challenge (LBC) certification
- Requires project registration confirmation and compliance with Scottsdale building codes.
  - 2021 IECC, EV charging infrastructure, solar-ready zone, recycling facilities, high-efficiency plumbing fixtures, hot water supply.

CITY OF SCOTTSDALE  
PLANNING AND DEVELOPMENT

## INTERPRETATIONS & APPLICATIONS OF BUILDING CODES & REGULATIONS 21-10

CODE SECTION: 2021 IgCC Section 101.3.2 amendment

rev. 12/23/24



### IgCC ABOVE CODE PROGRAMS

The purpose of this interpretation is to clarify the alternative compliance paths covered in the city amended Section 101.3.2 of the 2021 International Green Construction Code (IgCC). The amended section reads as follows:

**101.3.2 Above code programs.** Buildings registered for certification or designation under the following national or regionally recognized green building programs shall be deemed to comply with this code:

1. LEED green building rating system certification.
2. Green Globes green building rating system certification.
3. Living Building Challenge (LBC) certification.

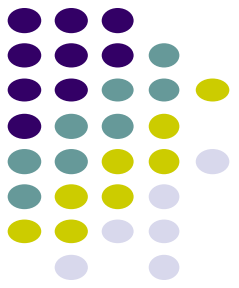
#### Application

When one of the above third-party certification programs is selected as an alternative compliance path, the following documentation shall be submitted and reviewed as part of the building plan review process:

1. Project registration confirmation for LEED v4 for new construction or major renovation, Green Globes-2021 for new construction, or LBC v4.0 Living, Petal or Core certification.
2. Scorecard for LEED; project checklist for Green Globes; or certification plan for LBC.
3. Name and contact information of third-party certification accredited professional, assessor, or auditor.
4. Energy compliance documentation in accordance with city amended 2021 IECC or ASHRAE 90.1-2019 including city amended EV charging infrastructure (C405.13) and solar-ready zone (appendix CB).
5. Commissioning plan as required by the city amended 2021 IECC.
6. Commissioning certificate (city form filled and signed by owner and commissioning agent).
7. Recycling facilities in accordance with city amended IBC Section 1211.
8. High-efficiency plumbing fixtures in accordance with city amended IPC Table 604.4.



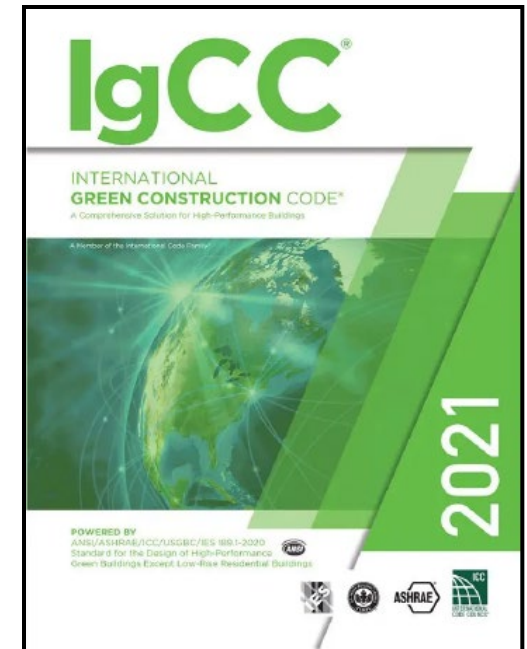
# IgCC for Commercial and Multifamily

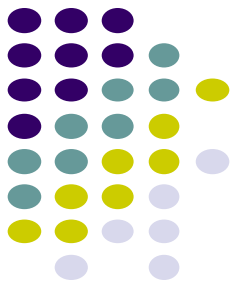


## ● Top 10 Green New Construction Provisions

1. Construction Waste Management (TI and NC)
2. Heat Island Mitigation (NC)
3. Cool Roofs (NC)
4. On-Site Renewable Energy (NC)
5. Solar-Ready Zone (NC)
6. EV Charging Infrastructure (NC)
7. Reduced Impact Materials (TI and NC)
8. Low VOC Emissions (TI and NC)
9. Recycling Facilities (TI and NC)
10. Water Use Efficiency (TI and NC)

Highlighted text only applies new construction.

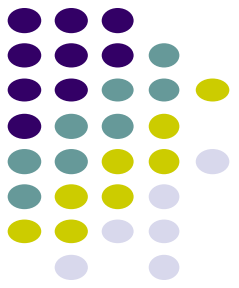




# **IgCC Checklist for For Building Plan Review**



# Applicable Codes

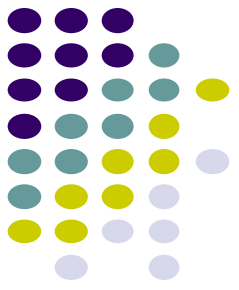


Check for “2021 International Green Construction Code (IgCC)”

**City of Scottsdale**  
**Adopted Building Codes and Amendments**

- 2021 International Building Code w/amendments (IBC)
- 2021 International Residential Code w/amendments (IRC)
- 2021 International Mechanical Code w/amendments (IMC)
- 2021 International Plumbing Code w/amendments (IPC)
- 2021 International Energy Conservation Code w/amendments (IECC)
- 2021 International Green Construction Code w/amendments (IGCC)
- 2021 International Fuel Gas Code w/amendments (IFGC)
- 2021 International Existing Building Code w/amendments (IEBC)
- 2021 International Fire Code w/amendments (IFC)
- 2020 National Electric Code w/amendments (NEC)
- 2021 ICC -300 Bleachers, Folding and Telescopic Seating, and Grandstands
- 2010 ADA Standards for Accessible Design
- 2009 ICC A117.1 Accessible and Usable Buildings and Facilities





## 2 Construction and Demolition Waste Multifamily and Commercial

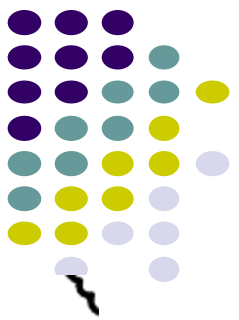
### Construction Waste Management (amended 901.3.1.1)

- Divert not less than 50% of construction waste from landfill for recycling and reuse
- Metal, wood, cardboard, foam, concrete, masonry, asphalt
- Recyclable materials can be co-mingled and sorted off-site at Material Recovery Facility (MRF)

**Exception:** Building projects less than 5,000 sq. ft. of new, added or remodeled floor area.







# Plan Review Correction Stamp

## **CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT**

Add note: “A minimum of 50% of nonhazardous construction, demolition, or deconstruction waste material shall be diverted from disposal in landfills and incinerators through reuse, recycling, repurposing, and/or composting. Such materials include paper, cardboard, concrete, masonry, wood, and metal. All diversion calculations shall be based on weight throughout the construction process (IgCC 901.3.1.1).”

"The following Construction and Demolition Waste Management Plan form must be submitted prior to permit issuance –

<https://www.scottsdaleaz.gov/Assets/ScottsdaleAZ/Design/green-building/2021+IgCC+Construction+Demolition+Waste+Management+Plan.pdf> “



# Construction and Demolition Waste Management Plan - 2021 IgCC

 Plan Review # 6374-23

Permit No # \_\_\_\_\_

### Building Project Information

 Project Name: Berkley Insurance TI Date: 10/27/2023

 Project Address: 7233 E Butherus Dr, Scottsdale, AZ 85260

 Contractor: Clune Construction Company Phone: 480-901-2969

 Owner: Berkley Insurance Company Phone: \_\_\_\_\_

### When Required

**Construction and Demolition (C&D) Waste Management:** Complete this form for all new construction, demolition or deconstruction for buildings with a total floor area of 5,000 sq. ft. or more (IgCC amended Sec. 901.3.1.1). **Review:** This form must be submitted and approved before permit(s) are issued.

### Materials to be Recycled

At least 50% of all construction debris must be diverted from the landfill by either **source-separating** the waste by material type or by mixing the materials in a mixed C&D material container. **Mixed C&D materials are required to be processed at a mixed C&D sorting facility.** See Definitions on next page for more information.

Recycled and salvaged materials include but not limited to metal, wood, cardboard, paper, plastic, masonry, tile, concrete, and asphalt.

**50%**  
of all construction  
debris must be  
diverted from the  
landfill

### Material Management

 How will the C&D debris be collected on project site:  Source-Separated  Mixed C&D

Materials to be collected & hauled	Facilities to receive materials for reuse
Ceiling tiles and grid	Northwest Regional 19401 W Deer Valley Rd, Surprise, AZ
metal track, studs and screws	Liberty Metals 4708 W Pasadena Ave, Phoenix, AZ
Millwork - 1 dimensional lumber	Grow Well 2807 S 27th Ave, Phoenix, AZ

### Planning and Development Services

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-7080

### Construction Waste Management (continued)

Materials to be collected & hauled	Facilities to receive materials for reuse
Electrical piping	Liberty Metals 4708 W Pasadena Ave, Phoenix, AZ
Aluminum Framing	Liberty Metals 4708 W Pasadena Ave, Phoenix, AZ
Carpet and Tile	Northwest Regional 19401 W Deer Valley Rd, Surprise, AZ
Glass	Sky harbor transfer - for recycling at Northwest Regional 19401 W Deer Valley Rd, Surprise, AZ

### Definitions

**Self-haul:** Permit holder, general contractor, or a subcontractor that hauls their own waste material for recycling, reuse, salvaging or disposal at recycling/waste facilities.

**Hauler:** A company that collects, hauls and tracks mixed C&D materials for diversion from landfill.

**Source separation:** Collection of wood, metal, cardboard, and other recyclables in separate containers.

**Mixed C&D material:** Collection of all recyclable material in same container. Mixed material is required to be sent to a mixed C&D sorting facility to have the recyclable materials extracted and recovered. This option will save the most space on tight construction sites.

**Mixed C&D sorting facility:** Specialized facilities that extract recyclable materials from mixed C&D debris. All mixed C&D material must go to a mixed C&D sorting facility.

### Terms and Conditions

1. This C & D Waste Management Plan must be kept on the job site in the permit folder for the duration of the project. City of Scottsdale staff may enter the jobsite to inspect waste and recycled collection areas.
2. Salvaged materials, recyclables, and waste shall be tracked and documented by means of receipts from the waste management subcontractor. Percentages of all salvaged, recycled and waste materials shall be calculated, demonstrating amounts based on weight and entered into the waste diversion log, including information from any subcontractors who self-hauled their own debris off-site.
3. Documentation shall be maintained through the course of construction. Where requested by code official, evidence of diversion shall be provided.
4. Construction and demolition debris shall not be burned or dumped illegally.
5. Waste diversion rates shall be available prior to framing and final building inspections with  $\geq 50\%$  average diversion rate.

Applicant's Signature: Anthony Semenza Date: 11/2/23

Applicant (print): Tony Semenza Company Clune Construction

### Planning and Development Services

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-7080



City of Scottsdale  
Green Building Program  
**CONSTRUCTION AND DEMOLITION WASTE  
REUSE AND RECYCLING**  
*rev. March 1, 2024*

Construction and demolition waste constitutes about 40 percent of the total solid waste stream in the United States. Besides source reduction, building and material reuse is the most effective strategy for reducing the environment impacts of the waste stream. Reusing existing materials reduce the environmental burden of the manufacturing process. Replacing existing materials with new ones broadens environmental impacts associated with natural resource extraction, production, and transportation.

In most urban areas, landfill space is reaching capacity, requiring the conversion of more land elsewhere and raising the transportation costs of waste. Innovations in recycling technology improve sorting and processing to supply raw material to secondary markets, keeping those materials in the production stream for an extended period.

#### **Material Reuse**

By reusing materials on-site, donating, or selling salvageable items, you can cut waste costs and reduce material expenses. Determine the savings and cost of reusing, donating, and/or selling salvageable materials. The following are just a few of the materials that can be salvaged and/or donated locally:

Appliances, block, bricks, carpeting, doors, flooring, lighting fixtures, metal framing, pipes, shelving, tile, windows, bathroom fixtures, cabinets, dimensional lumber, ductwork, insulation, marble, paneling, OSB & plywood, siding, trim, wood beams.

#### **Construction Site Recycling**

Recommended steps for an effective construction site recycling program:

- Include requirements for on-site recycling in all project documents and subcontracts.
- Decide what materials will be recycled on the project and determine which wastes subcontractors will be responsible for recycling.
- Clearly designate the recycling bins.
- Place garbage and recycling bins near each other, and close to the point of waste generation but out of the traffic pattern.
- Periodically check bins for contamination and check the wastes in the garbage dumpsters to see if recyclables are being thrown away.

#### **Local Recycling and Reuse Facilities**

##### Metal and steel

- Copper State Metals
- Davis Metals and Salvage
- Hendrix Salvage
- Liberty Iron and Metal
- Southwest Metals
- American Metals
- DeReel Tech Scrap Metal Processing

##### Concrete, asphalt, masonry

- Johnson-Stewart
- Contractors Landfill & Recycling

##### Cardboard, wood, metal, and multiple materials

- Waste Management
- Weinberger Waste Disposal
- Republic Services
- Friedman Recycling
- Sierra Waste Systems
- SA Recycling

##### High density polyethylene (HDPE), low density polyethylene (LDPE), polyethylene, polystyrene (PS), terephthalate (PET)

- Friedman Recycling

##### Wood and millwork

- AZ Wood Grinding and Recycling
- Gro-Well

##### Ceiling tiles, millwork, doors, windows, misc.

- Stardust Building Supply
- Armstrong ceiling recycling program

##### Carpeting

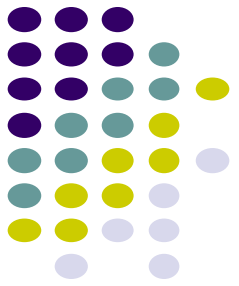
- Aquafil Carpet Recycling

Please note that Tenant Improvement projects often reuse existing materials including doors, interior partitions, suspended ceiling, light fixtures, and mechanical duct work.



# 3

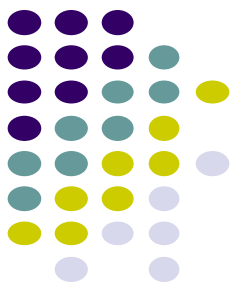
# Heat Island Mitigation



## Site Hardscape

- At least 50% of site hardscape shall be shaded by structures or trees
  - or -
- Light color paving surfaces with a solar reflective index (SRI) of 29 or more





# Plan Review Correction Stamp

**Heat Island Mitigation - IgCC 501.3.5.1 Site Hardscape.** Show that 50% or more of the site hardscape complies with one or any combination of the following:

- a) Trees and vegetation planted to provide full shade coverage based on ten-year growth.
- b) Shading with structures or parking under a building. Effective shade coverage is calculated as the arithmetic mean of the shade calculated at 10 a.m., noon, and 3 p.m. on summer solstice.
- c) Hardscape materials with a minimum initial solar reflectance index (SRI) of 29. A default SRI value of 35 for new concrete without added color pigment is allowed to be used instead of measurements. Asphalt paving will need to be shaded or coated with a cool surface sealer meeting the SRI value of 29.

**City of Scottsdale**  
**2021 International Green Construction Code (IgCC)**  
**Site Heat Island Mitigation Checklist**

rev. 8-29-24



The intent of this checklist is to list the heat island mitigation options in Section 501.3.5.1 of the 2021 International Green Construction Code (IgCC). The section reads as follows:

**501.3.5.1 Site hardscape.** At least 50% of the *site hardscape* that is not covered by *solar energy systems* shall be provided with one or any combination of the following:

- Existing trees and vegetation or new *biodiverse plantings of native plants and adapted plants*, which shall be planted either prior to the final approval by the *AHJ* or in accordance with a contract established to require planting no later than 12 months after the final approval by the *AHJ* so as to provide the required shade no later than ten years after the final approval. The effective shade coverage on the *hardscape* shall be the arithmetic mean of the shade coverage calculated at 10 a.m., noon, and 3 p.m. on the summer solstice.
- Paving materials with a minimum initial *solar reflectance index (SRI)* of 29. A default *SRI* value of 35 for new concrete without added color pigment is allowed to be used instead of measurements.
- Open-graded (uniform-sized) aggregate, permeable pavement, permeable pavers, and porous pavers (open-grid pavers)*. *Permeable pavement* and *permeable pavers* shall have a percolation rate of not less than 2 gal/min • ft<sup>2</sup> (100 L/min • m<sup>2</sup>).
- Shading through the use of structures*, provided that the top surface of the shading structure complies with the provisions of Section 501.3.5.3.
- Parking under a building*, provided that the *roof* of the building complies with the provisions of Section 501.3.5.3.
- Buildings or structures that provide shade to the site hardscape*. The effective shade coverage on the *hardscape* shall be the arithmetic mean of the shade coverage calculated at 10 a.m., noon, and 3 p.m. on the summer solstice.

Table 1- Solar Reflectance for Standard Paving materials

Paving Material	SRI	Reflectance	Emissivity
Typical new gray concrete	35	0.35	0.9
Typical weathered* gray concrete	19	0.20	0.9
Typical new white concrete	86	0.7	0.9
Typical weathered* white concrete	45	0.4	0.9
New asphalt	0	0.05	0.9
Weathered asphalt	6	0.10	0.9

\* Reflectance of surfaces can be maintained with cleaning. Typical pressure washing of cementitious materials can restore reflectance close to original value. Weathered values are based on no cleaning.

# Site Hardscape Checklist



## Site Hardscape Worksheet - Optional

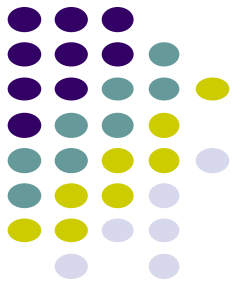
Site Hardscape Location	Site Mitigation Options (check V where applicable)				Hardscape Area (sq. ft.)	% of Total Site Hardscape Area
	Hardscape Areas with an Initial Solar Reflectance Value (SRI) ≥ 29 (see Table 1 next page)	Parking Areas under buildings or shade structures	Hardscape Areas shaded by Trees	Permeable Paving (percolation rate ≥ 2 gal/min per sq. ft.) including porous and open-grid pavers		
1						
2						
3						
4						
5						
6						
Protected Site Hardscape areas (1 thru 6 above)						
Unprotected Site Area (areas not included above)						
Total Site Hardscape Area (Protected and Unprotected)						
Total Percentage of Protected Site Hardscape Area (Protected Hardscape Area ÷ Total Hardscape Area)						



# Sample Submittal

## City of Scottsdale 2021 International Green Construction Code (IgCC) Site Heat Island Mitigation Checklist

rev. 8-29-24



The intent of this checklist is to list the heat island mitigation options in Section 501.3.5.1 of the 2021 International Green Construction Code (IgCC). The section reads as follows:

**501.3.5.1 Site hardscape.** At least 50% of the *site hardscape* that is not covered by *solar energy systems* shall be provided with one or any combination of the following:

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- Paving materials with a minimum initial *solar reflectance index (SRI)* of 29. A default *SRI* value of 35 for new concrete without added color pigment is allowed to be used instead of measurements.
  - Open-graded (uniform-sized) aggregate, permeable pavement, permeable pavers, and porous pavers (open-grid pavers)*. *Permeable pavement* and *permeable pavers* shall have a percolation rate of not less than 2 gal/min • ft<sup>2</sup> (100 L/min • m<sup>2</sup>).
- Shading through the use of structures, provided that the top surface of the shading structure complies with the provisions of Section 501.3.5.3.
  - Parking under a building*, provided that the *roof* of the building complies with the provisions of Section 501.3.5.3.
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\* Reflectance of surfaces can be maintained with cleaning. Typical pressure washing of cementitious materials can restore reflectance close to original value. Weathered values are based on no cleaning.

# Sample Submittal

## PALM LANE RESIDENCES PH1 - WEST PARCEL

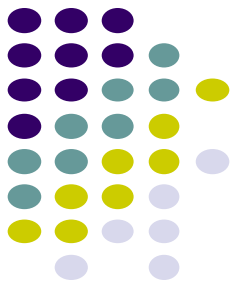
Site Hardscape Location	Site Mitigation Options (check ✓ where applicable)				Hardscape Area (sq. ft.)	% of Total Site Hardscape Area
	Hardscape Areas with an initial Solar Reflectance Value (SRI) ≥ 29 (see Table 1 next page)	Parking Areas under buildings or shade structures	Hardscape Areas shaded by Trees	Permeable Paving (percolation rate ≥ 2 gal/min per sq. ft.) including porous and open-grid pavers		
1 PARKING LOT - CONCRETE	✓				417	8.5%
2 PARKING - COVERED		✓			1,068	21.7%
3 PARKING -BUILDING SHADE		✓			497	10.1%
4 PARKING - VEG SHADE			✓		150	3.0%
5 SIDEWALKS / DRIVEWAYS	✓				388	7.9%
6						
Protected Site Hardscape areas (1 thru 6 above)					2,520	
Unprotected Site Area (areas not included above)					(PARKING LOT - ASPHALT) 2,404	
Total Site Hardscape Area (Protected and Unprotected)					4,924	
Total Percentage of Protected Site Hardscape Area (Protected Hardscape Area ÷ Total Hardscape Area)						51.2%

Site Hardscape Location		SITE MITIGATION OPTIONS				Hardscape Area (sq. ft.)	% of Total Site Hardscape Area
		Hardscape Areas with an initial Solar Reflectance Value (SRI) > 29	Parking Areas under buildings or shade structures	Hardscape Areas shaded by Trees	Permeable paving (percolation rate > 2 gal/min per sq. ft.) including porous and open-grid pavers		
1	ASPHALT	0sq.ft.	15,552sq.ft.	100,000sq.ft.	0sq.ft.	176,946 sq.ft.	73.40%
2	CONCRETE PAVING (WALKWAYS)	41,681sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	41,681 sq.ft.	17.29%
3	CONCRETE PAVING (OUTDOOR SHOWER AND BRIDGE)	213sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	213 sq.ft.	0.09%
4	CONCRETE PAVING (POOL DECK)	8,900sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	8,900 sq.ft.	3.69%
5	CONCRETE PAVERS (VEHICULAR GRADED)	3,000sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	3,000 sq.ft.	1.24%
6	STONE PAVING (PEDESTRIAN GRADED)	864sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	864 sq.ft.	0.36%
7	SYNTHETIC TURF AT DOG PARK	0sq.ft.	0sq.ft.	30sq.ft.	0sq.ft.	420 sq.ft.	0.17%
8	SYNTHETIC TURF	0sq.ft.	0sq.ft.	1,151sq.ft.	0sq.ft.	1,330 sq.ft.	0.55%
9	CONCRETE PAVERS	170sq.ft.	0sq.ft.	0sq.ft.	0sq.ft.	170 sq.ft.	0.07%
10	STABILIZED DECOMPOSE GRANITE	0sq.ft.	0sq.ft.	6,500sq.ft.	0sq.ft.	7,545 sq.ft.	3.13%
<b>Protected Site Hardscape Areas</b>							178,061Sq.ft.
<b>Unprotected Site Hardscape areas (areas not included above)</b>							63,008Sq.ft.
<b>Total Site Hardscape Area (Protected and Unprotected)</b>							241,069Sq.ft.
<b>Total percentage of Protected Site Hardscape Area (Protected hardscape Area / Total Hardscape Area)</b>							73.86%

# Sample Submittal

## HEAT ISLAND MITIGATION DATA (IgCC SECTION 501.3.5.1)

TOTAL PROJECT HARDSCAPE :	110,695 SF
SHADING FROM TREES:	3,975 SF
CONCRETE PAVING (SRI 35):	32,940 SF
SHADING FROM PARKING CANOPIES:	22,489 SF
HEAT ISLAND MITIGATION REQUIRED	55,347 SF (50%)
HEAT ISLAND MITIGATION PROVIDED	59,404 SF (54%)



## 4 Heat Island Mitigation - Cool Roofs

### Low Slope roofs (less than 2 in 12 slope)

- Solar reflectance index (SRI) of 64 or higher over conditioned and non-conditioned spaces
- Applies only to new roofing

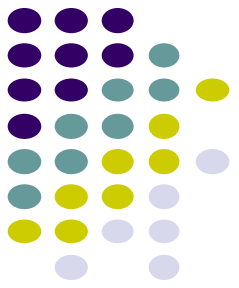
Low-slope roof surfaces (less than 2 in 12 slope) are required to have a solar reflectance index (SRI) value of 64 or higher.





## 5

# IgCC and Renewable Energy



## ● On-site Solar PV (new construction and additions)

- Provide a total rated capacity of not less than 2 watts per sq. ft. of roof area over conditioned space
- Applies to additions where the new area is more than 50% existing roof area

### Exceptions:

1. Building floor area less than 5,000 sq ft
2. Energy efficiency measures resulting in 20% annual energy savings



**IgCC On-Site Renewable Energy.** Provide on-site renewable energy system (solar PV) sized for (1) not less than 2 watts per sq. ft. of gross roof area over conditioned space or (2) not less than 3% of annual estimated energy use, in accordance with IgCC amended Section 701.3. See - <https://www.scottsdaleaz.gov/Assets/ScottsdaleAZ/Codes+and+Ordinances/INT+21-9.pdf>



# Deferred Submittal for On-Site Renewable Energy



## Deferred Submittal Form On-Site Renewable Energy System

rev. 10/11/24

This does NOT permit the violation of any section of the International Energy Conservation Code (IECC) and International Green Construction Code (IgCC), or any federal, state or local regulations.

Plan Review No.: \_\_\_\_\_ Permit No.: \_\_\_\_\_  
 Project Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Address: \_\_\_\_\_ Plan Check No.: \_\_\_\_\_

### OWNER'S NOTIFICATION OF DEFERRED SUBMITTAL FOR RENEWABLE ENERGY SYSTEM

To be completed and signed by **Owner** before a building permit is issued.

I hereby acknowledge that the deferred submittal for on-site solar energy system shall be submitted to the city for review and approval in accordance with IgCC Section 701.3 (see below). I do hereby certify that I have retained the following registered design professional or solar design/build contractor to be responsible for submitting the deferred solar energy submittal to the city for review and approval prior to final building inspection of work covered by this plan review and permit.

**Registered Design Professional or  
Solar Design/Build Contractor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
(Registered design professional or solar contractor name)

**Owner/Agent Signature** \_\_\_\_\_ **Date:** \_\_\_\_\_  
(Agent - Include title, relationship to project and provide letter signed by owner authorizing you as agent)

### ON-SITE RENEWABLE ENERGY (as amended by IgCC 701.3)

**Section 701.3 On-site renewable energy systems.** Building projects shall contain on-site photovoltaic systems with a total DC rated capacity in accordance with one of the following:

1. Not less than 3 percent of the annual estimated energy used within the building for building mechanical, service water-heating and lighting.
2. Not less than 2 watts per sq. ft. multiplied by the horizontal projection of the gross roof area over conditioned spaces.

**Exceptions to 701.3:**

1. A building with gross conditioned floor area less than 5,000 square feet.
2. On-site renewable energy systems, other than photovoltaic systems, that result in an equal or greater annual energy production.
3. All or part of the required renewable energy generation is permitted to be replaced by equivalent annual energy savings, as calculated using the total building performance compliance path in Section C407 of the IECC.

### CERTIFICATE OF COMPLETION FOR ON-SITE RENEWABLE ENERGY SYSTEM

To be signed by registered design professional or solar design/build contractor before a certificate of completion is issued.

I certify that, to the best of my knowledge, the requirements of the amended IgCC Section 701.3 and approved plans/specifications have been complied with, insofar as the portion of work requiring commissioning, except for previously reported deviations. A guarantee that the building is in full accordance is neither intended nor implied.

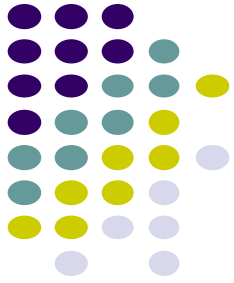
**Print Name:** \_\_\_\_\_ **Company Name:** \_\_\_\_\_

**Signature of Registered Design Professional or Solar Design/Build Contractor** \_\_\_\_\_ **Date** \_\_\_\_\_

Copy to be retained in plan review and permit records after the Certificate of Responsibility box (above) is signed.  
Copy to be retained by registered design professional or solar design/build contractor until completion of project and Certificate of Compliance box (above) is signed; then submitted to the city prior to final building inspection.

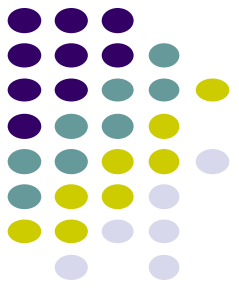
### Planning and Development

7447 E Indian School Road, Suite 125, Scottsdale, AZ 85251 • Phone: 480-312-7080



## 6

# IgCC/IECC and Renewable Energy



## ● Solar-Ready Zone (new construction and additions)

- Minimum 40% of roof area free and clear of obstructions
- Applies to additions where the new area is more than 50% existing roof area

### Exceptions:

1. A building with an installed, on-site renewable energy system
2. Roof areas obstructed by roof decks, walkways, equipment, vents, skylights, mandatory access or setback areas as required by the fire code



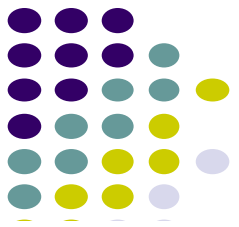
Credit: Ca risle Roof Foam

### **SOLAR-READY ZONE – COMMERCIAL**

**IECC Appendix CB103.3 Solar-ready zone area.** The total solar-ready zone area shall be not less than 40 percent of the roof area calculated as the horizontally projected gross roof area less the area covered by skylights, occupied roof decks, vegetative roof areas and mandatory access or setback areas as required by the *International Fire Code*. The solar-ready zone shall be a single area or smaller, separated sub-zone areas. Each sub-zone shall be not less than 5 feet in width in the narrowest dimension.

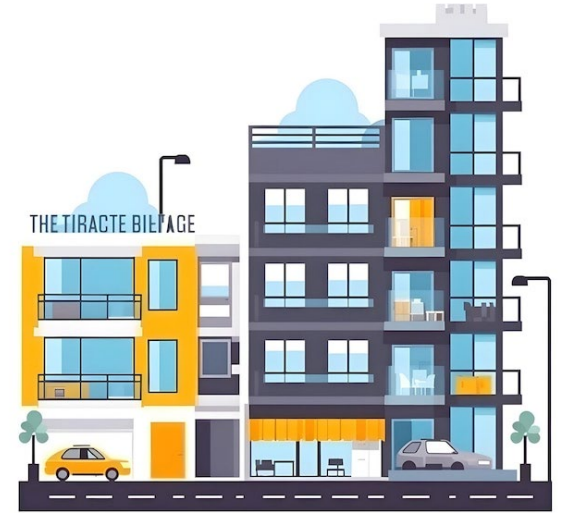
# 7

## Electric Vehicle Capable Charging 2021 IECC Section C405.13

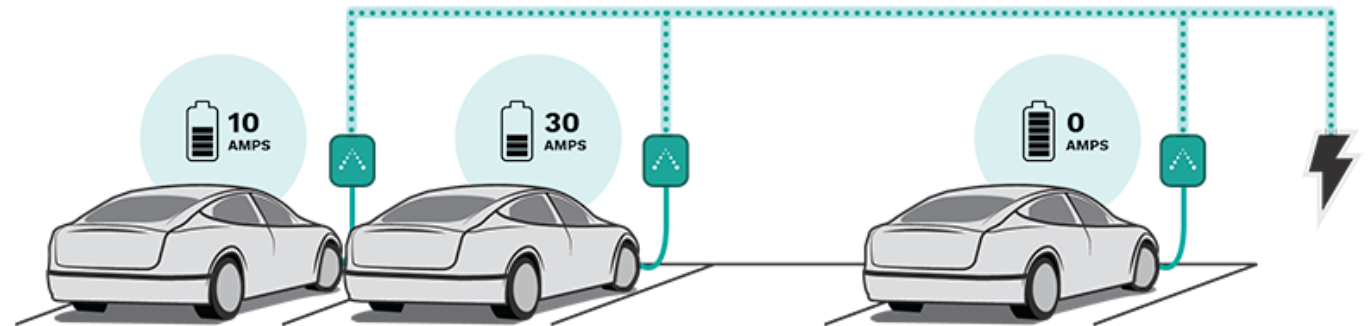


### New Multifamily & Hotels

- 4%-installed and 20% EV-capable parking spaces shall provide accommodates for future EV charging (ALMS)
- For EV-capable, reserve electrical service panel space for future circuit breakers labeled “Future EV Charging”
- Install raceway from the electrical service panel to parking area, with junction box or outlet labeled “Future EV Charging”.



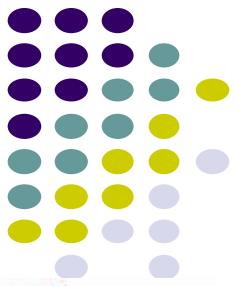
FreePik



Source: EverCharge SmartPower

# 7

## Electric Vehicle Capable Charging 2021 IgCC Section 501.3.7.3

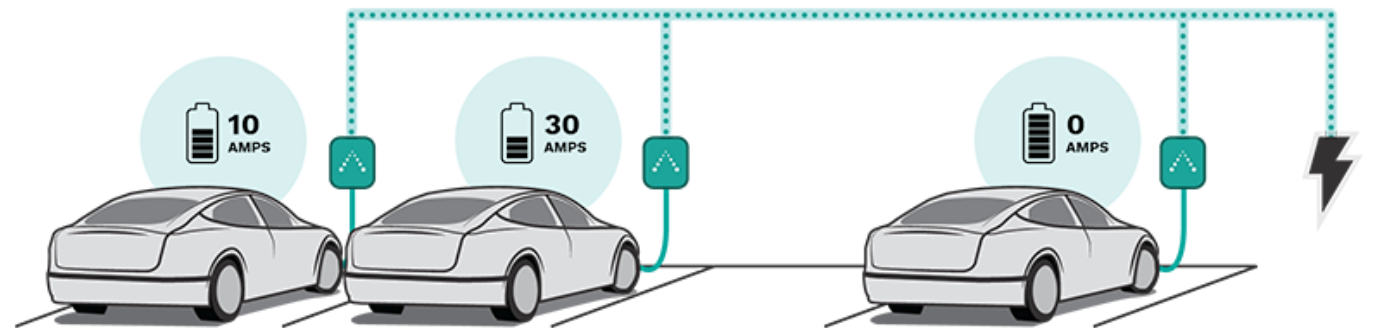


### ● New Commercial Buildings

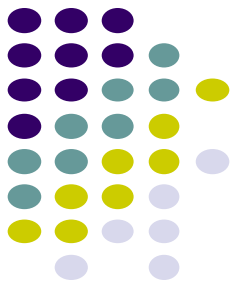
- 4%-installed and 10% EV-capable parking spaces shall provide accommodates for future EV charging (ALMS)
- For EV-capable, reserve electrical service panel space for future circuit breakers labeled “Future EV Charging”
- Install raceway from the electrical service panel to parking area, with junction box or outlet labeled “Future EV Charging”.



Vecteezy



Source: EverCharge SmartPower



# Plan Review Correction Stamp

**IgCC 501.3.7.3 Electric vehicle charging facilities.** EV installed spaces and EV capable spaces shall be provided in accordance with the following:

**IgCC amended TABLE 501.3.7.3**

## **ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS**

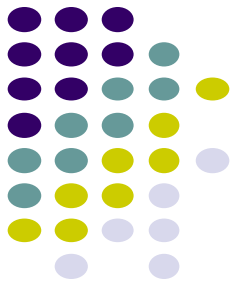
<b>Occupancy Group</b>	<b>Minimum number of EV Installed Spaces</b>	<b>Minimum number of EV Capable Spaces</b>
Group R-1 (hotels, motels) and Group R-2 (apartments, condominiums)	4% of total required parking spaces	20% of total required parking spaces
Group A, B, E, F, I, M, and S	4% of total required parking spaces or not less than 8% of designated employee only parking spaces	10% of total required parking spaces

**EV capable space:** A designated parking space provided with electrical raceway and capacity to support future EV charging.

**EV installed space:** A designated parking space with dedicated electric vehicle supply equipment.



# Sample Submittal



## **PARKING CALCULATION**

### **PARKING SPACE REQUIRED**

TOTAL OCCUPIABLE AREA / 300 SF = (39,733 + 1,676 / 300) = 138 TOTTAL

### **PARKING SPACE PROVIDED**

<b><u>SECURE STAFF PARKING LOT</u></b>	<b><u>SPACES</u></b>
STANDRARD STAFF PARKING SPACES	75
STANDARD ACCESSIBLE PARKING SPACES	1
EV STANDARD PARKING SPACES	9
EV READY ACCESSIBLE PARKING SPACES	1
EV READY PARKING SPACES	16
<hr/>	
<b>SUB-TOTAL</b>	102
<b><u>PER IBC TABLE 1106.1 &amp; ADAAG TABLE 208.2</u></b>	
REQUIRED ACCESSIBLE SPACES	6
REQUIRED VAN ACCESSIBLE SPACES (1 PER 6)	1
<b><u>PUBLIC VISITOR PARKING LOT</u></b>	<b><u>SPACES</u></b>
STANDARD VISITOR PARKING SPACES	42
STANDARD ADA PARKING SPACES	4
<hr/>	
<b>SUB-TOTAL</b>	46
<b><u>TOTAL PARKING ON-SITE</u></b>	<b><u>SPACES</u></b>
VISITOR PARKING	46
STAFF PARKING	102
<hr/>	
<b>TOTAL</b>	148



# EV Charging Infrastructure Interpretation & Applications # 21-13

**INTERPRETATIONS & APPLICATIONS  
OF BUILDING CODES & REGULATIONS 21-13**



CODE SECTION: 2021 IgCC Section 501.3.7.3  
rev. 12/30/24

**IgCC EV CHARGING INFRASTRUCTURE**

The purpose of this interpretation is to clarify electric vehicle (EV) charging infrastructure requirements contained in International Green Construction Code (IgCC) Section 501.3.7.3. The amended section reads as follows:

**501.3.7.3 Required EV installed spaces and EV capable spaces.** *EV installed spaces* and *EV capable spaces* shall be provided in accordance with Table 501.3.7.3. The required number of EV installed spaces or EV capable spaces shall be rounded up to the next highest whole number. Where a branch circuit serves a single charging space, it shall have a capacity not less than of 8.3 kVA (40A, 208/240V). Where a branch circuit serves multiple charging spaces, an Automatic Load Management System (ALMS) may be used to reduce the total electrical capacity provided that all charging spaces are capable of simultaneously charging at a minimum rate of 4.1 kVA (20A, 208/240V).

For *EV capable spaces*, the electrical service panel shall have reserved circuit breaker space(s) labeled "Future EV Charging". Raceway(s) shall be installed from the electrical service panel to outlet box(es) within the planned EV charging parking area(s). Outlet box(es) shall be labeled "Future EV charging".

TABLE 501.3.7.3  
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS

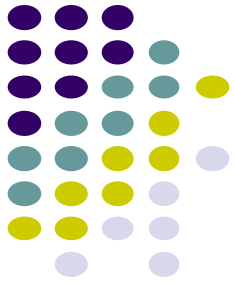
Occupancy Group	Minimum number of EV Installed Spaces <sup>a</sup>	Minimum number of EV Capable Spaces <sup>a</sup>
Group R-1 (hotels, motels) and Group R-2 (apartments, condos)	4% of total required parking spaces	20% of total required parking spaces
Group A, B, E, F, I, M, and S	4% of total required parking spaces or not less than 8% of designated employee only parking spaces	10% of total required parking spaces

<sup>a</sup>Parking spaces designated for other than passenger vehicles may be excluded from the number of parking spaces used to calculate the minimum number of EV spaces.

**Application:** Table 501.3.7.3 is not intended to apply to 1) non-residential occupancies with less than 10 parking spaces, 2) parking for automobile-related services, 3) parking at self-storage facilities, and 4) parking designated for pick-up or drop-off. See IBC Section 1107.2 for accessible EV charging spaces (not less than 5% of EV charging spaces shall be accessible).

*EV installed space* is defined as a designated parking space with dedicated electric vehicle supply equipment. For the purposes of meeting the "Minimum number of EV Installed Spaces" in Table 501.3.7.3 above, the installation of NEMA 14-50 electrical outlets (208/240V) will satisfy this requirement for Level 2 charging.

*EV capable space* is defined as a designated parking space provided with electrical raceway and electrical service capacity to support future EV charging as required in this code.



## 8

# Reduced Impact Materials – New Buildings

**Note:** Not intended to apply to shell buildings, warehouses and similar spaces devoid of interior improvements.\*

Comply with two of following: (901.4.1)

**a) Recycled content materials**

- Not less than 10% of materials (based on cost)

**b) Regional materials**

- Not less than 15% (based on cost)

**c) Biobased and wood components**

- Not less than 5% (based on cost)
- Wood from sustainably managed forests

**d) Environmental product declaration (EPD)**

- Not less than 10 EPDs for new construction



Metal



Masonry

\* See Scottsdale Interpretations and Applications 21-14

## 8

# Reduced Impact Materials -TI's

**Note:** Not intended to apply to tenant improvements less than 5,000 sq. ft.\*

Comply with **one\*** of following: (901.4.1)

**a) Recycled content materials**

- Not less than 10% of materials (based on cost)

**b) Regional materials**

- Not less than 15% (based on cost)

**c) Biobased and wood components**

- Not less than 5% (based on cost)
- Wood from sustainably managed forests

**d) Environmental product declaration (EPD)**

- Not less than 5 EPDs for tenant improvements\*

\* See Scottsdale Interpretations and Applications 21-14



Metal



Masonry



# Reduced Impact Materials Interpretation & Applications # 21-14

CITY OF SCOTTSDALE  
PLANNING AND DEVELOPMENT

## INTERPRETATIONS & APPLICATIONS OF BUILDING CODES & REGULATIONS 21-14



CODE SECTION: 2021 IgCC Section 901.4.1

rev. 1/22/25

### **SUBJECT: IgCC Reduced Impact Materials**

The purpose of this interpretation is to clarify the application of Section 901.4.1 of the 2021 International Green Construction Code (IgCC) which reads as follows:

**901.4.1 Reduced impact materials.** The *building project* shall comply with any two of the following options. Calculations shall only include materials *permanently installed* in the project. Components of mechanical, electrical, plumbing, and fire safety systems and transportation devices can be included when determining compliance.

**901.4.1.1 Recycled content and salvaged material content.** The sum of the *recycled content* and *salvaged material* content shall constitute a minimum of 10% (based on estimated cost), of the *total materials* in the *building project*.

**901.4.1.1.1 Recycled content.** The *recycled content* of a material shall be the *postconsumer recycled content* plus one-half of the *preconsumer recycled content*, determined by weight (mass). The recycled fraction of the material in a product or an assembly shall then be multiplied by the cost of the product or assembly to determine its contribution to the 10% requirement.

**901.4.1.2 Regional materials.** A minimum of 15% (based on estimated cost) of the building materials or products used shall be regionally extracted/harvested/recovered or manufactured within a radius of 500 miles of the project *site*. If only a fraction of a product or material is extracted/harvested/recovered or manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

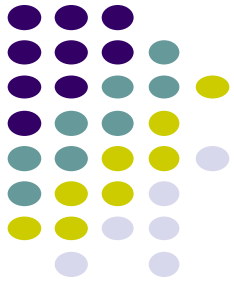
**901.4.1.3 Biobased products.** A minimum of 5% (based on estimated cost) of building materials used, shall be *biobased products*.

**901.4.1.3.1 Wood building components.** This section ensures that wood products used in buildings are sourced from sustainably managed forests. Sustainable forestry describes forest policies, practices and market mechanisms designed to enhance the ecological, economic and social conditions of forest lands.

**901.4.1.4 Multiple-Attribute Environmental Product Declarations (EPDs).** A minimum of ten different building products shall be specified with industry-wide or product-specific EPDs. An EPD is a disclosure of environmental impacts of a product over its lifetime.

#### **Application**

1. As an alternative to calculating the material costs for recycled content, regional, and biobased materials per Section 901.4.1 above, you can calculate the percentage of wall surfaces, roof, and floor areas that meet the material percentage requirements.
2. Tenant improvements < 5,000 sq. ft. are not intended to comply.
3. Tenant improvements ≥ 5,000 sq. ft. need only to comply with 1 of the above 4 options. When the EPD option is selected, tenant improvements only need to submit 5 EPDs.
4. These provisions are not intended to apply to shell buildings, warehouses and similar spaces devoid of interior improvements.



# IgCC Reduced Impact Materials – Example



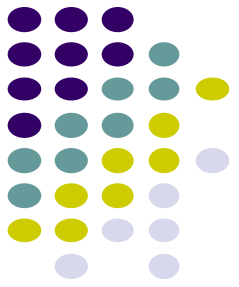
Core and Shell building

Butler Design Group

# Correction Stamp

**IgCC 901.4.1 - Reduced impact materials.** Demonstrate compliance with any two (1 for Tis) of the following options (does not apply to Tis less than 5,000 sq. ft.):

- 901.4.1.1 Recycled content and salvaged material content.** The sum of the recycled content and salvaged material content shall constitute a minimum of 10% (based on cost), of the total materials.
- 901.4.1.2 Regional materials.** A minimum of 15% (based on cost) of the total materials or products used shall be regionally extracted/harvested/recovered or manufactured within a radius of 500 miles of the project site.
- 901.4.1.3 Biobased products.** A minimum of 5% (based on cost) of building materials used, shall be forest certified wood components including but not limited to framing, sheathing, flooring, doors, window frames, millwork, and other biobased products.
- 901.4.1.4 Multiple-attribute product declaration or certification.** A minimum of 10 (5 for Tis) different building products shall comply with one of the following:
  - 901.4.1.4.1 Industry-wide declaration.** A Type III industry-wide environmental product declaration (EPD) shall be submitted for each product.
  - 901.4.1.4.2 Product-specific declaration.** The product-specific declaration shall be manufacturer-specific for a product family. Each product complying with this section shall be counted as two products.
  - 901.4.1.4.3 Third-party multi-attribute certification.** Each product complying with this section shall be counted as two products.
  - 901.4.1.4.4 Product life cycle.** Each product complying with this section shall be counted as two products.





# Worksheet

City of Scottsdale  
 Planning and Development  
**IGCC Worksheet - Reduced Impact Materials**  
 2021 International Green Construction Code (IgCC)



Project Name \_\_\_\_\_

Date \_\_\_\_\_

Completed by \_\_\_\_\_ Firm Name \_\_\_\_\_

**IgCC Section 901.4.1** requires each building project to comply with any two of the following: 1) Recycled Content (min. 10% of total building materials used based on costs); 2) Regional Materials (min. 15% of total building materials based on costs); 3) Biobased Materials (min. 5% of total building materials based on costs); or 4) Environmental Product Declaration (EPD) for a minimum of 10 different products.

Material or Product	Building Element or Component	Material Properties (check <input type="checkbox"/> where applicable)				Manufacturer	Is the material regionally manufactured within 500 miles of building site?	Percentage of Building Elements (where applicable)
		Recycl Content	Regional	Bio Based	EPDs			
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

**City of Scottsdale**  
**2021 International Green Construction Code (IgCC)**



**Reduced Impact Materials Checklist**

rev. 10-31-24

Use this checklist to identify reduced impact materials in accordance with Section 901.4.1 of the amended International Green Construction Code (IgCC).

**901.4.1 Reduced impact materials.** The *building project* shall comply with any two of the following options. Calculations shall only include materials *permanently installed* in the project. Components of mechanical, electrical, plumbing, and fire safety systems and transportation devices can be included when determining compliance.

**901.4.1.1 Recycled content and salvaged material content.** The sum of the *recycled content* and *salvaged material* content shall constitute a minimum of 10% (based on estimated cost), of the total materials in the *building project*.

**901.4.1.1.1 Recycled content.** The *recycled content* of a material shall be the postconsumer recycled content plus one-half of the preconsumer recycled content, determined by weight (mass). The recycled fraction of the material in a product or an assembly shall then be multiplied by the cost of the product or assembly to determine its contribution to the 10% requirement.

Postconsumer recycled content refers to materials generated by households or commercial, industrial or institutional facilities that have been recovered after the use phase. Pre-consumer recycled content on the other hand consists of waste material resulting from a manufacturing or industrial process that was used to create a new material or product.

The annual average industry values, by country of production, for the *recycled content* of steel products manufactured in basic oxygen furnaces and electric arc furnaces shall be permitted to be used as the *recycled content* of the steel.

**901.4.1.2 Regional materials.** A minimum of 15% (based on estimated cost) of the total materials or products used shall be regionally extracted/harvested/recovered or manufactured within a radius of 500 miles of the project site. If only a fraction of a product or material is extracted/harvested/recovered or manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

**Exception:** For building materials or products shipped in part by rail or water, the total distance to the project shall be determined by weighted average, whereby that portion of the distance shipped by rail or water shall be multiplied by 0.25 and added to that portion not shipped by rail or water, provided that the total does not exceed 500 miles.

**901.4.1.3 Biobased products.** A minimum of 5% (based on estimated cost) of building materials used, shall be *biobased products*.

**901.4.1.3.1 Wood building components.** This section ensures that wood products used in buildings are sourced from sustainably managed forests. Sustainable forestry describes forest policies, practices and market mechanisms designed to enhance the ecological, economic and social conditions of forest lands. Acceptable forest certification programs include the Sustainable Forest Initiative (SFI), American Tree Farm System (ATFS), Canadian Standards Association (CSA), and the Forest Stewardship Council (FSC). In accordance with sustainable forestry programs, chain of custody is an accounting process that tracks wood fiber through the different stages of production from harvesting to manufacturer and to the end user.

Wood building components include but not limited to structural framing, sheathing, flooring, subflooring, wood window sash and frames, doors, and architectural millwork. All materials complying with this requirement shall contain not less than 60% certified wood content tracked through a chain of custody process, by physical separation or percentage-based approaches.

**901.4.1.4 Multiple-Attribute Environmental Product Declarations (EPDs).** A minimum of ten different building products shall be specified with industry-wide or product-specific EPDs. An EPD is a disclosure of environmental impacts of a product over its lifetime.

**901.4.1.4.1 Industry-wide declaration.** Industry-wide EPDs shall be identified in the table below for each selected building product.

**901.4.1.4.2 Product-specific declaration.** Product-specific EPD shall be identified below and submitted for each selected building product. The product-specific declaration shall be manufacturer-specific for a product category. Each product complying with this section shall be counted as two products for compliance with Section 901.4.1.4.

Please use the following table to select applicable EPDs for your project:

<b>Recognized Industry-Wide EPDs</b> (Check applicable products below)	<b>Product-Specific EPDs</b> (Add applicable products with EPDs below)
<input type="checkbox"/> Ready mixed concrete	<input type="checkbox"/>
<input type="checkbox"/> Steel reinforcement bar	<input type="checkbox"/>
<input type="checkbox"/> Concrete masonry units	<input type="checkbox"/>
<input type="checkbox"/> Steel framing	<input type="checkbox"/>
<input type="checkbox"/> Steel floor deck	<input type="checkbox"/>
<input type="checkbox"/> Steel roof deck	<input type="checkbox"/>
<input type="checkbox"/> Open web steel joists	<input type="checkbox"/>
<input type="checkbox"/> Wood I-joists	<input type="checkbox"/>
<input type="checkbox"/> Softwood lumber	<input type="checkbox"/>
<input type="checkbox"/> Oriented strand board	<input type="checkbox"/>
<input type="checkbox"/> Resilient flooring (VCT, LVT, SVT)	<input type="checkbox"/>
Add other applicable EPDs for this project	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

# Plan Review Stamp for Reduced Impact Materials Checklist and Worksheet

**See Reduced Impact Materials checklist -**

[https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/codes---ordinances/building-codes/igcc/2021-igcc-reduced-impact-materials-checklist.pdf?sfvrsn=899f21b6\\_7](https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/codes---ordinances/building-codes/igcc/2021-igcc-reduced-impact-materials-checklist.pdf?sfvrsn=899f21b6_7)

**See Reduced Impact Materials worksheet -**

[https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/codes---ordinances/building-codes/igcc/2021-igcc-reduced-impact-materials-worksheet.pdf?sfvrsn=8d3aeb34\\_5](https://www.scottsdaleaz.gov/docs/default-source/scottsdaleaz/codes---ordinances/building-codes/igcc/2021-igcc-reduced-impact-materials-worksheet.pdf?sfvrsn=8d3aeb34_5) IgCC 901.4.1 - Reduced impact materials.

# Environmental Product Declaration (EPD)

- EPDs are similar to Environmental Impact Reports, MSDS or ICC ES reports
- Common materials and products
  - Ready mixed concrete
  - Metal framing
  - Drywall
  - Flooring and wall bases
  - Acoustical ceiling tiles
- Industry-wide and product-specific



[EPDs | Armstrong Ceiling Solutions – Commercial](#)



# Environmental Product Declaration



## NRMCA MEMBER INDUSTRY-AVERAGE EPD FOR READY MIXED CONCRETE



Environmental Product Declaration

Industry-wide EPD

**CEMEX**  
ENVIRONMENTAL PRODUCT DECLARATION  
Mix 1556315 • 19th Avenue Plant



This Environmental Product Declaration (EPD) reports the impacts for 1 m<sup>3</sup> of ready mixed concrete mix, meeting the following specifications:

- ASTM C94: Ready-Mixed Concrete
- UNSPSC Code 30111505: Ready Mix Concrete
- CSA A23.1/A23.2: Concrete Materials and Methods of Concrete Construction
- CSI Division 03-30-00: Cast-in-Place Concrete

#### COMPANY

**CEMEX**  
10100 Katy Freeway, Suite 300  
Houston, TX 77043

#### PLANT

**19th Avenue Plant**  
3640 South 19th Avenue  
Phoenix, AZ 85009

#### EPD PROGRAM OPERATOR

**ASTM International**  
100 Barr Harbor Drive  
West Conshohocken, PA 19428



#### DATE OF ISSUE

01/31/2022 (valid for 5 years until 01/31/2027)

#### ENVIRONMENTAL IMPACTS

##### Declared Product:

Mix 1556315 • 19th Avenue Plant  
Description: MAG AA 4000 ASH FLOWABLE  
Compressive strength: 4000 PSI at 28 days

Declared Unit: 1 m<sup>3</sup> of concrete

Global Warming Potential (kg CO <sub>2</sub> -eq)	287
Ozone Depletion Potential (kg CFC-11-eq)	6.92E-6
Acidification Potential (kg SO <sub>2</sub> -eq)	0.73
Eutrophication Potential (kg N-eq)	0.33
Photochemical Ozone Creation Potential (kg O <sub>3</sub> -eq)	14.9
Abiotic Depletion, non-fossil (kg Sb-eq)	6.21E-5
Abiotic Depletion, fossil (MJ)	483
Total Waste Disposed (kg)	87.9
Consumption of Freshwater (m <sup>3</sup> )	3.37

**Product Components:** crushed aggregate (ASTM C33), natural aggregate (ASTM C33), Portland cement (ASTM C150), fly ash (ASTM C618), admixture (ASTM C494), batch water (ASTM C1602)

Additional detail and Impacts are reported on page three of this EPD

ISO 21930:2017 Sustainability in Building Construction — Environmental Declaration of Building Products: serves as the core PCR  
PCR for Concrete, NSF International, August 2021 v2.1 serves as the sub-category PCR

Sub-category PCR review was conducted by Thomas P. Gloria • Industrial Ecology Consultants

Independent verification of the declaration, according to ISO 14025:2006:  internal  external

Third party verifier Thomas P. Gloria (t.gloria@industrial-ecology.com) • Industrial Ecology Consultants

#### For additional explanatory material

Manufacture Representative: David Fox (David.fox@cemex.com)  
Software Tool: CarbonCLARITY Suite, EPD Generator • Verification  
LCA & EPD Developer: Climate Earth (support@climateearth.com)

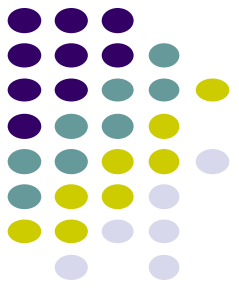
**CEMEX**  
10100 Katy Freeway, Suite 300  
Houston, TX 77043  
713-650-6200

**19TH AVENUE**  
3640 South 19th Avenue  
Phoenix, AZ 85009

Product-specific EPD

9

# Indoor Environmental Quality Multifamily and Commercial



## Low VOC Finishes

- At least 85% of interior finishes to be low-VOC (volatile organic compound)
  - Adhesives & sealants
  - Paints & coatings
  - Floor coverings
  - Acoustical ceiling tiles





# Plan Review Correction Stamp

## IgCC LOW-VOC FINISH MATERIALS

Newly installed interior wall, ceiling, and floor finish materials, including new carpeting and ceiling tiles shall comply with low-VOC limits of Scottsdale amended Section 801.4.2 of the *International Green Construction Code (IgCC)*.

801.4.2.1 Adhesives and sealants.

801.4.2.2 Paints and coatings.

801.4.2.3 Floor covering materials.

801.4.2.4 Composite woods, agrifiber and laminated products.

801.4.2.6 Ceiling tile and wall systems (excluding office furniture systems).

Floor covering materials, ceiling tiles, and wall system products certified under nationally recognized third-party low-emission certification programs such as Carpet and Rug Institute Green Label Plus, Resilient Floor Covering Institute FloorScore and UL GreenGuard, are deemed to comply with IgCC emission limits.

# Plan Review Correction Stamps VOC Content Limits

**IgCC TABLE 801.4.2.1  
VOC CONTENT LIMITS FOR ADHESIVES AND SEALANTS**

ADHESIVES	VOC LIMIT grams per liter (g/L) <sup>a,b</sup>
Building envelope membrane adhesive	250
Carpet and carpet pad adhesives	50
Ceramic tile adhesives	65
Cove base adhesives	50
Drywall and panel adhesives	50
Multipurpose construction adhesives	70
Rubber floor adhesive	60
Structural glazing adhesives	100
Subfloor Adhesive	50
VCT and asphalt tile adhesives	50
Wood flooring adhesives	100
SEALANTS	
Architectural sealants including foam and grout	250

- a. Values in this table are derived from those specified by SCAQMD Rule 1168, October 2017.
- b. For low-solid adhesives and sealants, the VOC limit is expressed in grams per liter of material as specified in SCAQMD Rule 1168. For all other adhesives and sealants, the VOC limits are expressed in grams of VOC per liter of adhesive or sealant less water and less exempt compounds as specified in SCAQMD Rule 1168.

**IgCC TABLE 801.4.2.2  
VOC CONTENT LIMITS FOR PAINTS AND COATINGS**

CATEGORY	VOC LIMIT grams per liter (g/L) <sup>a,b</sup>
Flat paints	50
Nonflat paints	50
Nonflat High-gloss paints	150
Specialty coatings:	
Concrete/masonry sealers	100
Floor coatings	50
Primers, sealers, and undercoats	100
Stains	250
Wood coatings	275

- a. Limits are expressed as VOC Regulatory, thinned to the manufacturer's maximum thinning recommendation, excluding any colorant added to tint bases.
- b. Values in this table are derived from those specified by the California Air Resources Board *Suggested Control Measure for Architectural Coatings* dated May 2020.

# Finish Schedule - Example

## MANUFACTURER REPRESENTATIVE CONTACT INFORMATION

MANUFACTURER	NAME	CONTACT INFORMATION
AHF (ARMSTRONG FLOORING)	SUSAN TOFT	MOBILE: 760.801.2122, EMAIL: STOFT@TRIWESTLTD.COM
ARMSTRONG CBLINGS	DAI-NEE TAN	MOBILE: 949.275.8169, EMAIL: DTAN@ARMSTRONG.COM
ARTE	SHARLENE MURTAGH	MOBILE: 858.449.4546, EMAIL: SMURTAGH@KOROSEAL.COM
CAESARSTONE	TODD CARPENTER	MOBILE: 818.277.3009, EMAIL: TODD.CARPENTER@CAESARSTONEUS.COM
CERTAINTEED	THOMAS OECHEL	MOBILE: 415.516.4235, EMAIL: THOMAS@GGRANTASSOCIATES.COM
FRASCH	THOMAS OECHEL	MOBILE: 415.516.4235, EMAIL: THOMAS@GGRANTASSOCIATES.COM
GARDEN STATE TILE	MIKE HUBERT	MOBILE: 407.982.0430, EMAIL: MHUBERT@GSTILE.COM
MAPEI	BRIAN CARLSON	MOBILE: 949.527.1564, EMAIL: BCARLSON@MAPEI.COM
MDC INTERIOR SOLUTIONS	SUZI HERRMANN	MOBILE: 909.737.7010, EMAIL: SHERRMANN@MDCWALL.COM
MECHO SHADES	CARLOS HERRERA	MOBILE: 626.221.0944, EMAIL: CARLOS.HERRERA@MECHOSHADE.COM
PATCRAFT	JERRY CORDOVA	MOBILE: 619.569.5846, EMAIL: JERRYCORDOVA@PATCRAFT.COM
SCHLUTER SYSTEMS	MARY YOCUM	MOBILE: 714.329.0355, EMAIL: MYOCUM@SCHLUTER.COM
SHAW	CATHY MILLER	MOBILE: 760.815.7371, EMAIL: CATHY.MILLER@SHAWCONTRACT.COM
SHERWIN WILLIAMS	JOHN DUMESNIL	MOBILE: 858.496.8929, EMAIL: JOHN.T.DUMESNIL@SHERWIN.COM
TARKETT	CARMELA LURIE	MOBILE: 619.985.9319, EMAIL: CARMELA.LURIE@TARKETT.COM
TRESPA	TROY WITTENBACH	TELEPHONE: 830.388.2733, EMAIL: T.WITTENBACH@TRESPA.COM
TURF	SHERYL GAYESKI	MOBILE: 630.258.4848, EMAIL: SGAYESKI@LEVELLINES.COM
WESINCO	RYAN LASARSKY	MOBILE: 918.633.7755, EMAIL: RLASARSKY@WESINCO.COM
WESTCOAT	MARC DIZINNO	MOBILE: 619.255.7187, EMAIL: MARC.DIZINNO@WESTCOAT.COM
WILSONART	EILEEN CAPELLE	MOBILE: 323.559.3070, EMAIL: ECAPELLE@EBBRADLEY.COM
WOLF GORDON	KRISTA MCBRIDE	MOBILE: 310.5956784, EMAIL: KRISTA.MCBRIDE@WOLFGORDON.COM

## GENERAL NOTES

- SEE FINISH PLANS FOR PATTERNS, ACCENT TILE LOCATIONS, THRESHOLDS, TRANSITIONS, CARPET PATTERNS, & CARPET DIRECTION.
- AT AREAS SCHEDULED TO RECEIVE NEW FINISHES ADJACENT TO EXISTING FINISHES, BLEND MATERIALS TO CREATE A SEAMLESS INTERFACE BETWEEN THE NEW & EXISTING FINISHES.
- "EX" SHOWN IN FINISH SCHEDULE MEANS: "EXISTING FINISH TO REMAIN, NO CHANGE UNLESS NOTED OTHERWISE" - SEE REMARKS.
- SEE A930 FOR TYPICAL FINISH DETAILS.
- WALL AND CEILING MATERIALS SHALL NOT EXCEED THE FLAME SPREAD CLASSIFICATIONS IN IBC TABLE 803.13. FINISHES SHALL BE CLASS 'C' MINIMUM.
- INTERIOR FLOOR FINISH & COVERINGS SHALL COMPLY WITH IBC SECTION 804.

## FINISH SCHEDULE & LEGEND REMARKS

- EXISTING FINISHES TO REMAIN IN ENTIRE ROOM. PATCH AS REQUIRED FOR NEW CONSTRUCTION TO ADJACENT SPACES AND MATCH EXISTING.
- SEE FINISH FLOOR PLANS FOR FLOORING PATTERN AND DIRECTION.
- SEE FINISH FLOOR PLANS FOR SPECIALTY WALL FINISH LOCATION.
- NOT USED.
- SEE REFLECTED CEILING PLANS FOR CEILING PANEL PATTERN & ADDITIONAL SOFFIT INFORMATION.
- SEE INTERIOR ELEVATIONS FOR CASEWORK LAYOUT AND ADDITIONAL INFORMATION REGARDING CASEWORK FINISHES AND DETAILS.
- SEE FINISH FLOOR PLANS AND INTERIOR ELEVATIONS FOR WALL TILE LOCATION AND PATTERN.
- PROVIDE ANODIZED ALUMINUM TRIM PIECES PER FINISH LEGEND.
- PAINT ALL CEILING SURFACES EXPOSED TO VIEW INCLUDING BUILDING STRUCTURE, HVAC DUCTS, PIPING, CONDUIT, ETC. AS INDICATED ON THE FINISH SCHEDULE - DO NOT PAINT LIGHT FIXTURES, UNO.
- PROVIDE CONTINUOUS BASE AROUND ALL PERMANENT FIXED CASEWORK AND IN KNEE SPACES.

## IGCC NOTES

NEWLY INSTALLED INTERIOR WALL, CEILING, AND FLOOR FINISH MATERIALS, INCLUDING NEW CARPETING AND CEILING TILES SHALL COMPLY WITH LOW-VOC LIMITS OF SCOTTSDALE AMENDED SECTION 801.4.2 OF THE INTERNATIONAL GREEN CONSTRUCTION CODE (IGCC).

801.4.2.1 ADHESIVES AND SEALANTS.

801.4.2.2 PAINTS AND COATINGS.

801.4.2.3 FLOOR COVERING MATERIALS.

801.4.2.4 COMPOSITE WOODS, AGRIFIBER AND LAMINATED PRODUCTS.

801.4.2.6 CEILING TILE AND WALL SYSTEMS (EXCLUDING OFFICE FURNITURE SYSTEMS).

FLOOR COVERING MATERIALS, CEILING TILES, AND WALL SYSTEM PRODUCTS CERTIFIED UNDER NATIONALLY RECOGNIZED THIRD-PARTY LOW-EMISSION CERTIFICATION PROGRAMS SUCH AS CARPET AND RUG INSTITUTE, GREEN LABEL PLUS, RESILIENT FLOOR COVERING INSTITUTE, FLOORSCORE, AND UL GREENGUARD, ARE DEEMED TO COMPLY WITH IGCC EMISSION LIMITS.

VOC CONTENT LIMITS FOR ADHESIVES AND SEALANTS - TABLE 801.4.2.1	
ADHESIVES	VOC LIMIT GRAMS PER LITER (g/L)
BUILDING ENVELOPE MEMBRANE ADHESIVE	250
CARPET AND CARPET PAD ADHESIVES	50
CERAMIC TILE ADHESIVES	85
COVE BASE ADHESIVES	50
DRY WALL AND PANEL ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVES	70
RUBBER FLOOR ADHESIVE	60
STRUCTURAL GLAZING ADHESIVES	100
SUBFLOOR ADHESIVE	50
VCT AND ASPHALT TILE ADHESIVES	50
WOOD FLOORING ADHESIVES	100
SEALANTS	
ARCHITECTURAL SEALANTS INCLUDING FOAM AND GROUT	250

VOC CONTENT LIMITS FOR PAINTS AND COATINGS - TABLE 801.4.2.2	
CATEGORY	VOC LIMIT GRAMS PER LITER (g/L)
FLAT PAINTS	50
NONFLAT PAINTS	50
NONFLAT HIGH-GLOSS PAINTS	150
SPECIALTY COATINGS	
CONCRETE / MASONRY SEALERS	100
FLOOR COATINGS	50
PRIMERS, SEALERS, AND UNDERCOATS	100
STAINS	250
WOOD COATINGS	275

# Finish Schedule - Example

## FINISH SCHEDULE

MARK	MANUFACTURER	STYLE/PATTERN/MODEL#	COLOR/FINISH#	VOC	SPECIFICATIONS	LOCATION/NOTES	VENDOR CONTACT
PT-05	BENJAMIN MOORE	CC-20	DECORATOR'S WHITE/EGG SHELL	VOC LEVEL: 0.0	ULTRA SPEC OR EQUAL	BRICK WALL PAINT, SEE ELEVATIONS	BENJAMIN MOORE P: 866.708.9181 E: info@benjaminmoore.com
PT-06	BENJAMIN MOORE	040	PEACHES 'N CREAM / EGG SHELL	VOC LEVEL: 47.4	REGAL SELECT OR EQUAL	ACCENT WALL PAINT @ ES GUEST ROOM	BENJAMIN MOORE P: 866.708.9181 E: info@benjaminmoore.com
PT-07	BENJAMIN MOORE	TO MATCH EXISTING	TO MATCH EXISTING	VOC LEVEL: 0.0	ULTRA SPEC OR EQUAL	EXTERIOR PATIO ACCENT - RED	BENJAMIN MOORE P: 866.708.9181 E: info@benjaminmoore.com
PT-08	BENJAMIN MOORE	TO MATCH EXISTING	TO MATCH EXISTING	VOC LEVEL: 0.0	ULTRA SPEC OR EQUAL	EXTERIOR PATIO FIELD PAINT - WHITE	BENJAMIN MOORE P: 866.708.9181 E: info@benjaminmoore.com
<b>(PTB) PORCELAIN TILE BASE</b>							
PTB-01	CONCEPT SURFACES	AKARD	PEARL	LEED V4.1	SIZE: CUSTOM CUT FROM 30" x 30" TILE INTO 4"H x 30"L WALL BASE, THICKNESS: .039", GRT-XX	SEE ELEVATIONS FOR LOCATIONS	CONCEPT SURFACES C: CHRIS HAYES P:602.614.0558 E:christopherh@conceptsurfaces.com
<b>(TS) TRANSITION STRIP</b>							
TS-01	SCHLUTER	FINEC	STAINLESS STEEL/S04	N/A	HEIGHT: 1/2", MATERIAL: STAINLESS STEEL	TRANSITION STRIP (SEE DETAILS)	SCHLUTER P: 888.472.4588
TS-02	SCHLUTER	RENO-V	SATIN ANODIZED ALUMINIUM/AE	N/A	HEIGHT: BASED ON MORTAR BED, MATERIAL: ALUMINUM	TRANSITION STRIP (SEE TRANSITION DETAILS)	SCHLUTER P: 888.472.4588
TS-03	SCHLUTER	SCHIENE	STAINLESS STEEL/S04	N/A	HEIGHT: BASED ON MORTAR BED, MATERIAL: STAINLESS STEEL	TRANSITION STRIP (SEE TRANSITION DETAILS)	SCHLUTER P: 888.472.4588
<b>(WC) WALLCOVERING</b>							
WC-01	WOLF GORDON	LEIDEN/LDN 5388	BLUSH	PASSES CAL 01350 STANDARD (LEED EQ 4.2)	ROLL WIDTH: 52", REPEAT: 52"H x 22.25"V, PATTERN MATCH: REVERSE HANG, RANDOM MATCH, CODES: CLASS A, NFPA 236	ACCENT WALLCOVERING @ GUESTROOMS	WOLF GORDON C: SHANNON VANCE P: 480.272.2200 E: SHANNON.VANCE@WOLFGORDON.COM
<b>(WF) WOOD FLOORING</b>							
WF-01	NUMUD - ELEMENTS	THE CLEAN COLLECTION	SUTTON PLACE, SKU# E36406	VOC FREE, FLOOR SCORE, LEED V4.1, WELL, BREEAM, CHPS, AND GREEN GLOBES	SIZE: 8.50" X 47.56", THICKNESS 10MM	WOOD FLOORING @ SUITES	HAGENER ASSOCIATES C: BILL HAGENER P:602.828.6364 E: BILL@BHAGENERASSOCIATES.COM
<b>(WV) WOOD VENEER</b>							
WV-01	TO BID - SUBMITTAL SAMPLE MUST BE SIGNED OFF ON BY DESIGNER	SPECIES: WALNUT OR EQUAL; GRAIN TO MATCH EXISTING	TO MATCH EXISTING BED BASE	N/A	FINISH: REFER TO DETAILS FOR SPECIFIC FINISHING REQUIREMENTS	SEE ELEVATIONS AND DETAILS	TO BID
WV-02	TO BID - SUBMITTAL SAMPLE MUST BE SIGNED OFF ON BY DESIGNER	SPECIES: TO MATCH EXISTING	TO MATCH EXISTING LAMINATE FINISH AT EXISTING CASEWORK	N/A	FINISH: REFER TO DETAILS FOR SPECIFIC FINISHING REQUIREMENTS	SEE ELEVATIONS AND DETAILS	TO BID



# Low-VOC Checklist

**City of Scottsdale**  
**2021 International Green Construction Code (IgCC)**  
**Building Product Emissions Checklist**



rev. 10-26-23

The intent of this checklist is to list the product emission limits in Section 801.4.2 of the amended International Green Construction Code (IgCC). The section reads as follows:

**801.4.2 Materials.** Reported emissions or volatile organic compound (VOC) contents specified in the following subsections shall be from a representative product sample. Products certified under third-party certification programs as meeting the specific emission requirements listed in the following subsections shall be deemed to comply.

**801.4.2.1 Adhesives and sealants.** Not less than 85% by weight or volume of site-applied adhesives and sealants used on the interior of the building envelope shall comply with the VOC content limits in Table 801.4.2.1.

**Table 801.4.2.1 – Adhesives and Sealants VOC Content Limits**

ADHESIVES	VOC Limits grams/liter
Building envelope membrane adhesive	250
Carpet and carpet pad adhesives	50
Ceramic Tile Adhesives	65
Cove base adhesives	50
Drywall and panel adhesives	50
Multipurpose construction adhesives	70
Rubber floor adhesives	60
Structural Glazing Adhesives	100
Subfloor adhesive	50
VCT and asphalt tile adhesives	50
Wood flooring adhesives	100
SEALANTS	
Architectural sealants including foam and grout	250

**801.4.2.2 Paints and coatings.** Not less than 85% by weight or volume of site-applied paints and coatings used on the interior of the building envelope shall comply with the VOC content limits of Table 801.4.2.2.

**Table 801.4.2.2 – Paints and Coatings VOC Limits**

PAINTS AND COATINGS	VOC Limits grams/liter
Flat paints	50
Nonflat paints	50
Nonflat high-gloss paints	150
SPECIALTY COATINGS	
Concrete and masonry sealers	100
Floor coatings	50
Primers, sealants and undercoats	100
Stains	250
Wood coatings	275

**801.4.2.3 Floor covering materials.** Not less than 85% of total area of flooring installed within the interior the building envelope shall comply with the VOC emission limits of Table 801.4.2.3 or Table 801.4.2.3.1.

**Table 801.4.2.3 – Floor Covering VOC Emission Limits**

VOC	Limit
Individual	≤½ CA chronic REL <sup>a</sup>
Formaldehyde	≤16.5 µg/m <sup>3</sup> or ≤13.5 ppb

<sup>a</sup> CA Chronic Reference Exposure Level (CREL).

**Table 801.4.2.3.1 – Floor Covering Materials Deemed to Comply with VOC Emission Limits**

Ceramic and concrete tile	Concrete masonry
Natural stone	Concrete
Gypsum plaster	Metal
Clay masonry	

Floor covering materials certified under nationally recognized third-party low-emission certification programs such as Carpet and Rug Institute Green Label Plus, Resilient Floor Covering Institute FloorScore and UL GreenGuard, are deemed to comply.

**801.4.2.4 Composite woods, agrifiber products and laminated products.** Composite wood and laminated products applied on the interior of the building shall comply with the VOC emission limits of Section 801.4.2.4. See IgCC.

**801.4.2.6 Acoustical ceiling tiles and wall systems.** Not less than 85% of total area of acoustical ceiling tiles and wall systems applied on the interior of the building envelope shall comply with the VOC emission limits of Table 801.4.2.6 or Table 801.4.2.6.1.

**Table 801.4.2.6 – Acoustical Ceiling Tiles and Wall Products VOC Emission Limits**

VOC	Limit
Individual	≤½ CA chronic REL <sup>a</sup>
Formaldehyde	≤16.5 µg/m <sup>3</sup> or ≤13.5 ppb

<sup>a</sup> CA Chronic Reference Exposure Level (CREL).

**Table 801.4.2.6.1 – Ceiling and Wall Products Deemed to Comply with VOC Emission Limits**

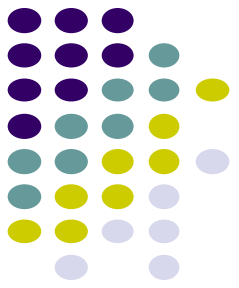
Ceramic and concrete tile	Concrete masonry
Natural stone	Concrete
Gypsum plaster	Metal
Clay masonry	

Ceiling tiles and wall system products certified under nationally recognized third-party low-emission certification programs such as UL GreenGuard are deemed to comply.

Scottsdale green code link – <https://www.scottsdaleaz.gov/green-building-program/green-codes>

# 10

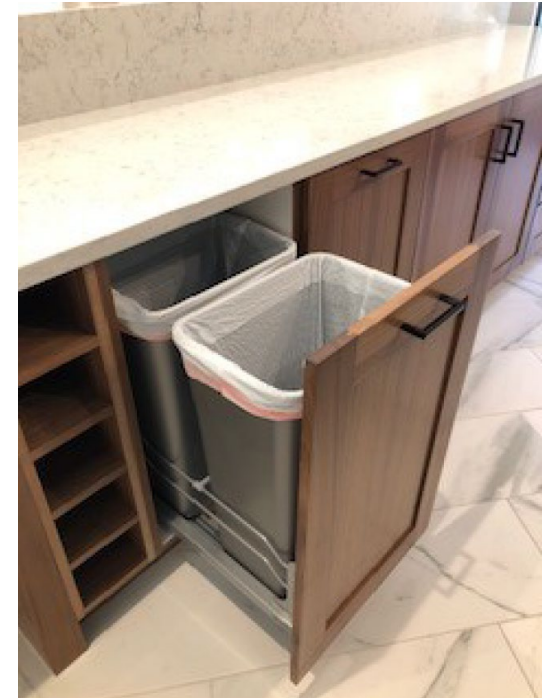
## IgCC/IBC Recycling Commercial (common areas)



### Recycling Facilities

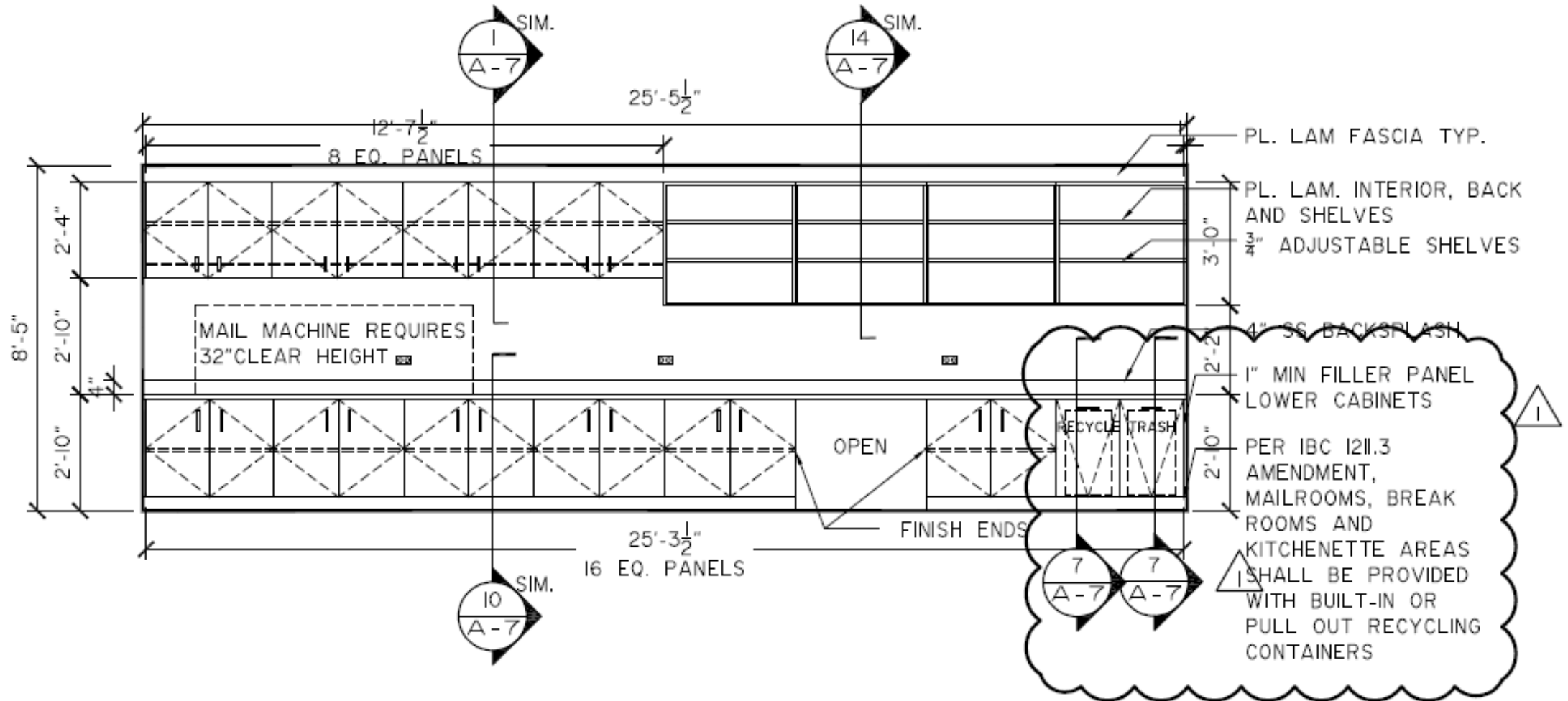
- Common kitchen areas in multi-family buildings (i.e. – club house)
- Provide recycling collection in mailrooms and breakrooms (i.e. – offices)

**IgCC 901.3.4.1 Recyclables.** Mailrooms, break rooms, and kitchen/kitchenette areas shall be provided with built-in or pull-out trash/recycling containers.





# Interior Elevation - Example



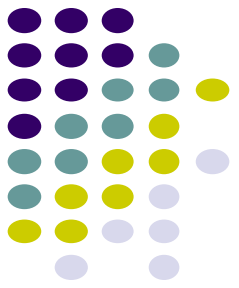
**8 MAILROOM 1007 ELEVATION**  
SCALE: 1/4" = 1'-0"

# 11

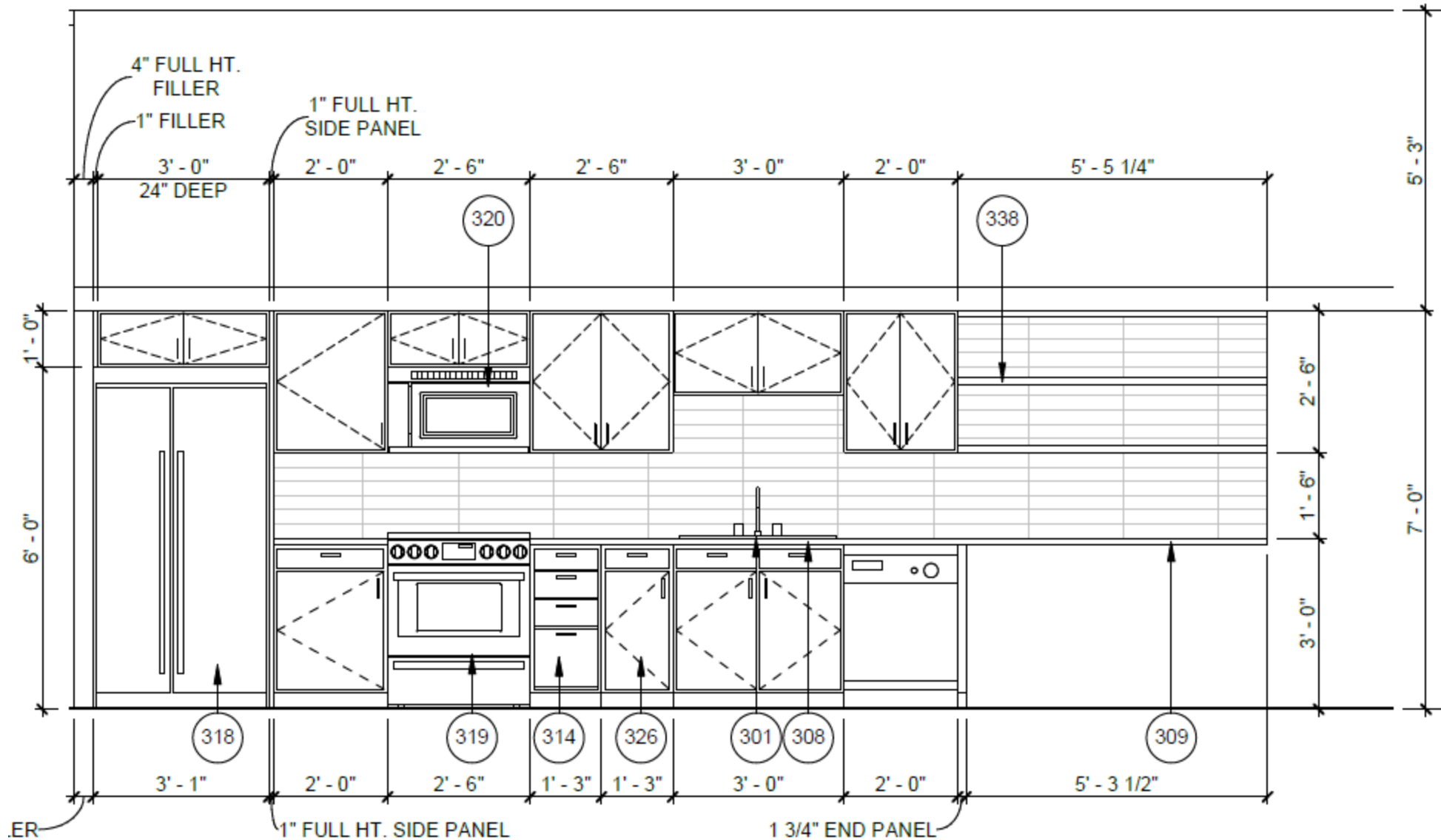
## IgCC/IBC Recycling Multifamily (Apts and Condos)

### Recycling Facilities

- Provide recycling/trash pull-out collection bins in kitchen cabinet of multi-family buildings
- Provide recycling and trash chutes in multifamily buildings (> 3 stories) or provide recycling collection area on each floor



# Interior Elevation - Example



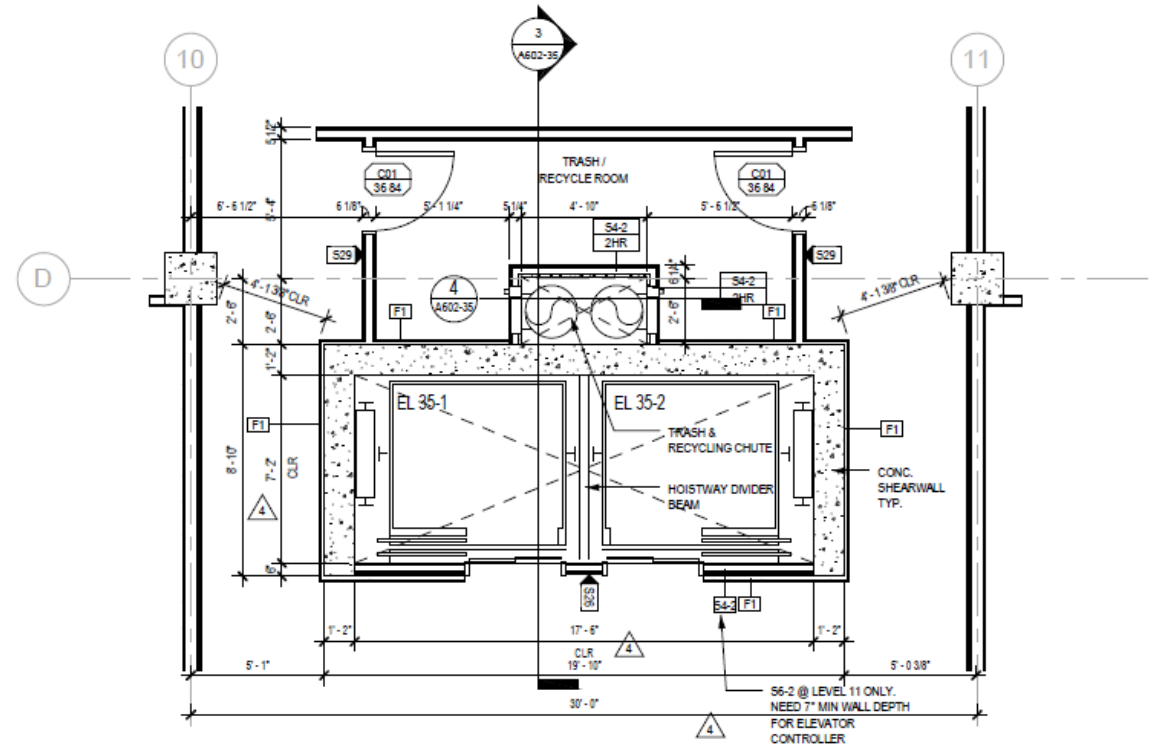
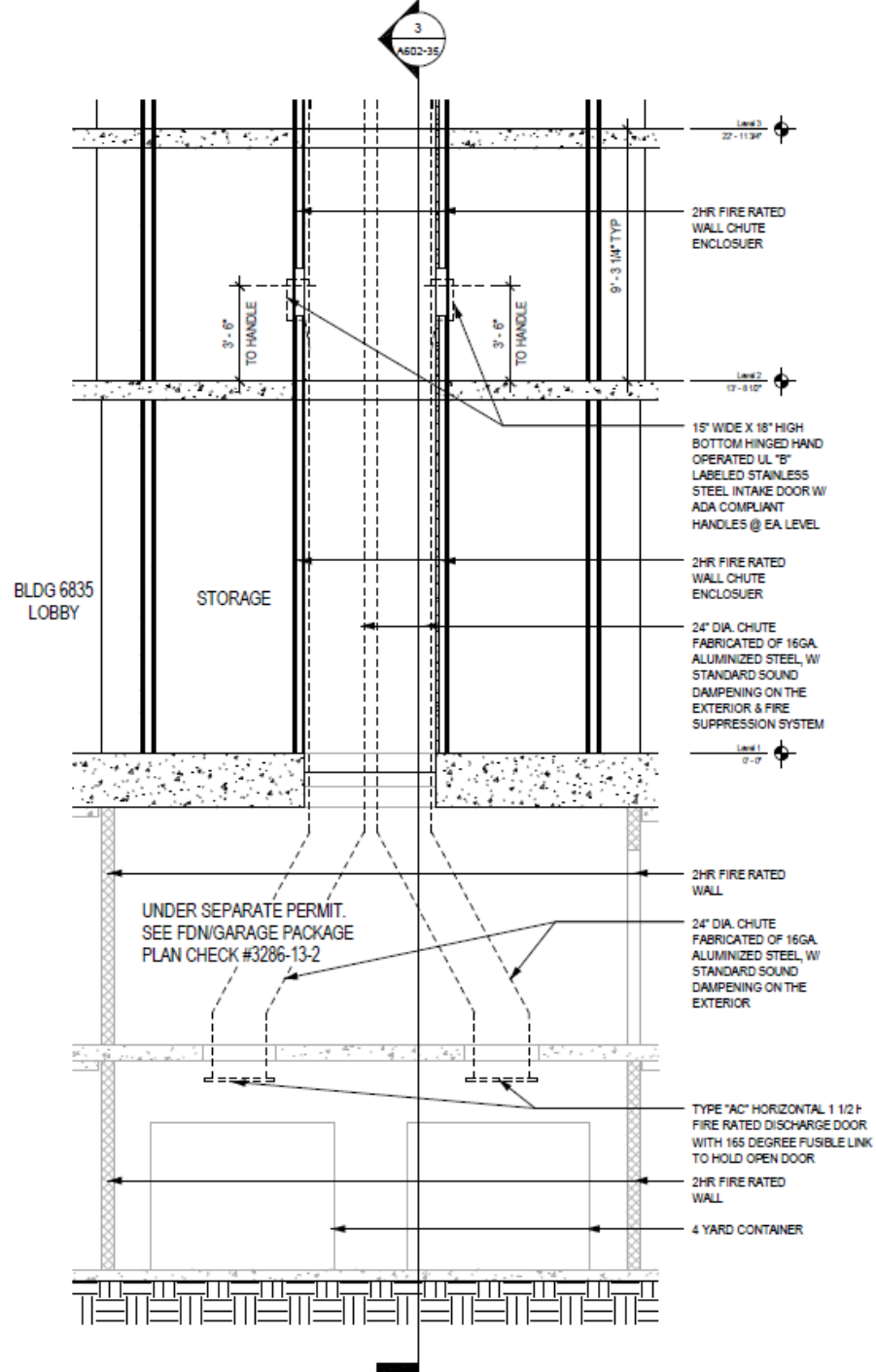
**3** KITCHEN - ELEVATION 1  
3/8" = 1'-0"

326	TWO (2) PULL-OUT BINS, MIN. 7-GALLON EACH, FOR RECYCLING AND TRASH IN BASE CABINET
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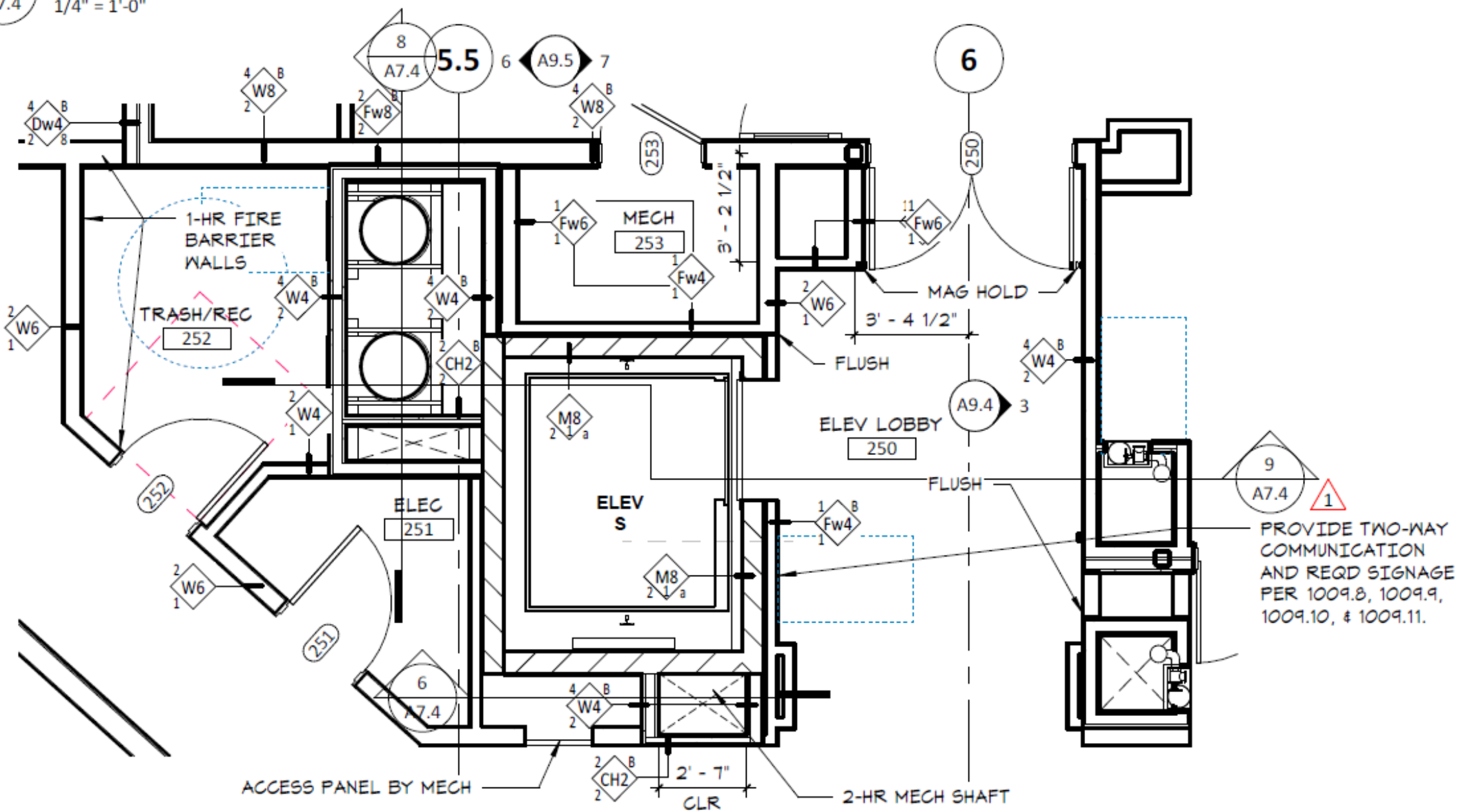
# Trash/Recycling Chute Detail - Examples



2 ENLARGED PLAN @ ELEVATOR 6835 (L2) TYPICAL

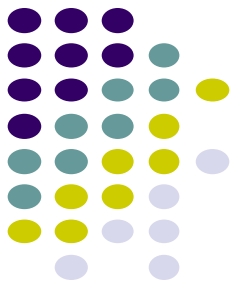
A602-35 SCALE: 1/4" = 1'-0"

# Trash/Recycling Chute Detail - Examples



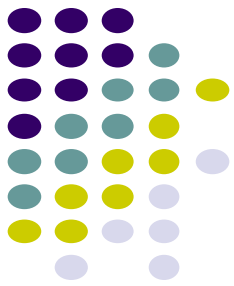
3  
A7.4 1/4" = 1'-0"  
**ELEVATOR SOUTH - LEVEL 2 PLAN**

# 12 IgCC Water Efficiency



- High-efficiency plumbing fixtures and fittings (601.3.2.1)
  - Water closets, urinals, lavatory faucets, showerheads, kitchen faucets
- Water-bottle filling stations (601.3.2.1j)
  - Water-bottle filling stations for all drinking fountains
- Hot water supply (601.3.3)
  - Maximum pipe length and recirculation pumps for remotely located water heaters (see IECC)
  - Pipe insulation



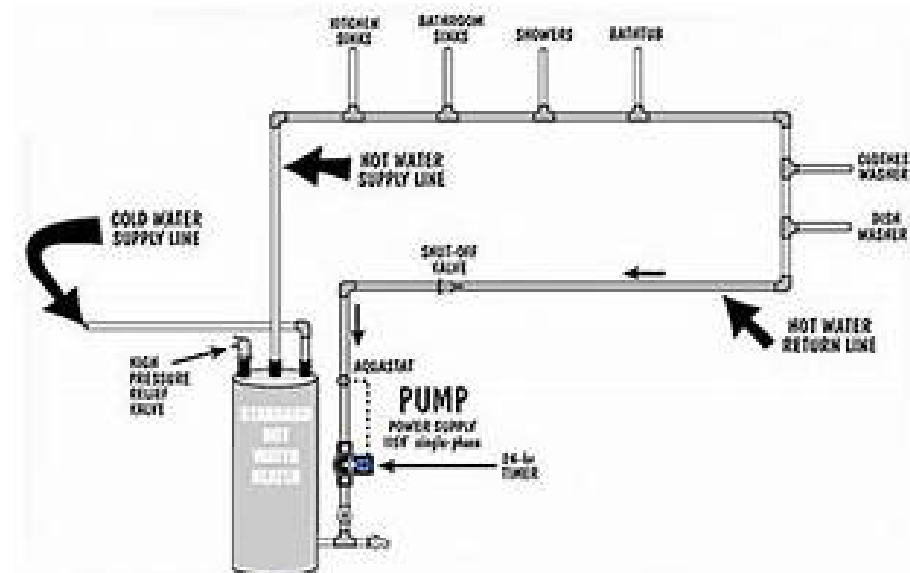


# Service Water Heating (IgCC/IECC)

TABLE C404.5.1  
PIPING VOLUME AND MAXIMUM PIPING LENGTHS

NOMINAL PIPE SIZE (inches)	VOLUME (liquid ounces per foot length)	MAXIMUM PIPING LENGTH (feet)	
		Public lavatory faucets	Other fixtures and appliances
1/4	0.33	6	50
5/16	0.5	4	50
3/8	0.75	3	50
1/2	1.5	2	43
5/8	2	1	32
3/4	3	0.5	21
7/8	4	0.5	16
1	5	0.5	13
1 1/4	8	0.5	8
1 1/2	11	0.5	6
2 or larger	18	0.5	4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 liquid ounce = 0.030 L, 1 gallon = 128 ounces.



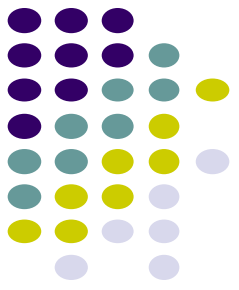
## IECC C404.6 HOT WATER CIRCULATION CONTROLS

Controls shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance (C404.6.1.1).

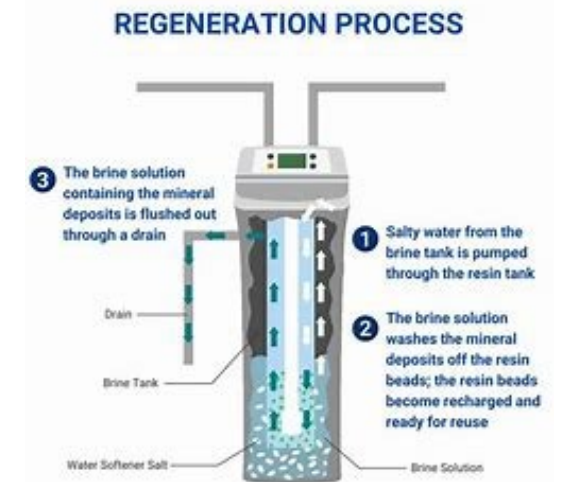
Controls for circulating hot water system pumps shall automatically turn off the pump when the water in the circulation loop is at the desired temperature and when there is not a demand for hot water (C404.6.1).

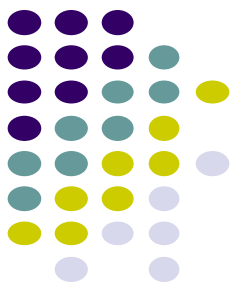


# IgCC Water Efficiency



- Water softeners (601.3.6)
  - Water softeners shall be equipped with demand-initiated regeneration control systems. Timer-based control systems are prohibited.
- Reverse osmosis water treatment (601.3.7)
  - Reverse osmosis systems shall be equipped with an automatic shutoff valve that prevents the production of reject water when there is no demand for treated water.





# Plan Review Correction Stamps

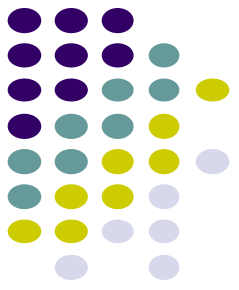
## **IgCC 601.3.6 Water Softeners**

**Demand-initiated regeneration.** Water softeners shall be equipped with demand-initiated regeneration control systems. Timer-based control systems shall be prohibited.

**Water consumption.** During regeneration, water softeners shall have a maximum water consumption of 4 gal per 1000 gr of hardness removed, as measured in accordance with NSF 44.

**Efficiency and listing.** Water softeners that regenerate in place, that are connected to the water system they serve by piping not exceeding 1-1/4 in. in diameter, or that have a volume of 3 ft<sup>3</sup> or more of cation exchange media shall have a rated salt efficiency of not less than 4000 gr of total hardness exchange per pound of salt, based on sodium chloride equivalency, and shall be listed and labeled in accordance with NSF 44. All other water softeners shall have a rated salt efficiency of not less than 3500 gr of total hardness exchange per pound of salt, based on sodium chloride equivalency.

**IgCC 601.3.7 Reverse osmosis water treatment systems.** Reverse osmosis systems shall be equipped with an automatic shutoff valve that prevents the production of reject water when there is no demand for treated water. Point-of-use reverse osmosis treatment systems for drinking water shall be listed and labeled in accordance with NSF 58.



# IgCC Water Efficiency

## Commercial food service operations (601.3.2.5)

- High-efficiency prewash spray valves
- Dishwashers and ice machines

### **IgCC COMMERCIAL FOOD SERVICE OPERATIONS**

Commercial food service operations shall comply with the water efficiency requirements of Scottsdale amended Section 601.3.2.5 of the *International Green Construction Code (IgCC)*.

- High-efficiency prerinse spray valves (i.e., valves that function at 1.3 gpm or less) shall be used and comply with a 26-second performance requirement when tested in accordance with ASTM F2324.
- Dishwashers shall comply with the requirements of the ENERGY STAR Program for Commercial Dishwashers.
- Boilerless/connectionless food steamers shall consume no more than 2.0 gal/h (7.5 L/h) in the full operational mode.
- Combination ovens shall consume not more than 10 gal/h (38 L/h) in the full operational mode.
- Air-cooled ice machines shall comply with the requirements of the ENERGY STAR Program for Commercial Ice Machines.



**Water-bottle filling stations.** All drinking fountains shall be provided with a water-bottle filling dispenser that is integral or adjacent to drinking fountain. (IPC 410.1.1/IgCC 601.3.2.1j).

# New Construction Checklist for Green Building

**City of Scottsdale**  
**2021 International Green Construction Code (IgCC)**  
**Building Plan Review Checklist – Commercial Building Projects**  
 rev. 4/20/23



Use this checklist for tracking compliance requirements with Scottsdale’s amended International Green Construction Code (IgCC). On-line resources are available including amendments and helpful worksheets for Heat Island Mitigation (Sec. 501.3.5) at <https://www.scottsdaleaz.gov/green-building-program/green-codes>. The full text of the unamended IgCC code book is available for viewing and/or purchase at [2021 International Green Construction Code \(IgCC\) | ICC Digital Codes \(iccsafe.org\)](https://www.iccsafe.org/)

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_ Plan Review # \_\_\_\_\_

CHAPTER 5 – SITE SUSTAINABILITY		Verification	
√	501.3.5 Mitigation of Heat Island Effect	Plan Review	Inspections
<input type="checkbox"/>	<p><b>501.3.5.1 Site Hardscape.</b> <i>At least 50% of the site hardscape</i> of new commercial building projects shall comply with one or any combination of the following:</p> <ul style="list-style-type: none"> <li>a. Trees and vegetation planted to provide full shade no later than ten years after project completion. The effective shade coverage on the <i>hardscape</i> shall be the arithmetic mean of the shade coverage calculated at 10 a.m., noon, and 3 p.m. on the summer solstice.</li> <li>b. Paving materials with a minimum initial <i>solar reflectance index (SRI)</i> of 29. A default <i>SRI</i> value of 35 for new concrete without added color pigment is allowed to be used instead of measurements.</li> <li>c. <i>Open-graded (uniform-sized) aggregate, permeable pavement, permeable pavers, and porous pavers (open-grid pavers). Permeable pavement and permeable pavers</i> shall have a percolation rate of not less than 2 gal/min • ft<sup>2</sup>.</li> <li>d. Shading through the use of structures, provided that the top surface of the shading structure complies with the provisions of Section 501.3.5.3.</li> <li>e. Parking under a building, provided that the <i>roof</i> of the building complies with the provisions of Section 501.3.5.3.</li> <li>f. Adjacent buildings or structures that provide shade to the <i>site hardscape</i>. The effective shade coverage on the <i>hardscape</i> shall be the arithmetic mean of the shade coverage calculated at 10 a.m., noon, and 3 p.m. on the summer solstice.</li> </ul>	Planning and Green/Energy Review	Planning and Green/Energy Inspection



# IgCC Plan Notes (optional use)



## 2021 IgCC Plan Notes Multifamily and Commercial Buildings

rev. 06/16/23



Provide the following compliance information on a dedicated green code compliance sheet within the set of construction drawings.

- Chapter 5 - Site Sustainability**
  - Mitigation of Heat Island Effect
    - Site hardscape (501.3.5.1) – see sheet \_\_\_\_\_
    - Roofs (IECC amended C402.3) – see sheet \_\_\_\_\_
  - EV Charging Facilities (amended 501.3.7.3) – see sheet \_\_\_\_\_
- Chapter 6 – Water Use Efficiency**
  - Irrigation system design (amended 601.3.1) – see sheet \_\_\_\_\_
  - Plumbing fixtures and fittings (amended 601.3.2.1) – see sheet \_\_\_\_\_
  - Appliances (601.3.2.2) – see sheet \_\_\_\_\_
  - HVAC systems and equipment (amended 601.3.2.3) – see sheet \_\_\_\_\_
  - Commercial food service operations (amended 601.3.2.5) – see sheet \_\_\_\_\_
  - Water softeners (601.3.6) – see sheet \_\_\_\_\_
  - Reverse osmosis water treatment systems (601.3.7) – see sheet \_\_\_\_\_
- Chapter 7 – Energy Efficiency**
  - On-Site Renewable Energy Systems (amended 701.3) – see sheet \_\_\_\_\_
  - See IECC for energy code requirements.
- Chapter 8 – Indoor Environmental Quality**
  - Low-VOC adhesives and sealants (amended 801.4.2.1) – see sheet \_\_\_\_\_
  - Paints and coatings (amended 801.4.2.2) – see sheet \_\_\_\_\_
  - Floor covering materials (amended 801.4.2.3) – see sheet \_\_\_\_\_
  - Composite woods, agrifiber, & laminated products (801.4.2.4) – see sheet \_\_\_\_\_
  - Acoustical ceiling tiles & wall systems (amended 801.4.2.6) – see sheet \_\_\_\_\_
- Chapter 9 – Materials and Resources**
  - Construction/demolition waste management plan (901.3.1.3) – see \_\_\_\_\_
  - Post-occupancy trash disposal and recycling facilities (amended 901.3.4.1 & 901.3.4.3) – see sheet \_\_\_\_\_
  - Reduced impact materials (901.4.1) compliance any two of the following:
    - Recycled content & salvaged material content (901.4.1.1) – see \_\_\_\_\_
    - Regional materials (901.4.1.2) – see \_\_\_\_\_
    - Biobased products (901.4.1.3) – see \_\_\_\_\_
    - Environmental product declarations (901.4.1.4) – see \_\_\_\_\_
- Chapter 10 – Construction and Plans for Operation**
  - See IECC Section C408 for Maintenance and System Commissioning

# IECC Plan Notes (optional use)



## 2021 IECC Plan Notes Multifamily and Commercial Buildings


rev. 10/16/23

Provide the following compliance information on a dedicated energy code compliance sheet within the set of construction drawings.

### IECC Energy Compliance Path Options


- IECC Prescriptive-based Compliance Path** (allowed when total vertical fenestration is less than 40%).
    - Building envelope (C402) – see sheet \_\_\_\_\_
      - Includes amended cool roofs (C402.3)
    - Building mechanical systems (C403) – see sheet \_\_\_\_\_
    - Service water heating (C404) – see sheet \_\_\_\_\_
    - Electrical power and lighting systems (C405) – see sheet \_\_\_\_\_
      - Includes automatic receptacle controls (C405.11) and EV charging infrastructure (C405.13)
    - Additional efficiency requirements (C406) – see sheet \_\_\_\_\_
    - Maintenance and system commissioning (C408) – see \_\_\_\_\_
    - Solar-ready zone (IECC appendix CB) – see sheet \_\_\_\_\_
  - IECC Performance-based Compliance Path** (required when total vertical fenestration is equal to or greater than 40%).
    - Submit energy performance modeling analysis in accordance with IECC amended C407 (total building performance) and comply with C405.2 (lighting controls), C408 (maintenance and commissioning), C405.13 (EV charging) and appendix CB (solar-ready).
  - ASHRAE 90.1-2019 Prescriptive-based Compliance Path** (allowed when total vertical fenestration is less than 40%)
    - Building envelope (Section 5) – see sheet \_\_\_\_\_
    - Building mechanical systems (Section 6) – see sheet \_\_\_\_\_
    - Service water heating (Section 7) – see sheet \_\_\_\_\_
    - Power (Section 8) – see sheet \_\_\_\_\_
    - Lighting (Section 9) – see sheet \_\_\_\_\_
    - Other equipment (Section 10) – see sheet \_\_\_\_\_
    - Verification, testing, and commissioning (Section 4.2.5) – see \_\_\_\_\_
    - Solar-ready zone (IECC appendix CB) – see sheet \_\_\_\_\_
  - ASHRAE 90.1-2019 Performance-based Compliance Path** (required when total vertical fenestration is equal to or greater than 40%).
    - Submit energy performance modeling analysis in accordance with ASHRAE 90.1-2019 Chapter 11 (energy cost budget method) or Appendix G (performance rating method) including commissioning (Section 4.2.5) and solar-ready zone (IECC appendix CB).
- Commissioning Plan**
- IECC Section C408 Path or ASHRAE 90.1-2019 Section 4.2.5 Path**
    - Submit commissioning plan and signed compliance certificate

# IgCC TI Checklist (optional use)



**Tenant Improvement (TI)  
Green Code Plan Review Checklist**

2021 International Green Construction Code (IgCC)  
rev. 12/17/24



Project Name \_\_\_\_\_ Date \_\_\_\_\_

Project Address \_\_\_\_\_

Submitted By \_\_\_\_\_ Phone Number \_\_\_\_\_

**Water Use Efficiency Compliance (IgCC)**

- Comply with amended IgCC 601.3.2 for new fixtures, fittings, appliances, and equipment:**
  - Plumbing fixtures and fittings (601.3.2.1) per amended IPC max. flow and flush rates.
  - Appliances (601.3.2.2) - ENERGY STAR compliant clothes washers and dishwashers.
  - HVAC systems and equipment (601.3.2.3) - Cooling tower/evaporative condenser requirements.
  - Food service equipment (601.3.2.5) - Prerinse spray flow rates, ENERGY STAR ice machines.
  - Water softeners (601.3.6) and reverse osmosis systems (601.3.7) efficiency requirements.

**Energy Efficiency Compliance (IECC)**

- Comply with energy code (IECC).**

**Indoor Environmental Quality Compliance (IgCC)**


- Comply with the VOC limits of amended IgCC Section 801.4.2 for newly installed materials:**
  - Adhesives and sealants (801.4.2.1)
  - Paints and coatings (801.4.2.2)
  - Floor covering materials (801.4.2.3)
  - Composite wood products, agrifiber, hardwood plywood and laminated products (801.4.2.4)
  - Acoustical ceiling tiles and wall systems (801.4.2.6)

**Materials and Resources Compliance (IgCC)**

- Comply with amended IgCC 901.3 for recycling and 901.4 for reduced impact materials:**
  - Divert a minimum of 50% of nonhazardous construction, demolition or deconstruction waste material from disposal in landfills or incinerators through reuse, recycling, repurposing and/or composting (901.3.1.1)
    - Exception:** Building projects less than 5,000 sq. ft. of new, added, or remodeled areas.
  - Mailrooms, breakrooms, and kitchen/kitchenette areas shall be provided with built-in/pull-out recycling bins (901.3.4.1)
  - Comply with any two of the following reduced impact materials for TI's ≥ 5,000 sq. ft. (901.4.1)
    - Minimum 10% recycled content and salvaged material content (901.4.1.1)
    - Minimum 15% regional materials (901.4.1.2)
    - Minimum 5% biobased including certified wood through forest certification (901.4.1.3)
    - Minimum 10 environmental product declarations or certifications (901.4.1.4)

Scottsdale's Building Code Information link –  
<https://www.scottsdaleaz.gov/codes-and-ordinances/building-codes>

# IECC TI Checklist (optional use)



**Tenant Improvement (TI)  
Energy Code Plan Review Checklist**

2021 International Energy Conservation Code (IECC)  
rev. 06/21/23

Project Name \_\_\_\_\_ Date \_\_\_\_\_

Project Address \_\_\_\_\_

Submitted By \_\_\_\_\_ Phone Number \_\_\_\_\_

**See IECC Sec. C503 (alterations) and C505 (change of occupancy or use) for existing buildings.**

**I. Building Envelope (IECC)**

- Tenant improvement does not involve expansion or alteration to existing thermal envelope.  
- OR -
- Comply with Building Envelope (Sec. C402) } Prescriptive or trade-off approach (COMcheck  
- [www.energycodes.gov/comcheck](http://www.energycodes.gov/comcheck))

**II. Mechanical and Service Water Heating (IECC)**

- Tenant improvement does not include new mechanical or service water heating equipment.  
- OR -
- Comply with Mechanical Systems (Sec. C403) } Prescriptive or trade-off approach (COMcheck
- Comply with Service Water Heating (Sec. C404) } - [www.energycodes.gov/comcheck](http://www.energycodes.gov/comcheck))

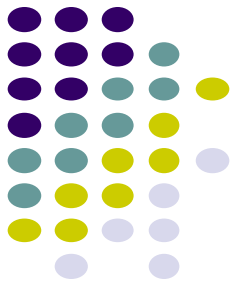
**III. Electrical Power and Lighting Systems (IECC)**

- Tenant improvement does not include new lighting systems or new electric receptacles.  
- OR -
- Comply with Lighting Controls (Sec. C404.2)
- Comply with Interior Lighting Power (Sec. C405.3) } Prescriptive or trade-off approach (COMcheck
- Comply with Receptacle Control (Sec. C405.11) } - [www.energycodes.gov/comcheck](http://www.energycodes.gov/comcheck) )

Scottsdale's Commercial Green Construction Code link –  
<https://www.scottsdaleaz.gov/green-building-program/green-codes>

# COMMERCIAL ENERGY AND GREEN CODE BUILDING INSPECTIONS

rev. 12/5/24



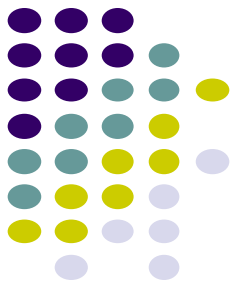
COMMERCIAL NEW CONSTRUCTION AND MULTIFAMILY
<b>1. ROUGH FRAME INSPECTIONS</b>
<input type="checkbox"/> <b>Construction and Demolition Waste</b> Check for one or more dumpster(s) that are marked for collection of recyclable materials. Buildings less than 5,000 sq. ft. are exempt per approved plans.
<input type="checkbox"/> <b>Recycling Infrastructure for Multifamily (≥ 4 stories)</b> Confirm rough installation of recycling and trash chutes.
<b>2. FINAL INSPECTIONS</b>
<input type="checkbox"/> <b>Recycling Facilities for Multifamily</b> Confirm installation of kitchen cabinet pull-out bins for separation and collection of recyclable materials and trash.
<input type="checkbox"/> <b>Electric Vehicle (EV) Charging Infrastructure</b> Confirm installation of 240V EV charging outlets with dedicated circuits per approved plans.
<input type="checkbox"/> <b>Third Party Energy Compliance Documentation</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Building envelope performance verification certificate (IECC C402.5.1.5).</li><li><input type="checkbox"/> Mechanical system commissioning compliance certificate (exceptions based on HVAC system size per approved plans) (amended IECC C408.2).</li><li><input type="checkbox"/> Lighting controls testing report or compliance certificate per approved plans (IECC C408.3).</li><li><input type="checkbox"/> Confirm on-site renewable energy system installed per approved plans (IgCC 701.3).</li></ul>

COMMERCIAL TENANT IMPROVEMENTS
<b>1. ROUGH FRAME INSPECTIONS</b>
<input type="checkbox"/> <b>Construction and Demolition Waste</b> Check for one or more dumpster(s) that are marked for collection of recyclable materials. Improvement projects less than 5,000 sq. ft. are exempt per approved plans.
<b>2. FINAL INSPECTIONS</b>
<input type="checkbox"/> <b>Third Party Energy Compliance Documentation</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Mechanical system commissioning compliance certificate (exceptions based on HVAC system size per approved plans) (amended IECC C408.2).</li><li><input type="checkbox"/> Lighting controls testing report or compliance certificate per approved plans (IECC C408.3).</li></ul>



Source: Special Inspection Training

# IECC Energy Code Compliance



- Building thermal envelope
  - Uninsulated walls and roofs (C402)
- Mechanical systems
  - Heating and cooling system controls (C403.4)
  - Ventilation and exhaust systems (C403.7)
  - Construction of HVAC system elements (C403.12)
  - Heated water piping insulation (C404.4)
  - Heated water supply piping (C404.5)
  - Heated water circulation systems (C404.6)
- Lighting
  - Lighting controls (C405.2)
  - Lighting power allowance (C405.3)



**Planning and Development**  
**Office of Environmental Initiatives**  
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