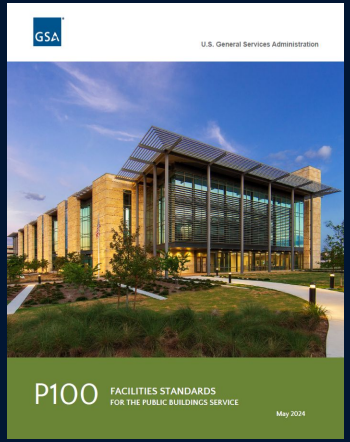
2024 P100 Training



This session is being recorded.

P100 A+E Training Series Ground Rules

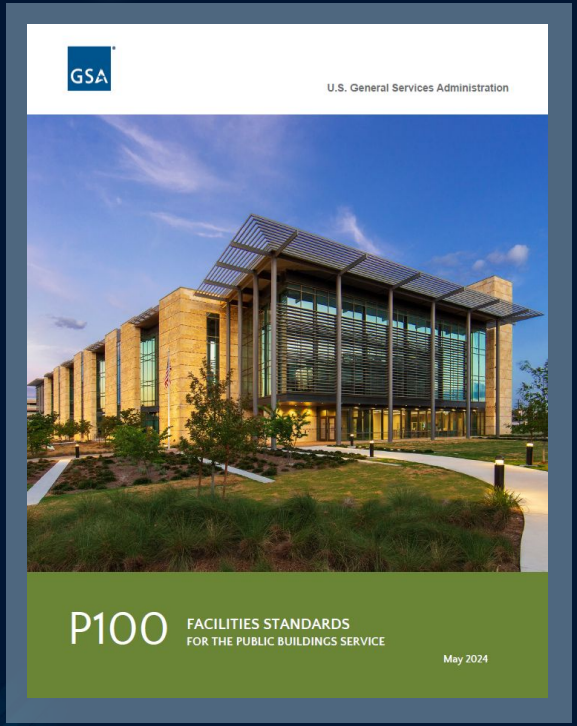
- Attendance will be taken automatically; there is no sign-in sheet
- No continuous learning points (CLPs) we be provided for this training.
- All attendees are muted and in listen only mode.
- Use Q & A function to ask questions. Written responses will be provided.

P100 A+E Training Series Ground Rules

- Approach each topic in a positive and constructive manner
- Slides and recordings will be made available after the session internally on Insite and publicly on: www.gsa.gov/p100.
- Slides will be added in a few days but recordings will take a few weeks.
- We are starting the meeting recording, please leave the meeting if you do not consent to being recorded.

Training

Getting to Know P100



This session is being recorded.

Agenda

Introduction to GSA, PBS, and P100 - Natalie Huber

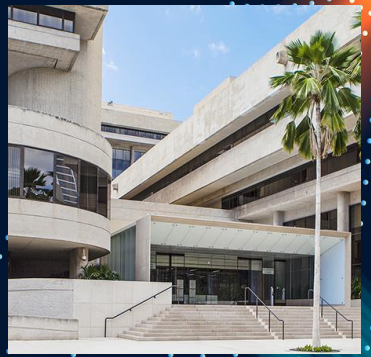
1. Getting to know P100 - Lance Davis
2. Sustainability and Resilience - Walter Tersch and Lance Davis
3. Community Planning - Frank Giblin
4. Landscape Design - Brandon Hartz
5. Envelope Design - Jason Danielson
6. Architecture - Tim Hansmann
7. Interior Design - Carin Demmon
8. Structural and Civil Engineering - Bill Earl and Hani Rimawi
9. Mechanical Engineering - Bobby Wager
10. Electrical Engineering - Ben Pisarcik
11. Fire Protection - Dave Frable
12. Specialty Spaces and EVSE - Jeff Schetrompf
13. Appendix and Tools - Lance Davis

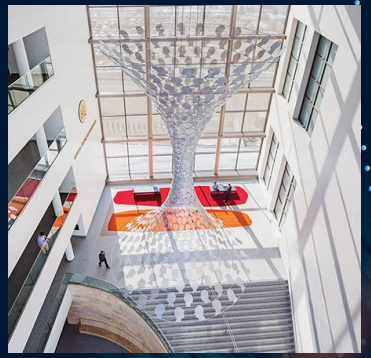
General Services Administration

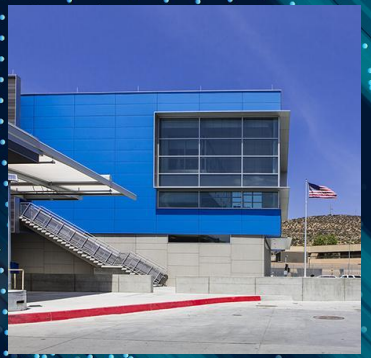
Public Buildings Service

Federal Office Buildings
Federal Courthouses
Land Ports of Entry

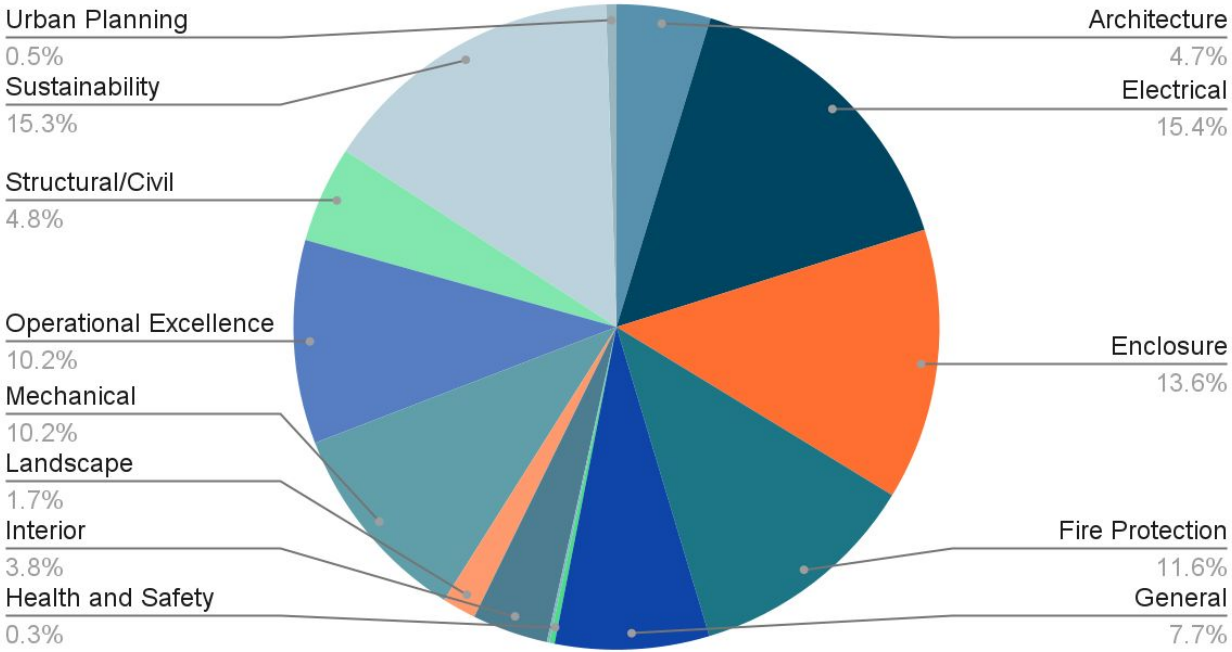
>376 million square feet
1.1 million federal employees







2024 P100 Update

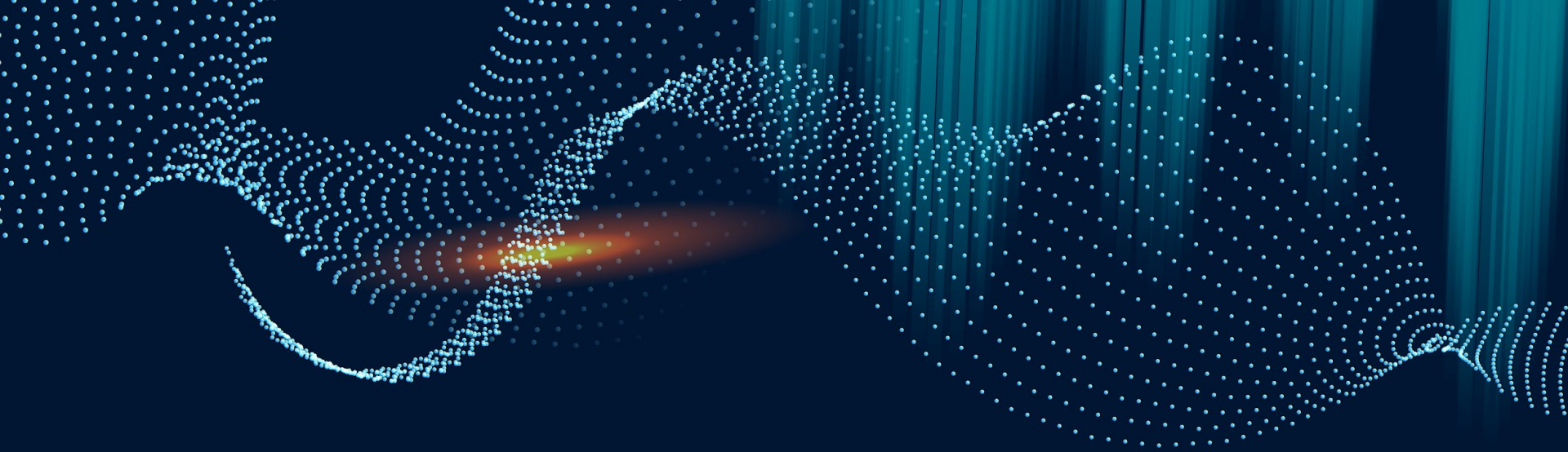


- ➔ Call for Change Proposals opened in Aug 2023

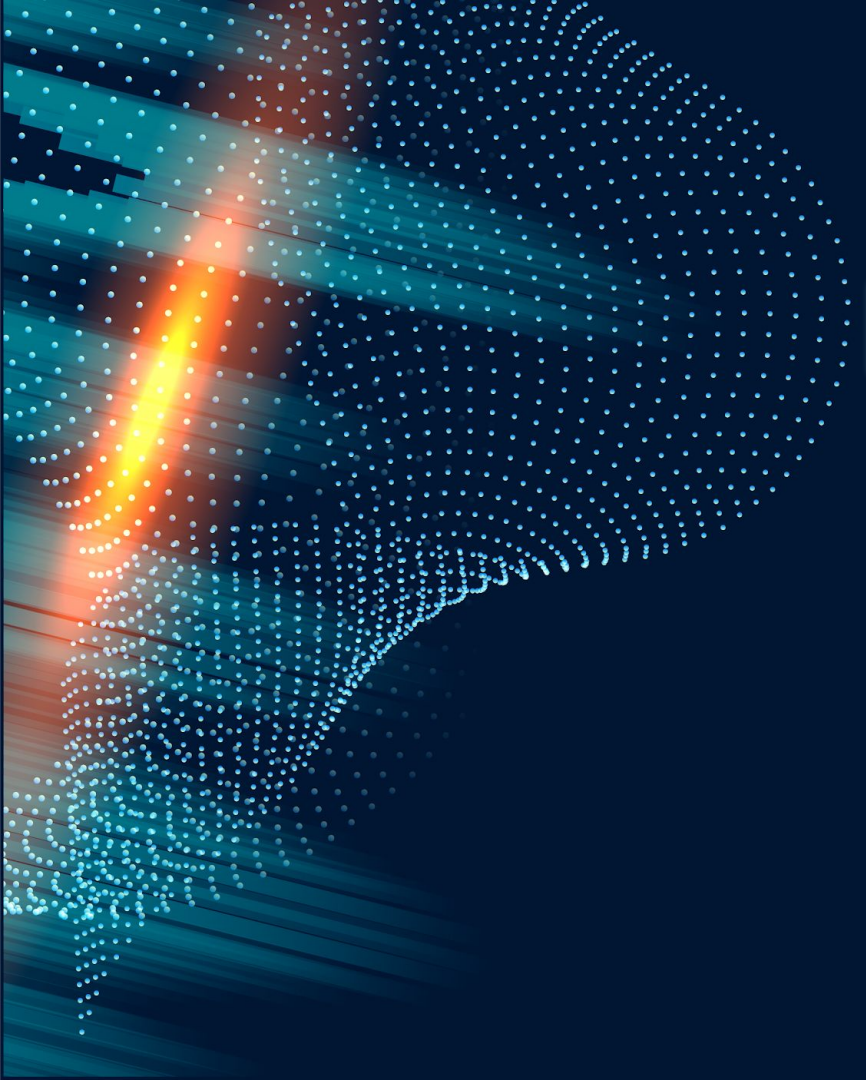
  >750 received

- ➔ New P100 Released May 2024

- ➔ Required for all owned projects starting after Aug 1, 2024



01 Getting to Know P100



P100 is mandatory!

It applies to our owned inventory regardless of funding source:

BA51	New Construction
BA54	Minor Repairs and Alterations
BA55	Major Repairs and Alterations
BA61	Operating Funds (including O&M contracts)
BA63	Energy Rebates
BA64	Historic Preservation
BA80	Reimbursable Work Authorization
External financed	ESPC

* P100 also applies to certain BA53 lease construction facilities.
* P100 is not retroactive

Most of P100, is performance based.

1.9.1.2 Water		
Water Net-Zero		
Baseline		New construction must be Water Net-Zero Ready with 15% potable water reused or infiltrated on site. Recycled water, either sourced from a municipal entity or produced onsite with systems listed or labeled in accordance with NSF/ANSI 350, may be used to meet these requirements. All projects must meet current policy including EISA section 438.
Tier 1		Meet baseline and increase new construction to 40%. Major modernization projects must be Water Net-Zero Ready with 15% potable water reused or infiltrated on site.
Tier 2		Meet baseline and increase new construction to 75% and major modernization to 40%.
Tier 3		Meet baseline and increase new construction to 100% and major modernization to 75%.
M & V		Report the project's ongoing water performance in a sustainability benchmarking platform.
Plans & Specs		Y
Calculations & Analysis		Provide calculations for water-use baseline. Show all methods of water conservation, reuse, and the amount of water returned to the original water source.
References		EPA REUSExplorer Tool
Basis of Design		Provide written narrative showing how water baseline is offset by proposed and installed water saving or reuse measures.
Construction Verification		CxP to confirm proper system functioning and staff are trained with operational manuals.

With associated prescriptive requirements.

1.9.2.2 WATER NET-ZERO

The National Blue-Ribbon Commission for Onsite Non-potable Water Systems defines water reuse, also known as water recycling, as the process of intentionally capturing wastewater, stormwater, or graywater and cleaning it as needed for a designated beneficial purpose such as drinking, cooling, toilet flushing, and irrigation. Recycled water may be produced onsite at federal facilities or by water or wastewater utilities. Utilize the EPA REUSExplorer Tool to determine regulations in each state.

Refer to Chapter 2, Rainwater Catchment Systems.

The rest is prescriptive.

2.5.3.2 WATER USE

Rainwater catchment and harvesting systems from architectural rooftops must comply with ARCSA/ASPE/ANSI Standard 63-2020: Rainwater Catchment Systems, while systems harvesting sidewalk, plaza, and/ or parking lot runoff must comply with ARCSA/ASPE/ANSI 78: Stormwater Harvesting System Design for Direct End-Use Applications. In addition to the above, capital projects may use recycled water sourced from a centralized treatment facility to meet these requirements. Testing of the recycled water must be conducted to determine if the chemistry is compatible for sustaining the proposed plant palette

Facility Definitions

Essential

IBC defines to remain operational after an event

Critical Action

DHS defines a slight chance of flooding is too great. Updated floodplain management information.

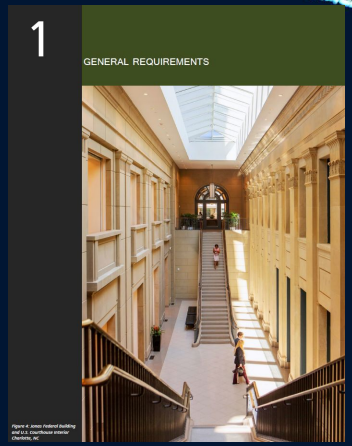
Mission Critical

Tenant defines if any operation is affected by electrical supply. Updated Data Center information.

P100 generally uses the I-Codes as a base.

State and Local Codes

Follow as practicable if more stringent than P100.



02 Sustainability and Resilience

1.9.2.1 Energy Net Zero

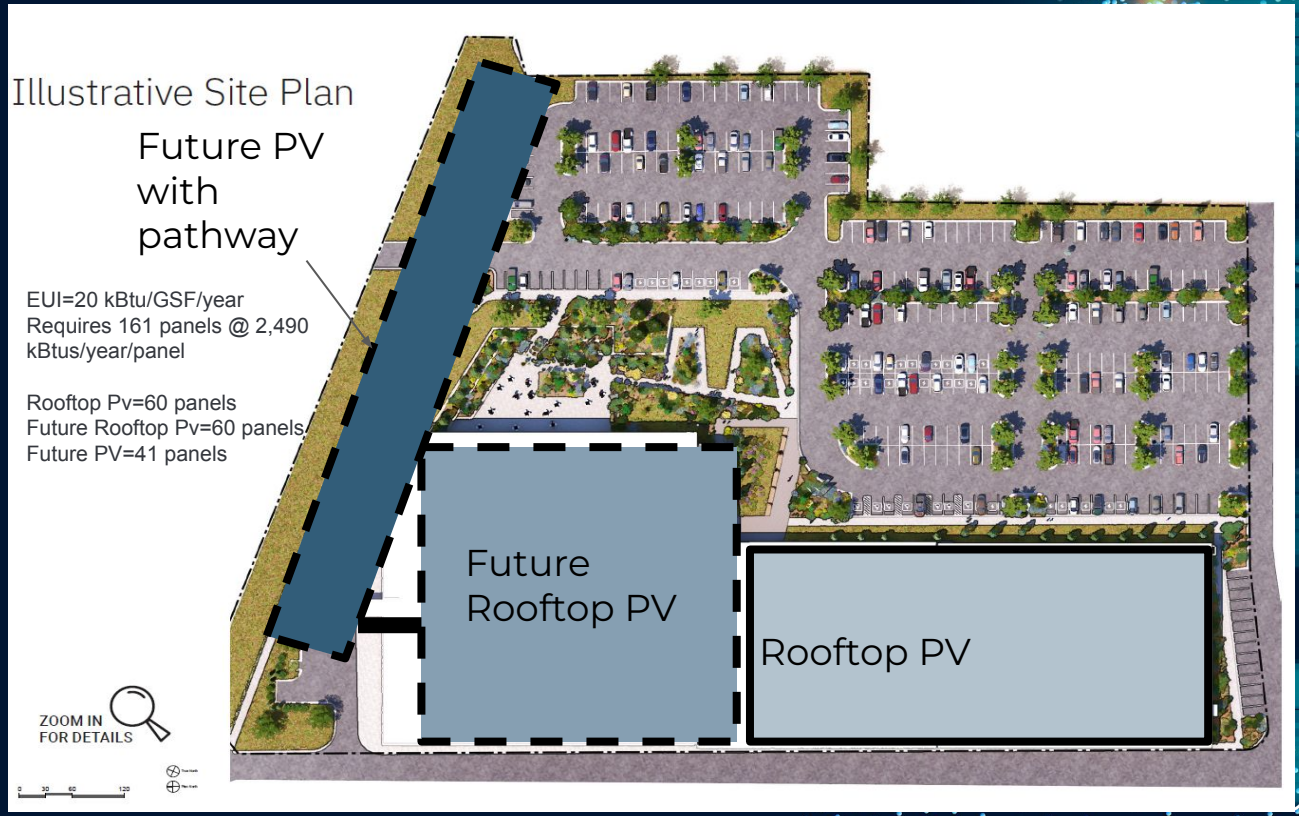
Baseline: Energy Net Zero Ready

Plan and Show Renewables on Plans

Tier 1: 25% Renewables + igCC 7.4.1.1

Tier 2: Tier 1+ 50% Renewables

Tier 3: Tier 1+ 100% Renewables



1.9.2.2 Water Net Zero

Baseline: New Construction must have 15% potable water reused or infiltrated on site. All projects meet current policies including EISA 438

Tier 1: New Construction increase to 40%; Major Modernization must have 15% water reuse/ infiltration

Tier 2: New Construction increase to 75%; Major Modernization increase to 40% water reuse/ infiltration

Tier 3: New Construction increase to 100%; Major Modernization increase to 75% water reuse/ infiltration

1.9.1.3 GPG Pilot to Portfolio Program (P2P)

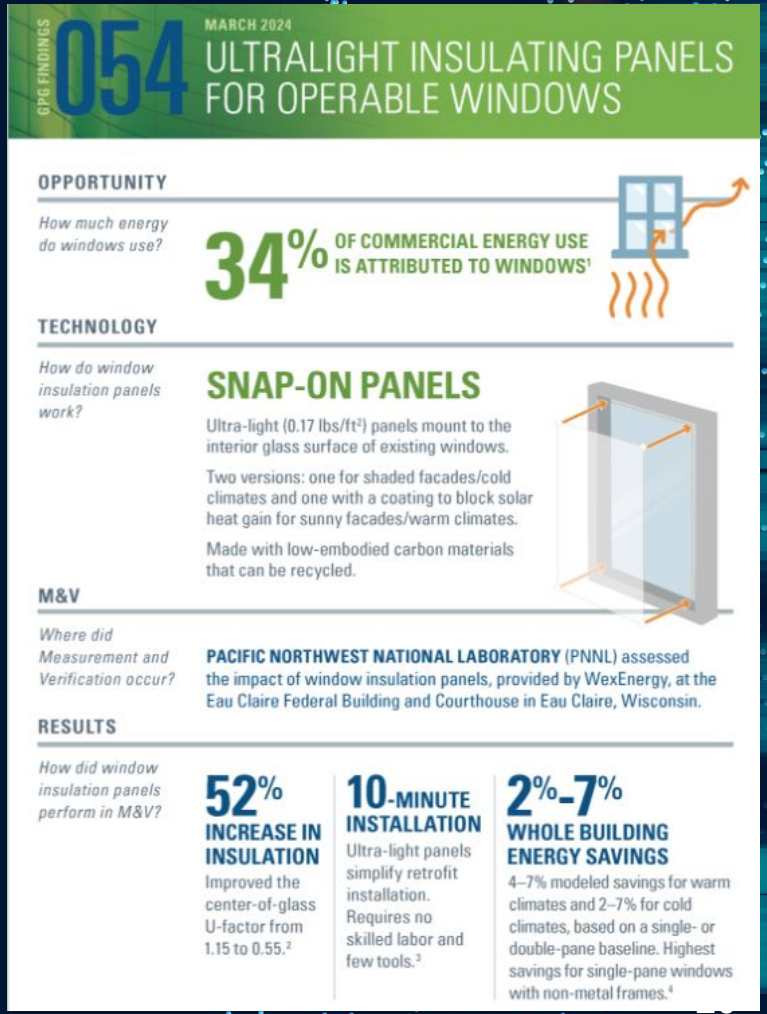
Baseline: Two (2) GPG P2P Technologies

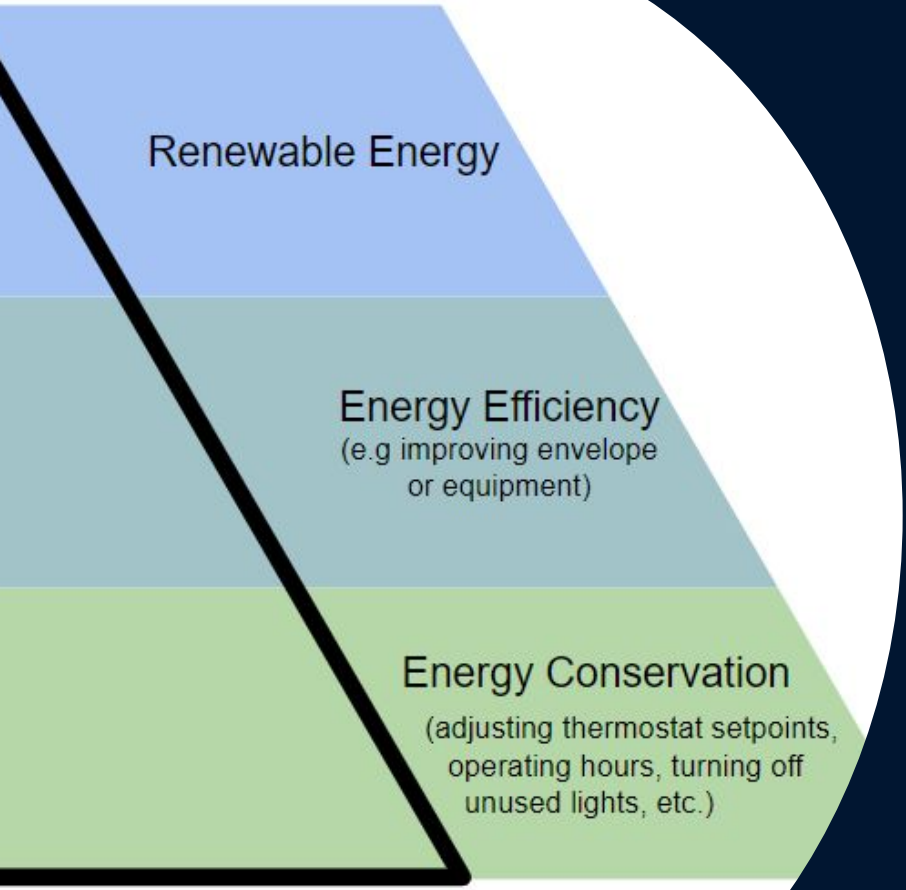
Tier 1: Four (4) GPG P2P Technologies

Tier 2: Five (5) GPG P2P Technologies

Tier 3: Six (6) GPG P2P Technologies

www.gsa.gov/gpg





1.9.3.1 Conservation is the Foundation

First: optimize daylighting, setpoints, schedules, and enclosure

Next: use technology to maximize benefit from the energy used

Finally: consider onsite renewables

1.9.3.2 Guiding Principles for Sustainable Federal Buildings

- Help integrate sustainable design best practices into projects starting from concept design through operation
- Required for new construction and major modernization (R&A) projects by EO 14057 § 205(c)(iii).

1.9.3.3. LEED Certification

LEED Gold has been required since 2010 for all BA51 (new construction) and BA55 (major repairs and alterations that affect a majority of the engineering systems)

- V4 or v4.1 BD+C
- V5 is coming soon (optional but encouraged -- GSA will do a final study)

Limited scope and partial renovation projects should contact central office (LEED Fellow Lance Davis) to discuss the appropriate rating level and system based on project scope before contracting.

1.9.3.5 Electrification

GSA defines building electrification of its owned inventory as the elimination of emissions generated directly by heating, ventilation, and air conditioning (HVAC), and by domestic water heating, cooking, laundry, and demand-response generators powered on site.

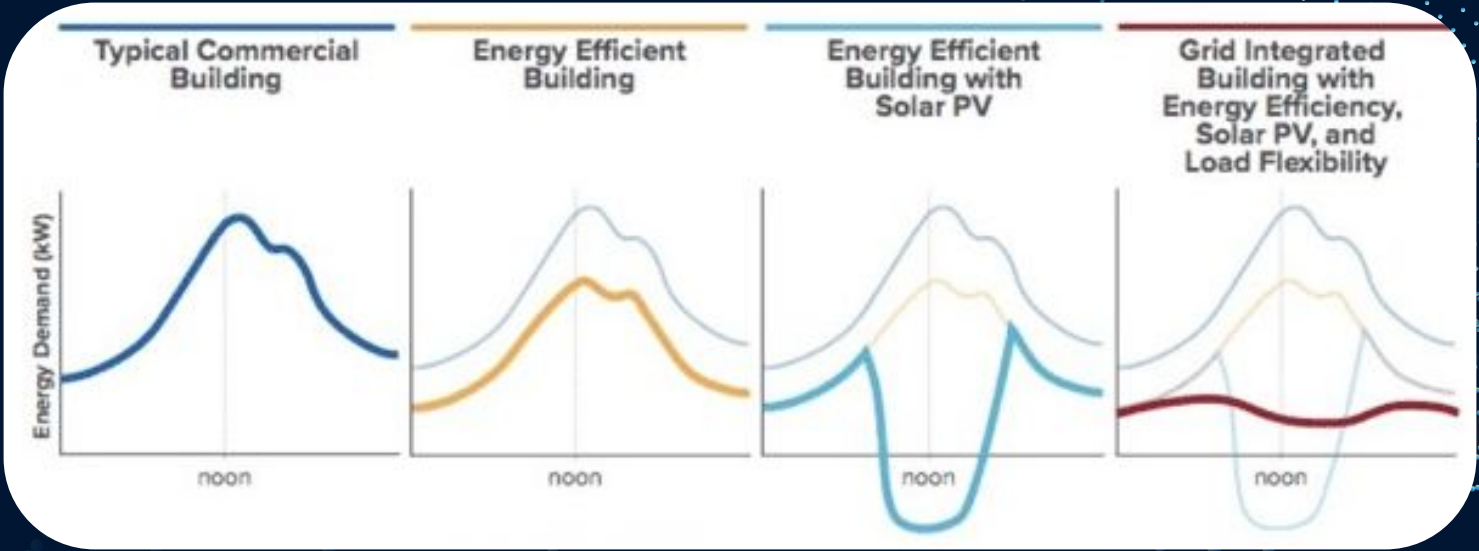
GSA requires Electrification

Some existing projects in ASHRAE zones 6, 7, and 8 may require supplemental fossil fuel for peak heating

LCC is an economic analysis method

- Required by 10 CFR §436, Subpart A.
- OMB requires for systems that affect energy and water
  - Building envelope
  - Passive Solar
  - Fenestration
  - HVAC
  - Domestic Hot Water
  - Water Reuse
  - Building Automation
  - Lighting

1.9.3.8 GRID-INTERACTIVE EFFICIENT BUILDINGS (GEBs)



LEC, Biomimic, Salvaged, and Regenerative Materials

1.9.3.10.3 Low Embodied Carbon Concrete

- Applies to all projects that use at least ten cubic yards of a concrete mix type.
  - Inflation Reduction Act-funded materials are subject to different (overall more stringent) global warming potential (GWP) limits.
- Environmental product declaration required.

- Waiver requests must include a GWP estimate

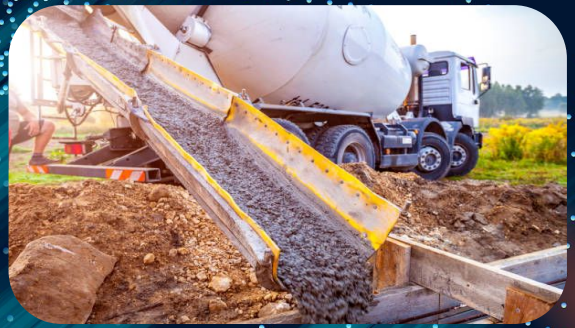


Table 1.3 Low Embodied Carbon Concrete

	Maximum Global Warming Potential Limits for GSA Low Embodied Carbon Concrete (kilograms of carbon dioxide equivalent per cubic meter - CO_2e kg/m3)		
Specified compressive strength (f'c in PSI)	Standard Mix	High Early Strength	Lightweight
up to 2499	242	314	462
2500-3499	306	398	462
3500-4499	346	450	501
4500-5499	385	500	540
5500-6499	404	526	N/A
6500 and up	414	524	N/A

These numbers reflect a 20% reduction from GWP (CO_2e) limits in proposed code language: "Lifecycle GHG Impacts in Building Codes" by the New Buildings Institute, January 2022.

1.9.3.10.4 Environmentally Preferable Asphalt

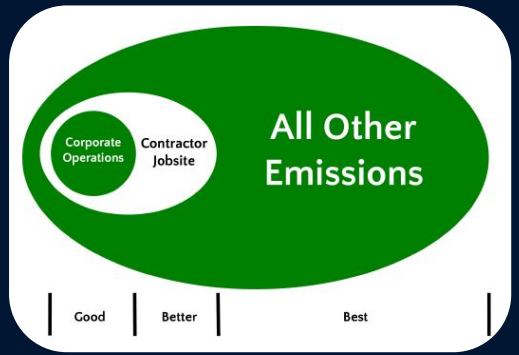
- Applies to all projects that use at least ten cubic yards of an asphalt mix type.

- Environmental product declaration required, plus “pick two”:
  - 21% or higher reclaimed asphalt pavement (RAP) content
  - Warm mix technology (reduced onsite mix temperature)
  - Non-pavement recycled content (e.g. roof shingles, rubber, or plastic)
  - Bio-based or other alternative binders
  - Improved efficiency of plants or equipment
  - Other environmentally preferable feature or practice

- Waiver requests must include a GWP estimate

Construction Site Decarbonization

- Do salvage assessments for existing buildings (1.9.3.10.2)
- Contractor's Commitment at the "good" level (track all fuel and utility usage for corporate operations) (1.9.3.11.1)
- Push for off-site construction (1.9.3.11.2)
- Divert more construction and demolition waste (50-75%) (1.9.3.11.3)
- Construction personnel that are green credentialed (1.9.3.11.4)

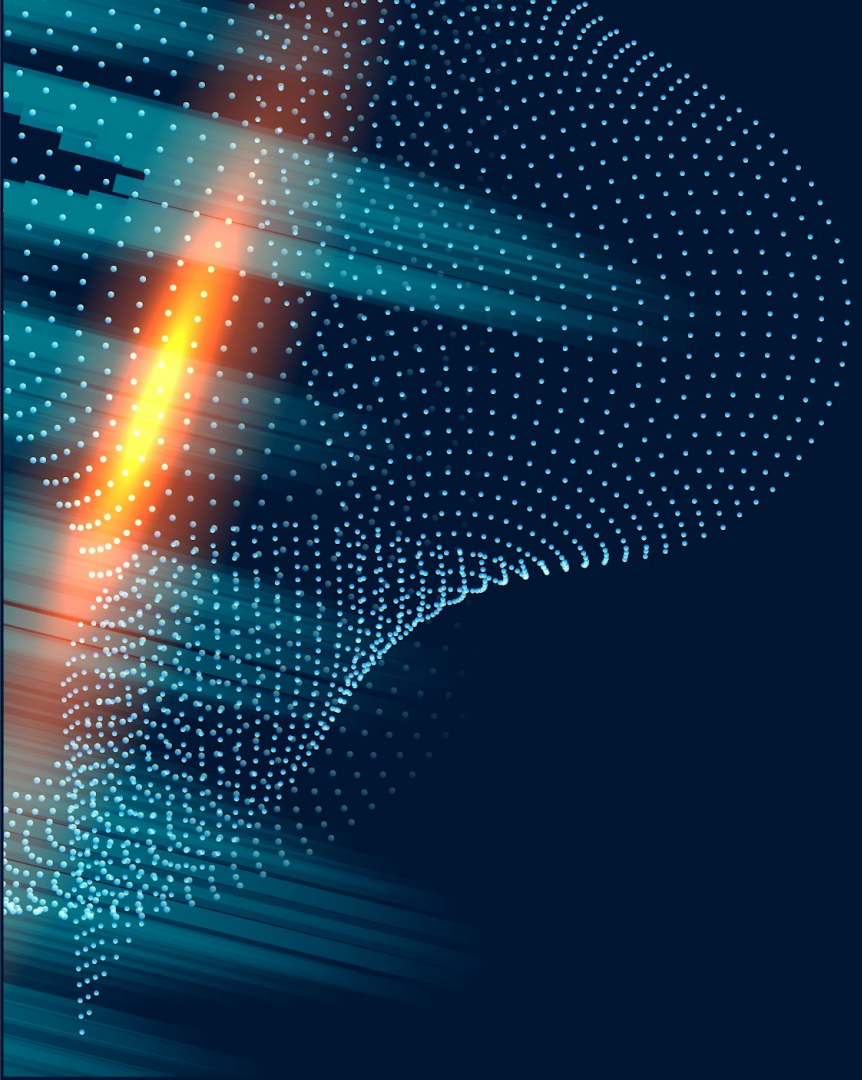


Material Equity

- **1.3.10 Child and Forced Labor**
- **1.9.3.10.6 Avoiding PFAS**

1.10.1 Managing Climate Related and Extreme Weather Risks

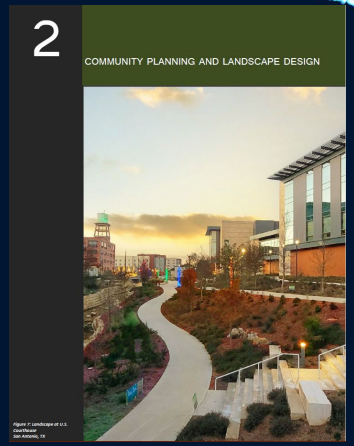
- Integrate observed and expected changes in climate for the asset's life
- Safeguarding assets is an iterative risk management process
- Manage energy and water surety during extended disruption
- This work requires Professional judgement and recommendations



1.10.2 Thermal Resilience

Mission Critical Facilities

- Support mission continuity in both observed and expected extreme climatic conditions
- May require thermal autonomy and passive habitability



03 Community Planning

Community Planning Background [Good Neighbor]

- **Federal Urban Land Use Act of 1949**
- **Public Buildings Amendments of 1988**
  - collaborative design
  - landscape + building design
- **Executive Orders**
  12072/13006/13946/14096/14057/14008. . .
  - downtown locations + local recommendations
  - historic buildings/districts + sustainability + EJ
- **Public Buildings Cooperative Use Act**
  - commercial, cultural, and educational activity
  - shared public use + liveliness

THEME: *Consult w/local stakeholders*

Leverage Federal Investment for multiple returns, where feasible

2.2 Community Planning

Purpose:

GSA has the responsibility to leverage its federal real estate actions in ways that support local community planning goals, and advance regional economic and sustainability objectives while also meeting client agency needs, wherever possible. This derives from several laws and executive orders (E.O.) including the Federal Urban Land Use Act of 1949 (40 USC §901-905); the Public Buildings Cooperative Use Act of 1976 (40 USC §581(h)); the Public Buildings Amendments of 1988 (40 USC §3312); and E.O. 12072, E.O. 13006, E.O. 14057 and E.O. 14091. These requirements are in addition to and must be coordinated with the local consultation required under NEPA.

2.2 Community Planning Requirements

2.2.1 Sustainable Locations

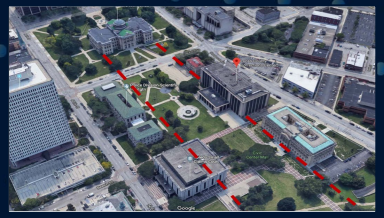
- Align with Local Infrastructure + Preserve Natural Resources
- Support Neighborhood Connectivity, Walkability, Transp Access

2.2.2 Collaborative Design Process

- Design Process Considers Input from Local Officials

2.2.3 Design for Public Use

- Interiors
- Exteriors



2.1.2

Collaborative Design Process

Design Process Considers Input of Local Officials

2.1.2 Collaborative Design Process	
Design Process Considers Input of Local Officials	
Baseline	For new construction or other projects with significant impact on the public realm (e.g., landscape, facades, perimeter security): Prior to design start, GSA project team (incl. AE or others as appropriate) meets with local officials, shares general project information, gathers officials' input, and reviews local plans. Based on meetings with local officials and other research, the project team completes a community stakeholder analysis (CSA) and a community engagement plan (CEP) to inform its design process. At first Peer Review, the project team presents input it has collected from local stakeholders and explains how the project's developing design strategy is informed by both the stakeholder analysis and community engagement plan. Areas that present potential concerns or opportunities are to be highlighted. At Final Design Concept presentation for Commissioner's approval, the project team presents local input, outlines responding design strategy, and details the relevant building and landscape design elements that demonstrate meaningful response to community engagement. Outstanding issues or challenges in this regard should also be presented to enable GSA leadership's full consideration of the proposed concept.
Tier 1	Meets Baseline performance requirements, AND: Prior to approval of the Final Design Concept, project team must share the relevant elements of the proposed design strategy with local officials and address their feedback in the Final Design Concept presentation.
Tier 2	Meets Tier 1 Requirements AND: Project development must be based upon a Feasibility Study that includes input from local officials on relevant design elements.
Tier 3	Meets Tier 2 Requirements AND: Project design and development must be informed by a neighborhood planning or charrette process that was conducted in partnership with local officials.
M & V	OAE Review of Design Narrative and presentation at relevant reviews
Plans & Specs	Design Concept materials
Calculations & Analysis	N/A
References	Applicable policies: EOs 12072, 13006, 14057, 14091; and 41 CFR §102–83; Federal Urban Land Use Act of 1949, as amended (40 USC §901–905); Public Buildings Amendments of 1988 (40 USC §3312);
Basis of Design	
Construction Verification	Verify relevant design elements from approved Concept presentation.

2.1.2
Collaborative Design Process

Design Process Considers Input of Local Officials

What projects does this apply to?

New construction or other projects with significant impact on the public realm. That might include landscape design work, facades, perimeter security.

2.1.2

Collaborative Design Process

Design Process Considers Input of Local Officials

Prior to Design Start

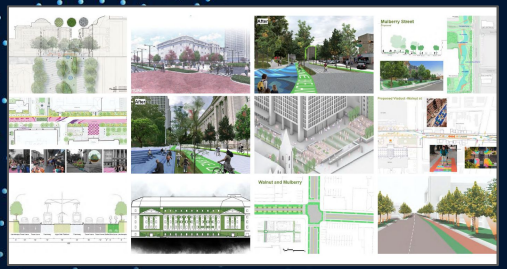
GSA project team (incl. AE or others as appropriate) meets with local officials, shares general project information, gathers officials' input, and reviews local plans. [aka info download]

Based on meetings with local officials and other research, the project team completes a community stakeholder analysis (CSA) and a community engagement plan (CEP) to inform its design process.

2.1.2

Collaborative Design Process

Design Process Considers Input of Local Officials



First Peer Review

At first Peer Review, the project team presents input it has collected from local stakeholders and explains how the project's developing design strategy is informed by both the stakeholder analysis and community engagement plan. Areas that present potential concerns or opportunities are to be highlighted.

- Part of design narrative + conversation
- Should inform the evaluation of concepts

2.1.2

Collaborative Design Process

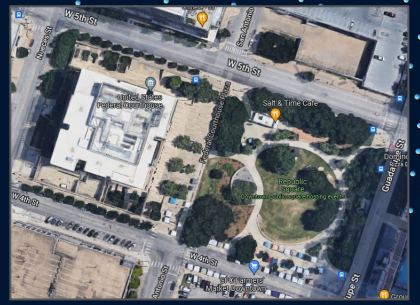
Design Process Considers Input of Local Officials

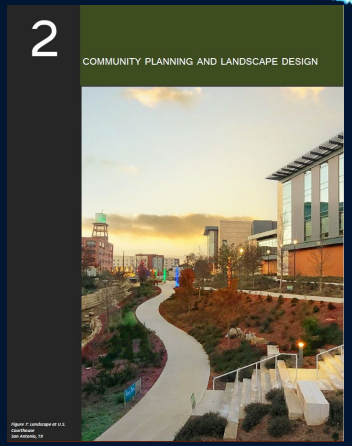
Final Concept Presentation

At Final Design Concept presentation for Commissioner's approval, the project team presents local input, outlines responding design strategy, and details the relevant building and landscape design elements that demonstrate meaningful response to community engagement. Outstanding issues or challenges should also be presented to enable GSA leadership's full consideration of the proposed concept.

- Present Site Context / Local Input / Design Response
- Must Inform Commissioner's concept approval

Project Specific Strategies





04 LANDSCAPE DESIGN

R1 - Volpe Center

SITES CERTIFICATION

Like LEED but for sustainable landscapes instead of buildings

SITES Certification

SECTION 1
SITE CONTEXT

SECTION 2
PRE-DESIGN ASSESSMENT + PLANNING

SECTION 3
SITE DESIGN – WATER

SECTION 4
SITE DESIGN – SOIL + VEGETATION

SECTION 5
SITE DESIGN – MATERIALS SELECTION

SECTION 6
SITE DESIGN – HUMAN HEALTH + WELL BEING

SECTION 7
CONSTRUCTION

SECTION 8
OPERATIONS + MAINTENANCE

SECTION 9
EDUCATION + PERFORMANCE MONITORING

SECTION 10
INNOVATION OR EXEMPLARY PERFORMANCE

Millennium Ecosystem Assessment

Ecosystem Services

GSA SITES Portfolio

1. New Federal Building - Miramar FL
2. Domenici Courthouse - Albuquerque NM
3. Columbus Land Port of Entry - Columbus NM
4. CRC Records Center - Winchester VA
5. Pelosi FB Plaza - San Francisco CA
6. New US Courthouse - Greenville SC
7. Otay Mesa Land Port of Entry - San Diego CA
8. New US Courthouse - Anniston AL
9. New US Courthouse - Nashville TN

The Sustainable SITES Initiative

GSA-Owned Facility

WATER

How storm water runoff and potable water are managed on site

Stormwater Law - EISA Section 438

What projects are subject to the law?

- Disturbance area >= 5,000 sf
- Non-maintenance activity
- Change in use

What does the law require?

- Capture, infiltrate, or reuse runoff from the 95% storm event
- Or mimic the hydrology of a predevelopment condition

How should GSA projects meet the requirements?

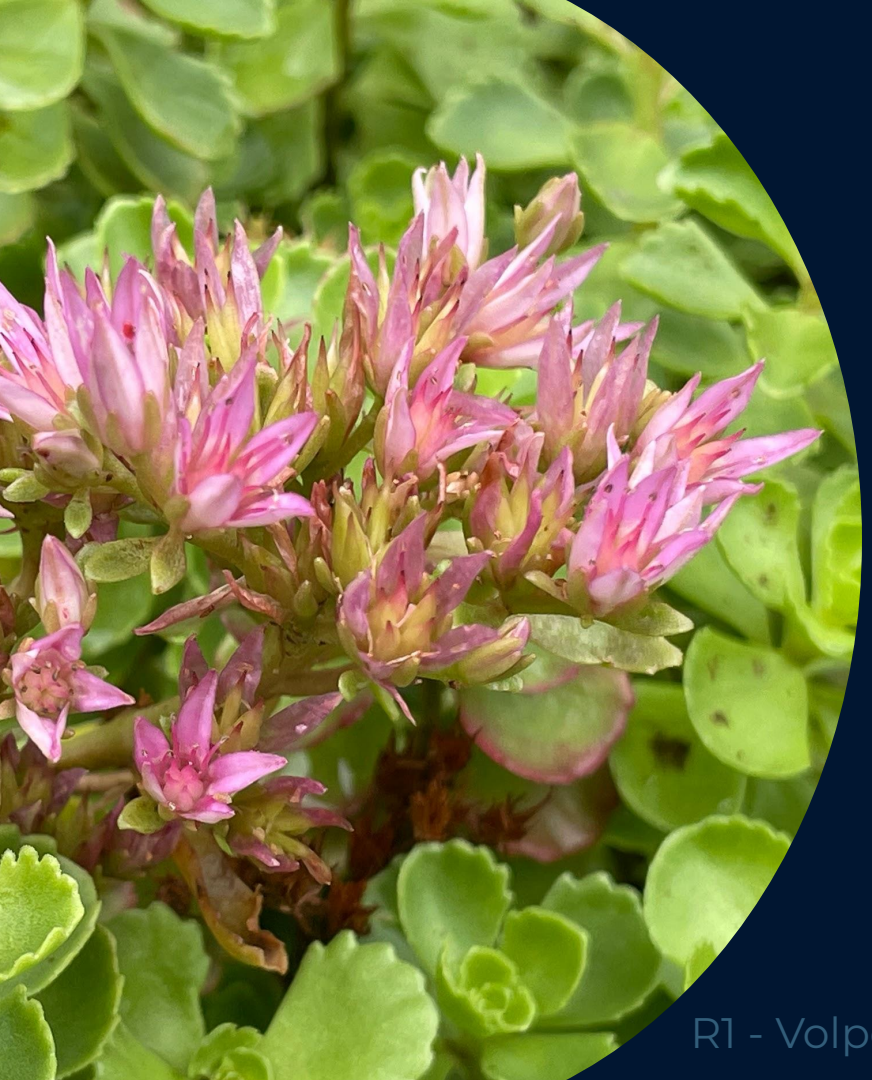
- Prioritize the use of nature based solutions

Stormwater Management + **Irrigation Water Use**

EISA section 438

SITES credit 3.3 for 6 points

SITES credit 3.4 for 5 points



BIODIVERSITY

Building healthy soils, using appropriate plant communities, and supporting pollinators

Soil Management
SITES prerequisites 2.3 + 4.1

Vegetation
SITES prerequisite 4.3
Preserve existing vegetation
Prioritize native species

Pollinators
Nesting + Foraging

HUMAN-CENTERED DESIGN AND WELL BEING

Support safe/ secure properties and human health

R1 - Volpe Center

Photo by Robert Reck

Accessibility/ Wayfinding

ABAAS
SITES credits 4.9

Education

SITES section 9

Safety + Security

Integrated Site Solutions

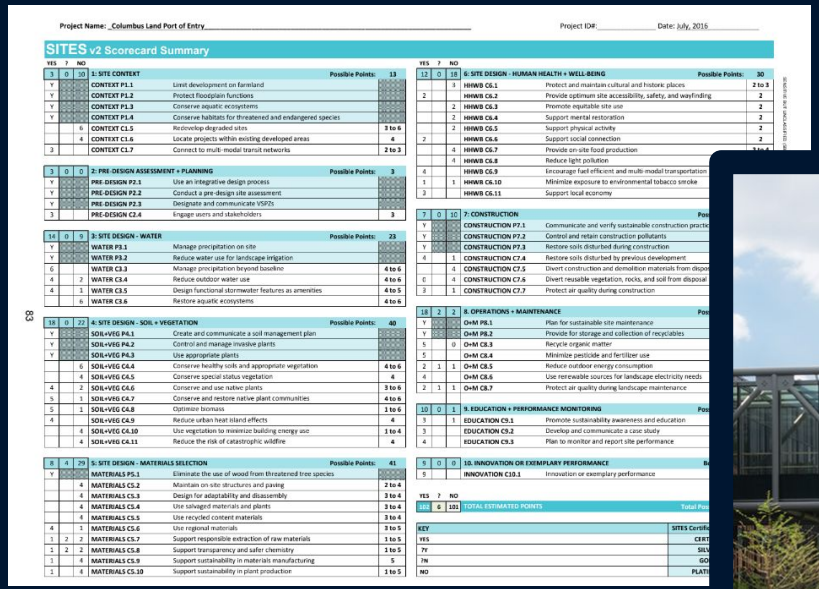
Operations + Maintenance

SITES section 8

LANDSCAPE PERFORMANCE

How do we learn from past projects to inform the next ones?

R7 - Columbus LPOE



Project Name: Columbus Land Port of Entry — Project ID#: — Date: July, 2015

SITES v2 Scorecard Summary

YES	?	NO			Possible Points: 13
3	0	10	1: SITE CONTEXT		
Y			CONTEXT P1.1	Limit development on farmland	
Y			CONTEXT P1.2	Protect floodplain functions	
Y			CONTEXT P1.3	Conserve aquatic ecosystems	
Y			CONTEXT P1.4	Conserve habitats for threatened and endangered species	
		6	CONTEXT C1.5	Redevelop degraded sites	3 to 6
		4	CONTEXT C1.6	Locate projects within existing developed areas	4
3			CONTEXT C1.7	Connect to multi-modal transit networks	2 to 3
3	0	0	2: PRE-DESIGN ASSESSMENT + PLANNING		Possible Points: 3
Y			PRE-DESIGN P2.1	Use an integrative design process	
Y			PRE-DESIGN P2.2	Conduct a pre-design site assessment	
Y			PRE-DESIGN P2.3	Designate and communicate VSPZs	
3			PRE-DESIGN C2.4	Engage users and stakeholders	3
14	0	9	3: SITE DESIGN - WATER		Possible Points: 23
Y			WATER P3.1	Manage precipitation on site	
Y			WATER P3.2	Reduce water use for landscape irrigation	
6			WATER C3.3	Manage precipitation beyond baseline	4 to 6
4	2		WATER C3.4	Reduce outdoor water use	4 to 6
4	1		WATER C3.5	Design functional stormwater features as amenities	4 to 5
		6	WATER C3.6	Restore aquatic ecosystems	4 to 6
18	0	22	4: SITE DESIGN - SOIL + VEGETATION		Possible Points: 40
Y			SOIL+VEG P4.1	Create and communicate a soil management plan	
Y			SOIL+VEG P4.2	Control and manage invasive plants	
Y			SOIL+VEG P4.3	Use appropriate plants	
		6	SOIL+VEG C4.4	Conserve healthy soils and appropriate vegetation	4 to 6
		4	SOIL+VEG C4.5	Conserve special status vegetation	4
4	2		SOIL+VEG C4.6	Conserve and use native plants	3 to 6
5	1		SOIL+VEG C4.7	Conserve and restore native plant communities	4 to 6
5	1		SOIL+VEG C4.8	Optimize biomass	1 to 6
4			SOIL+VEG C4.9	Reduce urban heat island effects	4
		4	SOIL+VEG C4.10	Use vegetation to minimize building energy use	1 to 4
		4	SOIL+VEG C4.11	Reduce the risk of catastrophic wildfire	4
8	4	29	5: SITE DESIGN - MATERIALS SELECTION		Possible Points: 41
Y			MATERIALS P5.1	Eliminate the use of wood from threatened tree species	
		4	MATERIALS C5.2	Maintain on-site structures and paving	2 to 4
		4	MATERIALS C5.3	Design for adaptability and disassembly	3 to 4
		4	MATERIALS C5.4	Use salvaged materials and plants	3 to 4
		4	MATERIALS C5.5	Use recycled content materials	3 to 4
4		1	MATERIALS C5.6	Use regional materials	3 to 5
1	2	2	MATERIALS C5.7	Support responsible extraction of raw materials	1 to 5
1	2	2	MATERIALS C5.8	Support transparency and safer chemistry	1 to 5
1		4	MATERIALS C5.9	Support sustainability in materials manufacturing	5
1		4	MATERIALS C5.10	Support sustainability in plant production	1 to 5

YES	?	NO			Possible Points: 30
12	0	18	6: SITE DESIGN - HUMAN HEALTH + WELL-BEING		
		3	HHWB C6.1	Protect and maintain cultural and historic places	2 to 3
2			HHWB C6.2	Provide optimum site accessibility, safety, and wayfinding	2
		2	HHWB C6.3	Promote equitable site use	2
		2	HHWB C6.4	Support mental restoration	2
		2	HHWB C6.5	Support physical activity	2
2			HHWB C6.6	Support social connection	2
		4	HHWB C6.7	Provide on-site food production	1 to 4
		4	HHWB C6.8	Reduce light pollution	1 to 4
4			HHWB C6.9	Encourage fuel efficient and multi-modal transportation	4
1		1	HHWB C6.10	Minimize exposure to environmental tobacco smoke	1 to 2
3			HHWB C6.11	Support local economy	3
7	0	10	7: CONSTRUCTION		Pos
Y			CONSTRUCTION P7.1	Communicate and verify sustainable construction practic	
Y			CONSTRUCTION P7.2	Control and retain construction pollutants	
Y			CONSTRUCTION P7.3	Restore soils disturbed during construction	
4		1	CONSTRUCTION C7.4	Restore soils disturbed by previous development	1
		4	CONSTRUCTION C7.5	Divert construction and demolition materials from disposa	4
0		4	CONSTRUCTION C7.6	Divert reusable vegetation, rocks, and soil from disposal	4
3		1	CONSTRUCTION C7.7	Protect air quality during construction	1
18	2	2	8. OPERATIONS + MAINTENANCE		Pos
Y			O+M P8.1	Plan for sustainable site maintenance	
Y			O+M P8.2	Provide for storage and collection of recyclables	
5		0	O+M C8.3	Recycle organic matter	
5			O+M C8.4	Minimize pesticide and fertilizer use	
2	1	1	O+M C8.5	Reduce outdoor energy consumption	
4			O+M C8.6	Use renewable sources for landscape electricity needs	
2	1	1	O+M C8.7	Protect air quality during landscape maintenance	
10	0	1	9. EDUCATION + PERFORMANCE MONITORING		Pos
3		1	EDUCATION C9.1	Promote sustainability awareness and education	
3			EDUCATION C9.2	Develop and communicate a case study	
4			EDUCATION C9.3	Plan to monitor and report site performance	
0	0	0	10. INNOVATION OR EXEMPLARY PERFORMANCE		Be
5			INNOVATION C10.1	Innovation or exemplary performance	

YES	?	NO	
102	6	101	TOTAL ESTIMATED POINTS

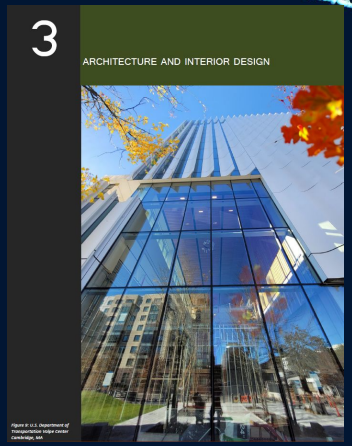
KEY	SITES Certific
YES	CERT
?Y	SILV
?N	GO
NO	PLATI

Design + Construction

SITES process and case studies

Post-Construction Performance

Landscape Analytics Reports



05 Envelope Design

P100 Chapter 1

1.3.9
Facility Definitions

Essential Facilities

Critical Action Facilities

Mission Critical Facilities

1.3.9 FACILITY DEFINITIONS

1.3.9.1 ESSENTIAL FACILITIES

The International Building Code (IBC) has defined essential facilities as "Any building and other structure that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquake". Buildings and other structures designated as essential facilities include but are not limited to: Group I-2 occupancies that have surgery or emergency treatment facilities, aviation control towers, or fire and police stations.

1.3.9.2 CRITICAL ACTION FACILITIES

The Department of Homeland Security Federal Emergency Management Agency has defined a facility as "Critical Action" when even a slight chance of flooding is too great. If critical action structures must be located within a 1-percent-annual-chance (also known as the 100-year), 0.2-percent-annual-chance (500-year) or the Federal Flood Risk Management Standard (FFRMS) floodplain (i.e., there are no practicable alternatives), critical infrastructure must be elevated above the applicable floodplain elevation. Critical actions include, but are not limited to:

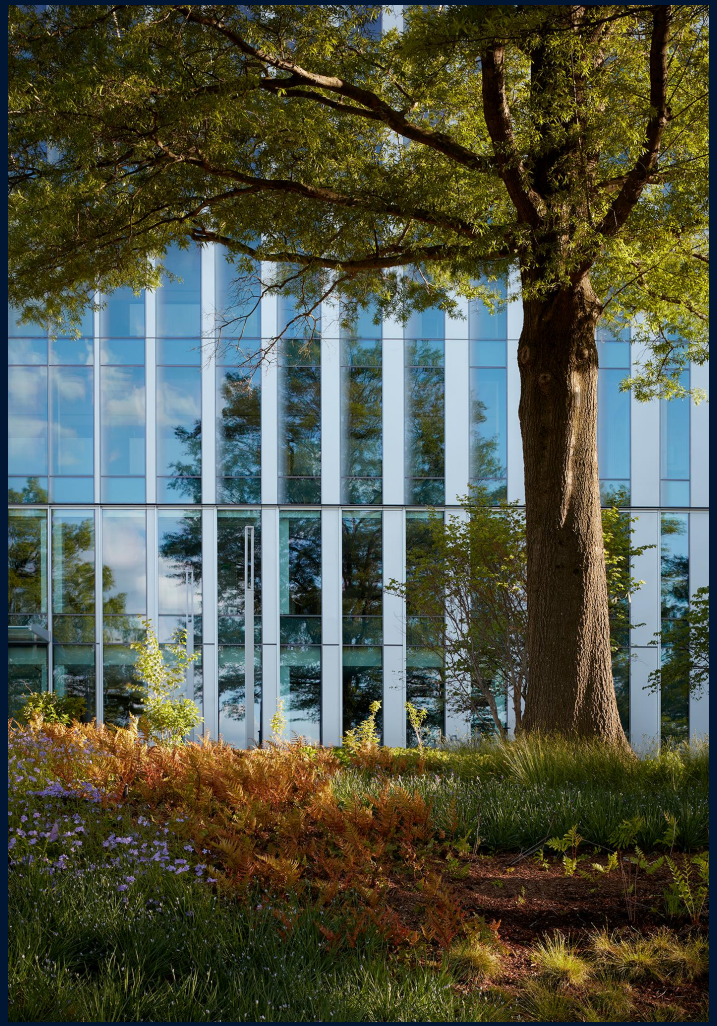
- storage of irreplaceable records
- the production, use, or storage of highly volatile, flammable, explosive, toxic, or water-reactive materials
- hospitals and nursing homes, and housing for the elderly, which are likely to contain occupants who may not be sufficiently mobile to avoid the loss of life or injury during flood and storm events.

The critical action designation is established under the decision-making process outlined in the accompanying Desk Guide for GSA Order PBS 1095.8A, Floodplain Management. The U.S. Courts has determined that all new court houses are critical action facilities. Refer to Chapter 4, Flood Resistant Design Requirements.

1.3.9.3 MISSION CRITICAL FACILITIES

The tenant will determine this designation during project development. A mission critical facility contains any operation that, if electrical supply is interrupted, will cause a negative impact on business activities, ranging from losing revenue to jeopardizing legal conformity, and loss of life. Examples may include data centers, hospitals, laboratories, public safety centers, court houses, land ports of entry, research facilities, law enforcement, and critical file and payroll centers. See Chapter 1, Resilience, Chapter 3, Enclosure, Chapter 5, Wildfire Smoke Mode, and Chapter 6, Primary Distribution for requirements.

The Federal Data Center Enhancement Act notes a "growing need for Federal agencies to use data centers and cloud applications that meet high standards for cybersecurity, resiliency, and availability". The minimum requirements applicable to data centers will be documented and published by the IT Modernization Division (GSA). Please contact dccoi@gsa.gov for more information.



P100 Chapter 3

Water Penetration Resistance

Moisture and Condensation Control

Air Tightness

Thermal Performance

Building Enclosure Commissioning

Service Life

3.2.4.1
Moisture Control Opaque Assemblies

Analyze the performance of unique or custom opaque assemblies

Use 2D or 3D thermal and hygrothermal tools

ASTM E3054, ISO 10211, CSA ZS010, ASHRAE 1365 RP

3.2.4 MOISTURE AND CONDENSATE CONTROL

3.2.4.1 MOISTURE CONTROL OPAQUE ASSEMBLIES

Where unique or custom opaque assemblies are proposed, analyze the performance and exposures to ensure the control of moisture and to mitigate the risk of condensation and uncontrolled moisture migration. Implement tools such as two-dimensional or three-dimensional thermal and hygrothermal simulation tools early in the project cycle to evaluate condensation risk. See ASTM E3054.

Condensation risk may be evaluated using dew point calculations following the Glaser Method outlined in the ASHRAE Handbook of Fundamentals under design conditions. For scenarios where transient/dynamic conditions are required, such as changing environmental conditions, moisture storage within materials, impact of thermal mass, one-dimensional or two-dimensional transient hygrothermal simulations with software (e.g. WUFI) may be required. These hygrothermal simulations must follow the ASHRAE 160 standard requirements.

For assemblies where thermal bridging may impact local surface temperatures within the assembly, condensation risk may be evaluated using thermal simulations under design conditions. Condensation risk analysis using thermal simulations must be performed with either two-dimensional or three-dimensional finite element heat transfer analysis and follow applicable simulation standards such as ISO 10211 or CSA Z5010, or follow the approach outlined in ASHRAE 1365 RP.

3.2.4.2
Condensation Resistance – Fenestration

Analyze the performance of fenestration

2D or 3D thermal and hygrothermal example conditions given

3.2.4.2 CONDENSATION RESISTANCE–FENESTRATION

Condensation resistance in fenestration is required to ensure no condensation occurs on uncontrolled surfaces based on the interior and exterior design criteria. Condensation resistance may be determined using two-dimensional or three-dimensional thermal simulations. These simulations must include sections of the fenestration and opaque assembly since connection details between the two assemblies may impact the surface temperatures of the fenestration. Thermal simulations must be evaluated following NFRC-500 for fenestration and ISO 10211 or CSA Z5010 for fenestration to opaque assembly details. Three-dimensional thermal simulations may be required for details with highly conductive materials such as aluminum framing or with discrete thermal bridges to evaluate surface temperatures at critical locations such as corners where vertical framing intersects with horizontal framing (e.g. window corners).

Include in the analysis project spandrel panel size and conditions, adjacent assemblies (e.g., transparent vision glazing sections, non-spandrel opaque assemblies), intermediate floor attachments and anchorages, spandrel construction (e.g., backpan configuration, insulation type, cladding type, interior wall construction), and airflow in and around the spandrel assembly. Do not rely on a single interior film coefficient factor.

Table 3.1.5

Air Tightness / Enclosure Airtightness (All Six Sides of the Building)

Baseline air infiltration tighter, .17 cfm/sf from .25 cfm/sf

Tier 1 air infiltration match PHIUS

Verification	testing, so there is no CxP witness activity
3.1.5 Air Tightness	
Fenestration	
Baseline	CW30 Minimum Performance Class

	Curtain wall, window wall and storefront, < 0.3 L/s*m (0.06 cfm/ft) @ 75 Pa (0.3" wc) Performance and durability testing of fenestration assemblies and interface conditions or documented.
Tier 1	Baseline AND Punch windows, AW40 Minimum Performance Class, fixed < 0.5 L/s*m (0.10 cfm/ft) @ 300 Pa (1.2" wc), operable < 1.5 L/s*m (0.3 cfm/ft) @ 300 Pa (1.2" wc) Curtain wall, window wall and storefront, < 0.3 L/s*m (0.06 cfm/ft) @ 300 Pa (0.3" wc) Required for mission critical facilities as defined under 1.3.9.3, Highrise locations, or at locations ASCE 7 115 mph+ Durability Testing as required for Performance Class or as appropriate for the systems anticipated use, whichever is greater.
Tier 2	N/A
Tier 3	N/A
M & V	ASTM E283 ASTM E783 Failure protocol = retest +1 additional sampling per failure.
Plans & Specs	AAMA 101 NAFS
Calculations & Analysis	AAMA 101 NAFS
References	
Basis of Design	Document requirement in basis of design
Construction Verification	CxP to witness Performance Mock-up Test outlined in ASTM E783 and ASTM E283.

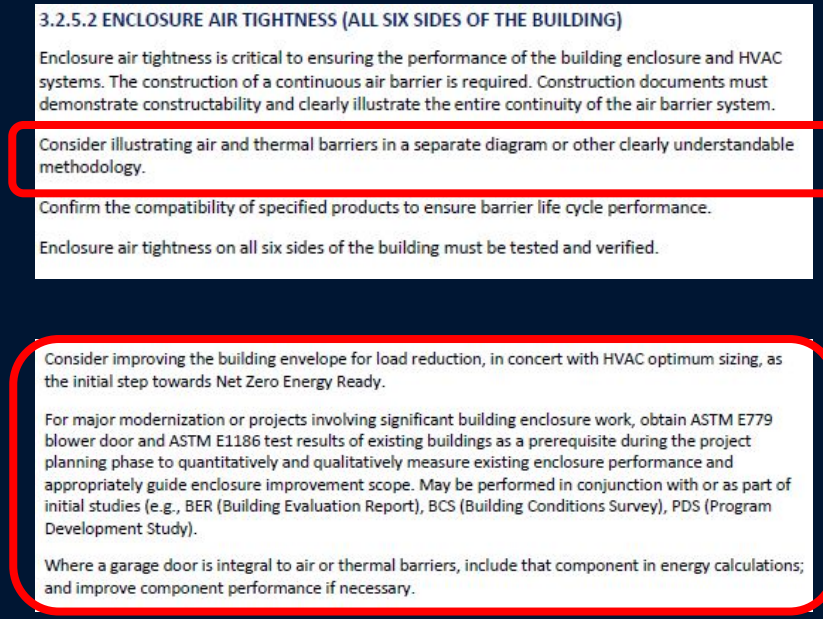
3.2.5.2
Enclosure Air Tightness (all six sides of the building)

Diagrammatically demonstrate continuity of air and thermal barriers on drawings (industry best practice)

Improvement of building envelope performance as part of net zero strategy (industry best practice)

Quantitatively and qualitatively measure existing performance for major modernizations

Include garage doors in energy models where they are integral to air and thermal barriers



3.2.5.2 ENCLOSURE AIR TIGHTNESS (ALL SIX SIDES OF THE BUILDING)

Enclosure air tightness is critical to ensuring the performance of the building enclosure and HVAC systems. The construction of a continuous air barrier is required. Construction documents must demonstrate constructability and clearly illustrate the entire continuity of the air barrier system.

Consider illustrating air and thermal barriers in a separate diagram or other clearly understandable methodology.

Confirm the compatibility of specified products to ensure barrier life cycle performance.

Enclosure air tightness on all six sides of the building must be tested and verified.

Consider improving the building envelope for load reduction, in concert with HVAC optimum sizing, as the initial step towards Net Zero Energy Ready.

For major modernization or projects involving significant building enclosure work, obtain ASTM E779 blower door and ASTM E1186 test results of existing buildings as a prerequisite during the project planning phase to quantitatively and qualitatively measure existing enclosure performance and appropriately guide enclosure improvement scope. May be performed in conjunction with or as part of initial studies (e.g., BER (Building Evaluation Report), BCS (Building Conditions Survey), PDS (Program Development Study).

Where a garage door is integral to air or thermal barriers, include that component in energy calculations; and improve component performance if necessary.

3.2.6
Thermal Performance

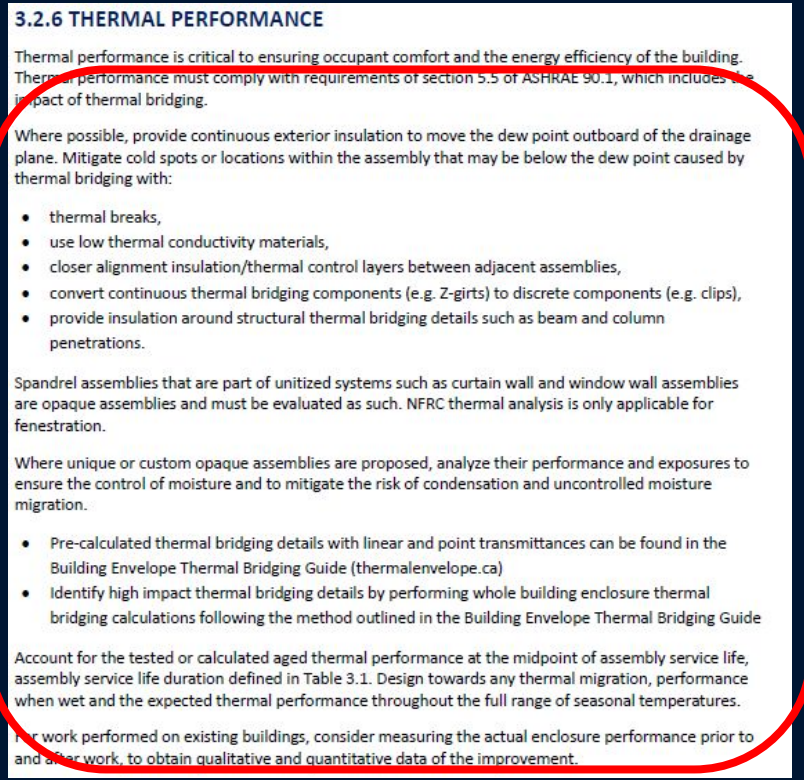
Mitigate the effect of thermal bridges, including material conductivity and thermal continuity

Building Envelope Thermal Bridging Guide reference

Analyze unique spandrel assemblies that are part of curtain walls as opaque assemblies

Account for aged thermal performance of materials, performance when wet, performance throughout full range of seasonal temperatures

For modernizations, consider measuring performance before and after work



3.2.6 THERMAL PERFORMANCE

Thermal performance is critical to ensuring occupant comfort and the energy efficiency of the building. Thermal performance must comply with requirements of section 5.5 of ASHRAE 90.1, which includes the impact of thermal bridging.

Where possible, provide continuous exterior insulation to move the dew point outboard of the drainage plane. Mitigate cold spots or locations within the assembly that may be below the dew point caused by thermal bridging with:

- thermal breaks,
- use low thermal conductivity materials,
- closer alignment insulation/thermal control layers between adjacent assemblies,
- convert continuous thermal bridging components (e.g. Z-girts) to discrete components (e.g. clips),
- provide insulation around structural thermal bridging details such as beam and column penetrations.

Spandrel assemblies that are part of unitized systems such as curtain wall and window wall assemblies are opaque assemblies and must be evaluated as such. NFRC thermal analysis is only applicable for fenestration.

Where unique or custom opaque assemblies are proposed, analyze their performance and exposures to ensure the control of moisture and to mitigate the risk of condensation and uncontrolled moisture migration.

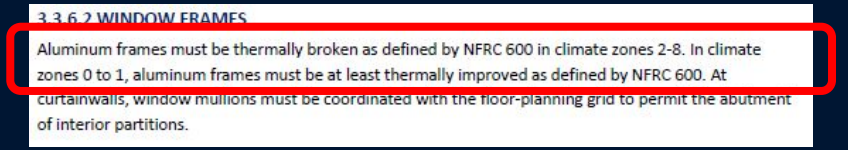
- Pre-calculated thermal bridging details with linear and point transmittances can be found in the Building Envelope Thermal Bridging Guide (thermalenvelope.ca)
- Identify high impact thermal bridging details by performing whole building enclosure thermal bridging calculations following the method outlined in the Building Envelope Thermal Bridging Guide

Account for the tested or calculated aged thermal performance at the midpoint of assembly service life, assembly service life duration defined in Table 3.1. Design towards any thermal migration, performance when wet and the expected thermal performance throughout the full range of seasonal temperatures.

For work performed on existing buildings, consider measuring the actual enclosure performance prior to and after work, to obtain qualitative and quantitative data of the improvement.

3.3.6.2
Window Frames

Thermally break aluminum frames per NFRC 600 in climate zones 2-8



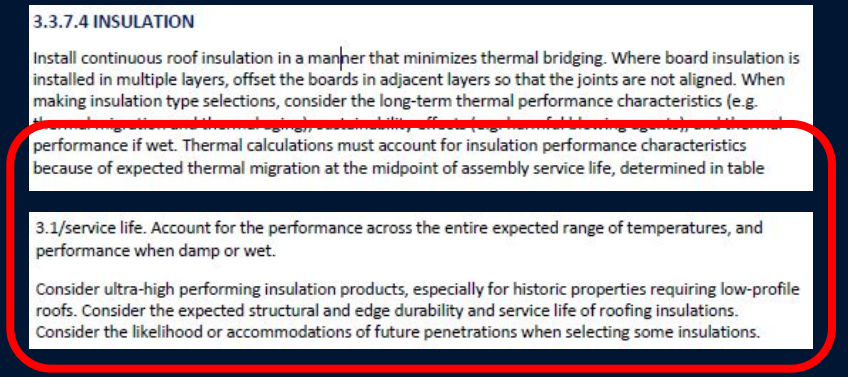
3.3.6.2 WINDOW FRAMES

Aluminum frames must be thermally broken as defined by NFRC 600 in climate zones 2-8. In climate zones 0 to 1, aluminum frames must be at least thermally improved as defined by NFRC 600. At curtainwalls, window mullions must be coordinated with the floor-planning grid to permit the abutment of interior partitions.

3.3.7.4
Insulation

Insulation considerations for historic properties

Insulation options and factors described

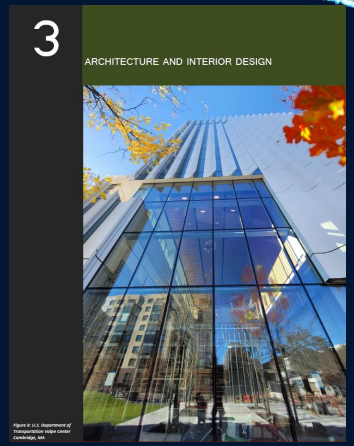


3.3.7.4 INSULATION

Install continuous roof insulation in a manner that minimizes thermal bridging. Where board insulation is installed in multiple layers, offset the boards in adjacent layers so that the joints are not aligned. When making insulation type selections, consider the long-term thermal performance characteristics (e.g. [illegible] performance if wet. Thermal calculations must account for insulation performance characteristics because of expected thermal migration at the midpoint of assembly service life, determined in table

3.1/service life. Account for the performance across the entire expected range of temperatures, and performance when damp or wet.

Consider ultra-high performing insulation products, especially for historic properties requiring low-profile roofs. Consider the expected structural and edge durability and service life of roofing insulations. Consider the likelihood or accommodations of future penetrations when selecting some insulations.



06 Architecture

3.4 GENERAL ARCHITECTURE

3.4.1 Cornerstone
3.4.2 Registry of Designers and Builders
3.4.3 Promote the Use of Stairs
3.4.4 Vertical Transportation
- 3.4.4.1 Vertical Transportation/Elevator Traffic Analysis
- 3.4.4.2 Elevators
- 3.4.4.3 Elevator Classifications
- **3.4.4.4 Machine Room-Less (MRL)**
- 3.4.4.5 Escalators
- 3.4.4.6 Wheelchair Lifts

3.4.5 Family/Single Occupancy Restrooms
3.4.6 Lactation Rooms
- Table 3.1 Lactation Stations

3.4.7 Bird-Safe Building Design

***Sections that have changed from 2021 version**

3.4.1 Cornerstone

A cornerstone **is required** for all new buildings as a part of the exterior wall. The cornerstone must be a cut stone block or similar long lasting material meeting table 3.1 Enclosure Service Life tier 2 or better having a smooth face of size adequate to present the following incised letters:

UNITED STATES OF AMERICA

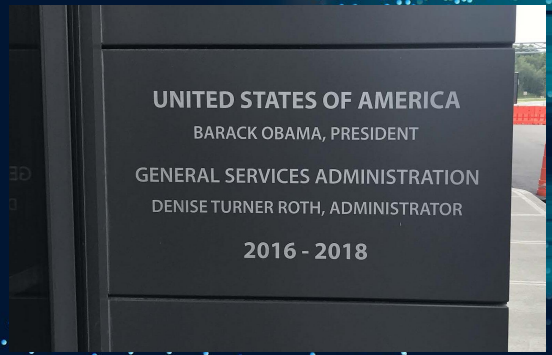
(PRESIDENT'S NAME), PRESIDENT

GENERAL SERVICES ADMINISTRATION

(ADMINISTRATOR'S NAME), ADMINISTRATOR

(YEAR OF CONSTRUCTION START) – (YEAR OF PROJECT COMPLETION)

Traditional Stone



Example with Non-Stone Material
LPOE - Derby Line, VT

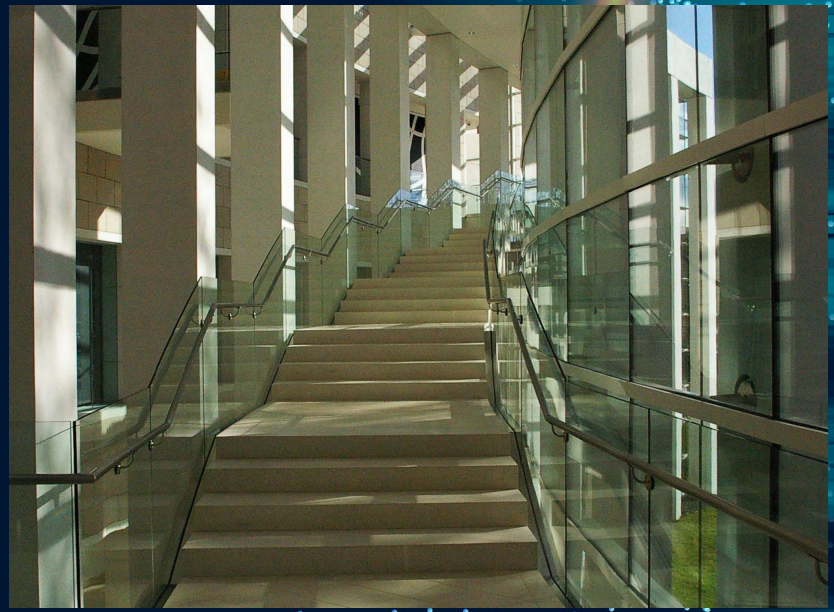
3.4.2 Registry of Designers and Builders

A plaque or electronic interface that names the individuals of the project team **may** be placed inside the building. Listed individuals are members of the GSA project team, consultant architects and engineers, on-site construction managers, and construction workers who have completed at least **200 hours of service** to the project. The list encompasses office staff and on-site workers.

The Regional Project Management Team (RPMT) will provide the specifications for the design and construction of the plaque or electronic media.

3.4.3 Promote the Use of Stairs

GSA **encourages** employees, tenants, and visitors to step up to a healthier lifestyle and consider taking the stairs. Regular physical activity, such as stair climbing, can help reduce the risk for several diseases and health conditions such as heart disease, high blood pressure, and obesity. **Consider** stair and circulation space design so they are readily accessible, easy to find, and desirable to use.



U.S. Courthouse, Springfield, MA

3.4.4 Vertical Transportation

The goal of GSA's Vertical transportation program is to ensure code compliance on all new and modernization installations of both elevators and escalators, thereby improving overall building safety related to vertical transportation. The primary goal is the safety of the riding public and to protect from accidents or injury related to vertical transportation, while ensuring the cost effective and accurate installation of vertical transportation equipment.

The GSA Regional Vertical Transportation Subject Matter Expert (SME) must participate in each phase of the project from concept through design, construction, final acceptance, and occupancy to ensure all ASME A17 codes, as well as IBC and NEC code requirements, are incorporated into the project. The GSA Regional Vertical Transportation SME must review design plans, specifications, and related information; review contractors' submittals for compliance with contract documents; witness acceptance testing and commissioning of the Vertical Transportation systems; and upon successful completion of commissioning and acceptance of tested systems, will issue certificates of operation (or temporary certificates of operation). The GSA regional Vertical Transportation SME is the Authority Having Jurisdiction (AHJ) for the Regional Vertical Transportation program and for technical requirements in this chapter. As the AHJ, the GSA Vertical Transportation SME has the right to revise the specific requirements within this chapter based on a technical evaluation and analysis of the project's specific needs.

All new and altered elevators and escalators must comply with ASME A17.1. All new and altered lifts must comply with ASME A18.1, Safety Standard for Platform Lifts and Stairway Chair Lifts. (See Chapter 7, Fire Protection for specific requirements related to elevator systems).

The selection of type and quantity of conveying systems, such as elevators, escalators, and wheelchair lifts, must be made in conjunction with a thorough vertical transportation traffic analysis of the facility.

3.4.4 Vertical Transportation

3.4.4.1 Vertical Transportation/Elevator Traffic Analysis
3.4.4.2 Elevators
3.4.4.3 Elevator Classifications

3.4.4.4 Machine Room-Less (MRL)

A machine room-less elevator is an elevator with the drive machine, governor, and other related components located in the elevator hoistway. Hydraulic machine room-less elevators are prohibited. Traction machine room-less elevators require specific Government approval by the GSA regional elevator/transportation SME. The elevator must have a metal belt and the control system must be located outside of public and high-security areas to facilitate safe maintenance procedures. The MRL must meet the following minimum requirements:

- Main line disconnect switches must be installed within 18 inches of the strike jamb of control room door
- The car position, movement, and direction must be able to be determined from the control room
- Provide HVAC in the control room so that the temperature does not go below 50 degrees or above 90 degrees
- Access to the governor must be provided from outside the hoistway
- The suspension means must be manufactured for elevator use only and be constructed from steel only

3.4.4 Vertical Transportation

3.4.4.5 Escalators

3.4.4.6 Wheelchair Lifts

Proper design of accessible routes in new construction **must not require the use of wheelchair lifts**. In repair and alteration projects, ramps are preferred to wheelchair lifts.

Coordination with Vert Transportation SME for proper design

In conjunction with Chapter 8.1.3.2 (Planning for Accessibility) judiciary/Judges bench: Comply with clear floor space and maneuvering requirements of ABAAS. Adaptable for future inclusion of ramp or **platform lift**. See Ch 8 for detailed access requirements

3.4.5 Family/Single Occupancy Restroom

All new federal buildings **must** provide one or more combined purpose family/single occupancy restroom on each accessible floor. This restroom is in addition to, and preferably collocated with Male/Female building restrooms. For partial floor alterations, provide the family/single occupancy restroom when alteration area is equal to or exceeds 50% of that floor's total rentable area. This restroom must be sensitive to historic features.

The physical characteristics of the family/single occupancy restroom must:

- Provide a lockable door with deadbolt-type occupancy designation.
- Provide door signage to indicate the following features:
    - International Symbol of Accessibility per ABAAS 703.7.2
    - Designations for family, single use and non-gender specific occupants
    - Presence of Adult (Universal) or /Infant changing station
- Provide minimum clear floor areas and accessible routes to all restroom features following ABAAS standards.
- Provide all elements of an accessible restroom to include but not limited to:
    - one accessible sink
    - one accessible toilet with accessible toilet accessories and grab bars
- Provide one accessible changing station as follows:
    - Infant Changing Station - Provide one infant changing station. The station may be fixed at +30" above finished floor or a powered height adjusted table with a range from +17" to +34" above finished floor and hold a weight of no less than 50 Lbs.
    - Adult (universal) Changing Station - In buildings where the main floor can accommodate a public area with fifty or more occupants, exchange the infant changing station on that floor with one adult (universal) changing station. The station may be fixed at +30" above finished floor or a powered height adjusted table with a range from +17" to +34" above finished floor and hold a weight of no less than 300 lbs with minimum dimensions of 25" in width by 70" in length.
- Provide finishes appropriate for ease of maintenance and in line with specific Building Design Standards.

3.4.6 Lactation Rooms

Consistent with Section 4207 of the Patient Protection and Affordable Care Act (P.L. No. 111-148), federal agencies are required to provide a reasonable break time for female employees to express breast milk as needed for their nursing child for 1 year after the child's birth. Federal agencies **must** provide a place for lactation, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public.

Added Reference (PUMP Act of June 27, 2023):
Per 29 USC §218d, nursing employees have the right to reasonable break time and a place, other than a bathroom, that is shielded from view and free from intrusion to express breast milk while at work. This right is available for up to one year after the child's birth.

See P100 for Room Size, Minimum Requirements, or Location sections
(Note the August 1, 2024 Memorandum from the Chief Architect emphasizing the signage requirement)

HVAC and Lighting:
- Provide HVAC and lighting in accordance with Chapter 5 and Chapter 6, respectively.
- While existing conditions vary, below are preferable, particularly in new construction and substantial renovation:
    - A thermostat for user adjustment. Air ventilation and filtration: Consult Chapter 5 tables to determine optimal solutions.
    - Noise control to reduce sound intrusion and attenuation. Consult Chapter 5 tables to determine optimal solutions. STC 45 is recommended as a minimum.
    - Non-glare lighting fixtures are preferred. A dimmer switch is strongly recommended. Consult Chapter 6 tables to determine optimal solutions.
    - Electrical loads accommodating refrigerators, milk pumps, personal phones and computers are recommended at a minimum.

3.4.7 Bird-Safe Building Design

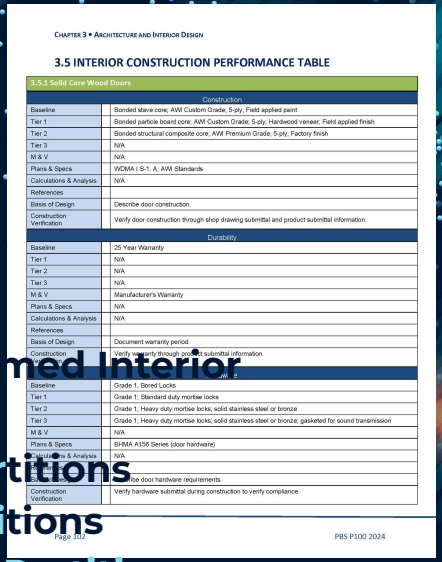
All BA51 (new construction) or BA55 (major repairs and alterations) projects affecting the glazing of the envelope meet the following (historic buildings must make a determination with the RHPO):

- All glass, from ground level to a minimum of 75 feet above grade must have a Threat Factor rating of 30 or less (Note: previously 40 feet)
- All glass, adjacent to a green roof or partial green roof and up to three floors above, must have a Threat Factor rating of 30 or less (Note: previously 15 feet above)
- All glazed corners, fly-through conditions, glazing adjacent to courtyards, skywalks, building connectors, railings, noise barriers, wind barriers (including in parking structures, transportation and weather shelters, gazebos, external booths, atria, and any other free-standing glass, plexiglass, or other clear, transparent, or highly reflective free-standing structure must have a Threat Factor less than or equal to 25

See The American Bird Conservancy Threat Factors product database.

All projects should consider bird friendly design per the American Bird Conservancy for Bird-Safe Building Design and the National Glass Association's Best Practices for Bird-Friendly Glazing Design.

3.5 INTERIOR CONSTRUCTION PERFORMANCE TABLE



CHAPTER 3 • ARCHITECTURE AND INTERIOR DESIGN

3.5 INTERIOR CONSTRUCTION PERFORMANCE TABLE

3.5.1 Solid Core Wood Doors	
Construction	
Baseline	Bonded stave core; AWI Custom Grade; 5-ply; Field applied paint
Tier 1	Bonded particle board core; AWI Custom Grade; 5-ply; Hardwood veneer; Field applied finish
Tier 2	Bonded structural composite core; AWI Premium Grade; 5-ply; Factory finish
Tier 3	N/A
M & V	N/A
Plans & Specs	WDMA I.S-1. A; AWI Standards
Calculations & Analysis	N/A
References	
Basis of Design	Describe door construction.
Construction Verification	Verify door construction through shop drawing submittal and product submittal information.
Durability	
Baseline	25 Year Warranty
Tier 1	N/A
Tier 2	N/A
Tier 3	N/A
M & V	Manufacturer's Warranty
Plans & Specs	N/A
Calculations & Analysis	N/A
References	
Basis of Design	Document warranty period.
Construction	Verify warranty through project submittal information.
Hardware	
Baseline	Grade 1, Bored Locks
Tier 1	Grade 1, Standard duty mortise locks
Tier 2	Grade 1, Heavy duty mortise locks; solid stainless steel or bronze
Tier 3	Grade 1, Heavy duty mortise locks, solid stainless steel or bronze, gasketed for sound transmission
M & V	N/A
Plans & Specs	BHMA A156 Series (door hardware)
Calculations & Analysis	N/A
References	
Basis of Design	Describe door hardware requirements.
Construction Verification	Verify hardware submittal during construction to verify compliance.

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3.5.1 Solid Core Wood Doors
3.5.2 Hollow Metal Doors
3.5.3 Glazed Aluminum Doors
3.5.4 All Glass Entrances
3.5.5 Borrowed Lights
3.5.6 Wood Framed Interior Lights
3.5.7 Hollow Metal Framed Interior Lights
3.5.8 Aluminum Framed Interior Lights
3.5.9 Metal Stud Partitions
3.5.10 Masonry Partitions
3.5.11 Demountable Partitions
3.5.12 Operable Walls
3.5.13 Millwork and Cabinets
3.5.14 Countertops

*Sections that have changed

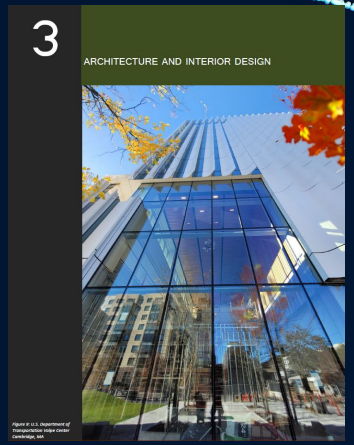
Note: Finishes after Countertops from previous Table have moved to 3.7

3.6 INTERIOR PERFORMANCE ATTRIBUTES

3.6.1 Construction Products and Materials

3.6.1.1 Solid Core Wood Doors
3.6.1.2 Hollow Metal Doors
3.6.1.3 Glazed Aluminum Doors
3.6.1.4 All Glass Entrances
3.6.1.5 Borrowed Lights
3.6.1.6 Wood Framed Interior Lights
3.6.1.7 Hollow Metal Framed Interior Lights
3.6.1.8 Aluminum Framed Interior Lights
3.6.1.9 Metal Stud Partitions
3.6.1.10 Masonry Partitions
3.6.1.11 Demountable Partitions
3.6.1.12 Operable Walls
3.6.1.13 Millwork and Cabinets
3.6.1.14 Countertops

***Sections that have changed from 2021 version**



07 Interior Design

3.7 Interior Finishes Performance Table

(Previously 3.4 Interior Performance Table)

GOALS:

1. REQUIREMENTS TO BE MORE DIRECT AND CLEAR

More lists and less sentences. Combine information when possible.
Consistency with the other Tables in the P100.

2. PROTECT THE GOVERNMENT'S INVESTMENT BETTER

Warranties to cover more like freight and labor, not just materials.

3. BALANCE REQUIREMENTS WITH PRODUCT AVAILABILITY

GSA can be a leader, but it's also our responsibility to be fair to the market.

4. GROUP LIKE MATERIALS TO HAVE THE SAME ECO-LABELS

Similar materials can share the same environmental standards.

5. MAKE THE P100 MORE OF A LIVING DOCUMENT

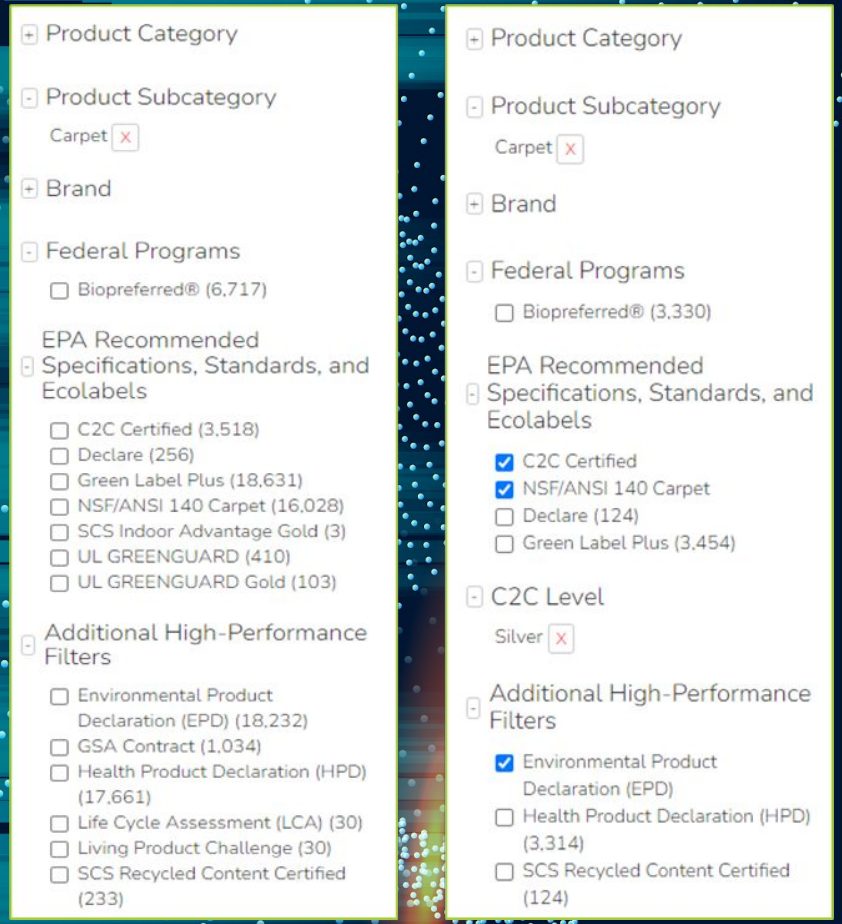
Things change, so we tried to add more flexible language.

EXAMPLES

Maintenance	
Baseline	Factory Finish - No Wax
Tier 1	N/A
Tier 2	N/A
Tier 3	N/A
M & V	Document frequency and type of cleaning and disinfection.
Plans & Specs	Product maintenance per manufacturer recommendations and product application requirements
Calculations & Analysis	N/A
References	
Basis of Design	Identify maintenance requirements as determined by Owner Project Requirements (OPR). Provide product manufacturer recommendations. Verify cleaning and disinfection chemical compatibility and efficacy.
Construction Verification	Verify compliance through product submittal information.

Environmental	
Baseline	Multi-Attribute Certification Required: NSF/ANSI 332 Level 1 or Conformant EPD Required: Product Specific Type III EPD
Tier 1	NA
Tier 2	Multi-Attribute Certification Required: NSF/ANSI 332 Level 2 or Gold or Cradle to Cradle Silver EPD Required: Product Specific Type III EPD
Tier 3	NA
M & V	N/A
Plans & Specs	Yes
Calculations & Analysis	N/A
References	https://sftool.gov/greenprocurement
Basis of Design	NA
Construction Verification	Verify compliance through product submittal information

SFTool and the new P100 Button



P100

https://sftool.gov/greenprocurement

3.8 Interior Finishes Performance Attributes

(Previously 3.5.2 Interior Finishes and Materials)

3.8.1 Interior Finishes And Materials

- 3.8.1.1 Interior Coatings (Paint)
- 3.8.1.2 Wallcovering Type II

3.9 Interior Requirements

(Previously 3.5.3 Acoustics)

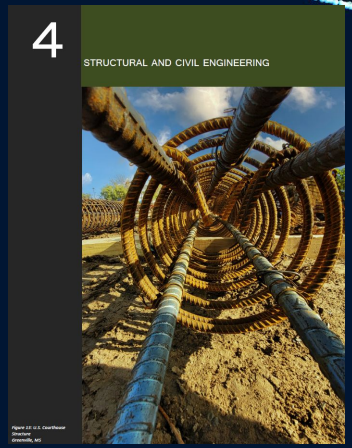
3.9.1 Acoustics

- 3.9.1.1 General Criteria For Building Spaces
- 3.9.1.2 Closed Offices Versus Open Plan
- 3.9.1.3 Mechanical And Plumbing Noise
- 3.9.1.4 Absorption And Isolation
- 3.9.1.5 Parameters Used In Acoustical Design
- 3.9.1.6 Noise Isolation And Privacy

3.10 Workplace Requirements

(Previously 3.8.4 Workplace Tools and Processes)

- 3.10.1 Planning and Design Strategies
  - 3.10.1.1 Goal Setting
  - 3.10.1.2 Planning and Design Process
  - 3.10.1.3 Requirements Development
  - 3.10.1.4 Balance of all Design Factors
- 3.10.2 Health and Comfort: Environmental Controls
  - 3.10.2.1 Ventilation and Thermal Comfort
  - 3.10.2.2 Lighting/Daylighting
  - 3.10.2.3 Acoustic Comfort
- 3.10.3 Image
  - 3.10.3.1 Workplace Image
  - 3.10.3.2 Wayfinding
- 3.10.4 Workplace Tools and Processes
  - 3.10.4.1 A Balanced Scorecard Approach
  - 3.10.4.2 Quantitative and Qualitative Discovery Processes and Tools
  - 3.10.4.3 Change Management
  - 3.10.4.4 Feedback Loop



08 Structural and Civil Engineering

Chapter 4

Structural Engineering

Sections 4.1, 4.2, 4.3, 4.4, and 4.5

Civil Engineering

Sections 4.6, 4.7, 4.8, and 4.9

Structural General

- Grammar and readability
- Updated references
- Consistency
- Ordering of subjects

4.2 STRUCTURAL PERFORMANCE ATTRIBUTES

The structural design of new or modification of existing buildings, structures, and portions thereof must follow the latest edition of the International Code Council *IBC Code and Commentary*, except as modified in this chapter. Generally, the baseline and tier performance levels are intended to align with the structure risk categories as defined by the IBC.

4.2.1 LOADS AND NATURAL HAZARDS

Loads must be governed by the latest edition of American Society of Civil Engineers & Structural Engineering Institute *ASCE/SEI 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures*.

The designer must verify local regulations that require loads exceeding those specified by ASCE 7 and coordinate with the GSA Structural Engineer to determine if they should be incorporated.

Design loads must be itemized and categorized in calculations and on construction documents.

4.2.1.1 LIVE LOAD

Floor framing members supporting general office space must be designed using a uniform live load of 100 pounds per square foot (psf) over the entire floor for all elevated slabs unless the tabulated uniform live load required by the ASCE 7 is higher than 100 psf. This includes a nominal partition load of 15 pounds per square foot but excludes heavy loads like the planned use of heavy file systems, book racks, ammunition storage, sliding room partitions, safes, and other similar items. Some projects may require that the designer not use live load reductions for 1) horizontal framing members, 2) transfer girders supporting columns, or 3) columns or walls supporting roofs where mechanical equipment can be located. The designer will discuss this issue with the GSA structural engineer early in the project development. Live load reductions must be considered in the design of foundation members regardless of the restrictions placed on individual members.

For buildings having plaza areas where there is a possibility of vehicular traffic these loads, including impact must be provided for in the design.

4.2.1.2 SEISMIC LOAD

Seismic design of new buildings and building additions must be governed by the latest edition of American Society of Civil Engineers Structural Engineering Institute ASCE/SEI 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. Retrofit of existing buildings must conform to the Basic Performance Objectives defined by the latest edition of American Society of Civil Engineers Structural Engineering Institute ASCE/SEI 41 Seismic Evaluation and Retrofit of Existing Buildings based on the facility Risk Category.

Structural New Topics

Previously incorporated into other portions of the chapter. Important enough to have a specific section.

- **Non-Structural Components**
- **Geotechnical Requirements**
- **Special Durability Requirements**
- **Forced Entry Resistance**
- **Storage of Hazardous Materials**
- **Delegated Designs**

4.3.9 SPECIAL DURABILITY REQUIREMENTS

The designer must incorporate the use of more durable construction materials and detailing for structures supporting vegetative roofs, plaza areas and other structural elements exposed to weather and/or exterior environmental conditions.

Structural Performance Tiers

Now aligned with building code risk categories. This will provide a consistent level of design.

4.1.2 Seismic	
Structure	
Baseline	Risk Category I & II Structures
Tier 1	Risk Category III Structures
Tier 2	Risk Category IV Structures
Tier 3	N/A

Non-Structural	
Baseline	Risk Category I & II Structures
Tier 1	Risk Category III Structures
Tier 2	Risk Category IV Structures
Tier 3	N/A

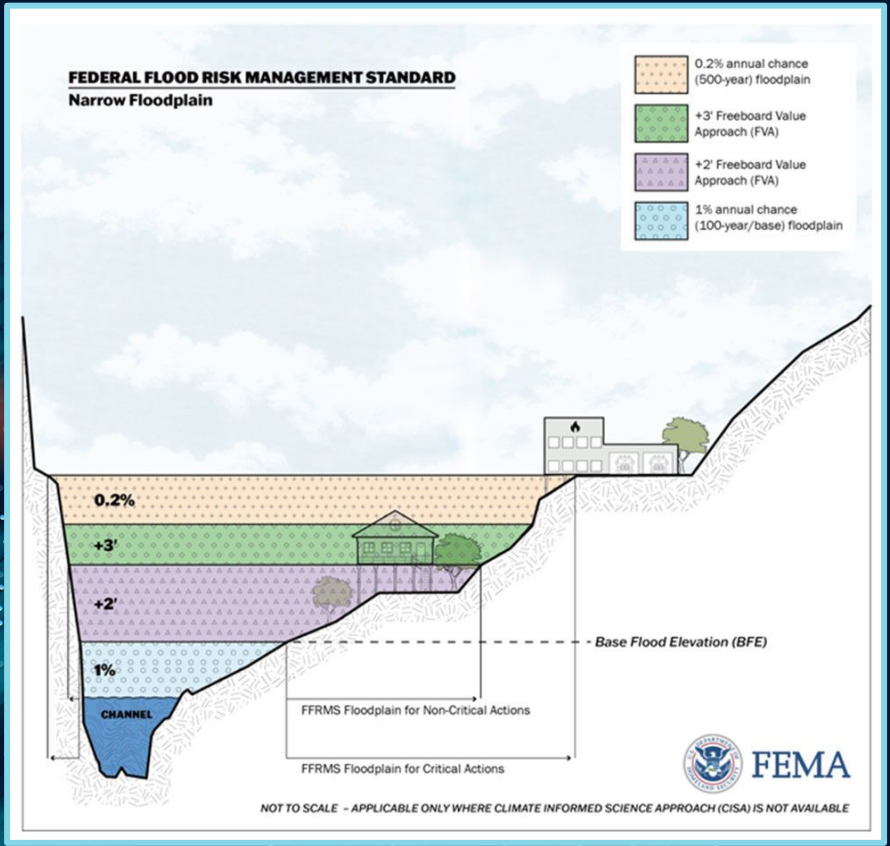
4.1.3 Wind	
Structure	
Baseline	Risk Category I & II Structures
Tier 1	Risk Category III Structures
Tier 2	Risk Category IV Structures
Tier 3	N/A

4.4.1 Security	
Physical Security Performance	
Baseline	ISC Level I or II
Tier 1	ISC Level III
Tier 2	ISC Level IV
Tier 3	ISC Level V

Civil Engineering Section Updates

- 4.6 - Replaced Flood Mitigations with new section
- 4.7.1 - Replaced Flood Mitigations with new section
- 4.8.1 - New storm and drainage requirements
- 4.8.2 - Added water recycling
- 4.8.4 - Updated requirements for coal tar sealant
- 4.8.5 - Moved Low Embodied Carbon Concrete to Chapter 1
- 4.8.6 - Moved Environmentally Preferable Asphalt to Chapter 1

Terminology



- Design Flood Elevation (DFE) - ASCE 24
- Flood Design Class (FDC) - ASCE 24
- Risk Category (RC) - ASCE 7
- Base Flood Elevation (BFE) = 100-year Flood Elevation = 1.0 Percent-Annual-Chance Flood Elevation
- 500-year Flood = 0.2 Percent-Annual-Chance Flood
- Climate-Informed Science Approach (CISA)
- Federal Flood Risk Management Standard (FFRMS)
- National Flood Insurance Program (NFIP)

1.3.9.1 ESSENTIAL FACILITIES

The International Building Code (IBC) has defined essential facilities as "Any building
that are intended to remain operational in the event of extreme environmental loading fr
snow or earthquake". Buildings and other structures designated as essential facilities include
limited to: Group I-2 occupancies that have surgery or emergency treatment facilities, aviation co
towers, or fire and police stations.

1.3.9.2 CRITICAL ACTION FACILITIES

The Department of Homeland Security Federal Emergency Management Agency has defined a facility as "Critical Action" when even a slight chance of flooding is too great. If critical action structures must be located within a 1-percent-annual-chance (also known as the 100-year), 0.2-percent-annual-chance (500-year) or the Federal Flood Risk Management Standard (FFRMS) floodplain (i.e., there are no practicable alternatives), critical infrastructure must be elevated above the applicable floodplain elevation. Critical actions include, but are not limited to:

- storage of irreplaceable records
- the production, use, or storage of highly volatile, flammable, explosive, toxic, or water-reactive materials
- hospitals and nursing homes, and housing for the elderly, which are likely to contain occupants who may not be sufficiently mobile to avoid the loss of life or injury during flood and storm events.

The critical action designation is established under the decision-making process outlined in the accompanying Desk Guide for GSA Order PBS 1095.8A, Floodplain Management. The U.S. Courts has determined that all new court houses are critical action facilities. Refer to Chapter 4, Flood Resistant Design Requirements.

1.3.9.3 MISSION CRITICAL FACILITIES

The tenant will determine this designation during project development. A mission critical facility conta
any operation that, if electrical supply is interrupted, will cause a negative impact on business activi
ranging from losing revenue to jeopardizing legal conformity, and loss of life. Examples may inclu
centers, hospitals, laboratories, public safety centers, court houses, land ports of entry, resea
facilities, law enforcement, and critical file and payroll centers. See Chapter 1, Resilience
Enclosure, Chapter 5, Wildfire Smoke Mode, and Chapter 6, Primary Distribution for

The Federal Data Center Enhancement Act notes a "growing need for Fed

1.3.9 Facility Definitions

Required for Flood Resistant Design

- Critical Action
- Non-Critical Action

3.1 ENCLOSURE PERFORMANCE TABLE

Envelope – Natural Hazard	
	Flood Resistant
Baseline	Locate above the 100-year base flood elevation + 2 feet. Critical Action facilities must be elevated above the 1% annual chance (100-year) base flood elevation + 3 feet, or the 0.2% annual chance flood (500-year) elevation, whichever is higher.
Tier 1	Flood Hazard Areas not identified as Coastal High Hazard Areas and Coastal A Zones: ASCE 24 Flood Design Class
Tier 2	High Risk Flood Hazard Areas including Coastal High Hazard Area and Coastal A Zones: Site Specific Risk Assessment (Dam, Levee, and Floodwall Failure Hazards)
Tier 3	N/A
M & V	
Plans & Specs	Site Planning
Calculations & Analysis	FEMA Flood Maps, ASCE 24, "Flood Resistant Design and Construction", Project team Calculations & Inspection
References	
Basis of Design	Describe flood resistance design requirements
Construction Verification	Witness mockup test when provided

4.6 CIVIL PERFORMANCE TABLE

Flood	
	Flood Mitigation
Baseline	100 Year Base Flood Elevation + 2 feet
Tier 1	Higher of 500 Year Flood Elevation + 1 foot or 100 Year Flood Elevation + 3 feet
Tier 2	Determined on a Site-Specific Basis
Tier 3	N/A
M & V	N/A
Plans & Specs	N/A
Calculations & Analysis	
References	FEMA Flood Maps and ASCE 24
Basis of Design	N/A
Construction Verification	N/A

P100 (2022)

4.6 CIVIL PERFORMANCE TABLE

4.6.1 Flood Resistant Design Requirements		
	Building Enclosure and Site	
	Non-Critical Action	Critical Action
Baseline	Design Flood Elevation (DFE) = Base Flood Elevation (BFE) + 2 feet. ASCE 24 Flood Design Class (FDC) = 2. Risk Category (RC) = I & II.	DFE = BFE + 3 feet or 500-year Elevation, whichever is higher. FDC = 3. RC = III.
Tier 1	DFE = BFE + 3 feet or 500-year Elevation, whichever is higher. FDC = 3. RC = III.	DFE = BFE + 4 feet or 500-year Elevation, whichever is higher. FDC = 4. RC = IV.
Tier 2	DFE = higher than Tier 1. FDC = 4. RC = IV.	DFE = higher than Tier 1. FDC = 4. RC = IV.
Tier 3	N/A	N/A
M & V	N/A	
Plans & Specs	Yes, and included in the Emergency Action Plan.	
Calculations & Analysis	Project team must provide calculations showing requirements for all performance levels.	
References	Flood Study and Mapping, ASCE 24, ASCE 7 Supplement on Flood Loads, ANSI/FM 2510.	
Basis of Design	Describe flood resistance design requirements.	
Construction Verification	N/A	

P100 (2024)

5.3 MECHANICAL PRESCRIPTIVE REQUIREMENTS

All mechanical and electrical equipment within the building or on the property must be in areas not subject to flooding and 1.6 meters (5 ft.) above the 100-year flood plain. Refer to the ISC for mechanical system requirements per the facility security level.

P100 (2022)

4.6 CIVIL PERFORMANCE TABLE

4.6.1 Flood Resistant Design Requirements

Mechanical		
	Non-Critical Action	Critical Action
Baseline	DFE = BFE + 5 feet. FDC = 2. RC = I & II.	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is lower. FDC = 3. RC = III.
Tier 1	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is higher. FDC = 3. RC = III.	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is higher. FDC = 4. RC = IV.
Tier 2	DFE = higher than Tier 1. FDC = 4. RC = IV.	DFE = higher than Tier 1. FDC = 4. RC = IV.
Tier 3	N/A	N/A
M & V	N/A	
Plans & Specs	Yes, and included in the Emergency Action Plan.	
Calculations & Analysis	Project team must provide calculations showing requirements are met. Calculations required at all performance levels.	
References	Flood Study and Mapping, ASCE 24, ASCE 7 Supplement on Flood Loads, ANSI/FM 2510.	
Basis of Design	Describe flood resistance design requirements.	
Construction Verification	N/A	

P100 (2024)

6.5.5.8 FLOOD PLAIN CLEARANCE

Electrical equipment must be located at five feet above the 100-year flood plain. Electrical equipment for facilities classified as Critical Action Facilities must be located five feet above the 500 year flood plain. The electrical engineer must determine from local jurisdictions any additional freeboard requirements above this base level.

6.5.9.2 GENERATOR SYSTEM

If possible, locate the generators outside and on grade. If installed outdoors, they must be provided with a suitable reach-in acoustic enclosure and jacket water heaters to ensure reliable starting in cold weather. In harsh weather environments, walk-in enclosures should be considered. If critical action structures must be located within a floodplain, generators must be elevated above the 500-year base flood elevation.

P100 (2022)

4.6 CIVIL PERFORMANCE TABLE

4.6.1 Flood Resistant Design Requirements

Electrical and Generator System		
	Non-Critical Action	Critical Action
Baseline	DFE = BFE + 5 feet. FDC = 2. RC = I & II.	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is lower. FDC = 3. RC = III.
Tier 1	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is higher. FDC = 3. RC = III.	DFE = 500-year elevation + 5 feet, or BFE + 8 feet, whichever is higher. FDC = 4. RC = IV.
Tier 2	DFE = higher than Tier 1. FDC = 4. RC = IV.	DFE = higher than Tier 1. FDC = 4. RC = IV.
Tier 3	N/A	N/A
M & V	N/A	
Plans & Specs	Yes, and included in the Emergency Action Plan.	
Calculations & Analysis	Project team must provide calculations showing requirements are met. Calculations required at all performance levels.	
References	Flood Study and Mapping, ASCE 24, ASCE 7 Supplement on Flood Loads, ANSI/FM 2510.	
Basis of Design	Describe flood resistance design requirements.	
Construction Verification	N/A	

P100 (2024)

4.7.1 FLOOD RESISTANT DESIGN REQUIREMENTS

- Floodplain data applicability
  - Floodplain Management Desk Guide, Order PBS 1095.8A - source options
  - Conduct Hydrologic and Hydraulics analysis
    - No available data or outdated data (more than 15 years)
    - Complies with FEMA NFIP mapping standards + PE certified
  - 500-year elevation = BFE + 3 feet
    - When the 500-year elevation is not available
    - BFE is available and up-to-date
  - CISA elevation (coastal areas)
    - May be substituted for baseline DFE (BE and Site only)
    - Apply FFRMS Job Aid recommendations
- Application of ASCE 24, Flood Resistant Design and Construction and ASCE 7, supplement on flood loads
  - Per flood hazard area designation: Flood Hazard, High Risk Flood Hazard, or Coastal High Hazard and Coastal A Zones
  - Dry or wet floodproofing - products to meet ANSI/FM 2510 standard
- No Adverse Impact (NAI) - demonstrate compliance
- Flood resistance documentation: design narrative, plans, specification, and emergency action plan

4.8.1 SITE GRADING AND DRAINAGE

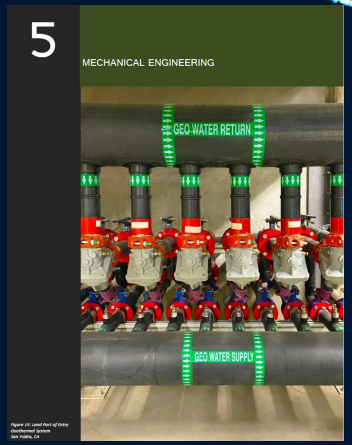
- Storm drainage system requirements
  - Moved from 4.8.2
  - Locate in unpaved areas to the extent possible
- Comply with state and local stormwater management requirements
  - In addition to EISA 438 compliance (law requirement)
- Performance analysis of proposed drainage system for 100-year and 500-year storm events
  - Mitigate adverse impacts for proposed drainage conditions
- Inlet and catch basins to include bicycle safe grates
- Drainage pipe velocities:
  - Minimum 2 ft/s "flowing full" with a desired minimum "self-cleaning" velocity of 3 ft/s.
  - Maximum velocity must not exceed 10 ft/s.

4.8.2 SITE UTILITIES

- Addition of Water Recycling requirement
  - Follow local and state requirement
  - Reference to Chapter 1, Water Net-Zero and Chapter 2, Rainwater Catchment

4.8.4 PAVEMENTS

- Addition of non-coal tar sealant requirement
  - Inline with Chapter 2



09 Mechanical Engineering

Chapter 5 Highlights

Equipment Redundancy –→ offering higher tier options to offer N+1

Air Filtration –→ MERV-A classifications are now required for all final filter efficiencies

Operational Efficiency –→ revised compliance requirements for ASHRAE 90.1 & FEMP

Electrification –→ expanded on GSA's electrification requirements, new section 1.9.3.5

Roof Mounted Equipment –→ ASHP, condensing units are now permitted

Building Automation –→ reference to GSA's Building Technologies Technical Reference Guide

Refrigeration Safety –→ increased deliverable requirements demonstrating compliance with ASHRAE 15 and 34 Standards

Domestic Water Systems –→ reference to PBS Drinking Water Policy and Desk Guide

Existing Buildings –→ direct replacement-in-kind of equipment is prohibited (right size new)

5.1.3 Cooling Robustness (Redundancy)	
	Performance
Baseline	Failure of one machine (chiller, pump, cooling tower, etc.) will result in a building dry bulb temperature rise of no more than 5°F, and building maximum humidity <60% Relative Humidity (RH).
Tier 1	Failure of one machine (chiller, pump, cooling tower, etc.) will not result in a rise of building dry bulb temperature, and building maximum humidity <60% RH.
Tier 2	N/A
Tier 3	N/A
M & V	Commission cooling system at the most extreme temperatures and humidity levels possible, measuring performance with one of each equipment type turned off. Only one piece of equipment (chiller, pump, or cooling tower) should be turned off in each test.
Plans & Specs	
Calculations & Analysis	Show calculations for system performance upon failure of the largest of each type of machine, calculating performance at 0.4% cooling design dry bulb temperature at mean coincident wet bulb, at 0.4% design dehumidification dewpoint temperature at mean coincident dry bulb temperature, and (for evaporative machines) at the 0.4% evaporation design wet bulb temperature at mean coincident dry bulb temperature. Where chilled and condenser water temperatures change upon failure of the largest piece of equipment, consider the performance degradation from when deviating from design water temperatures. Upon an indoor dew point rise above 60%, the chilled water temperature reset function will be locked out.
References	ASHRAE Fundamentals Handbook, Chapter 14; ASHRAE HVAC Systems and Equipment Handbook.
Basis of Design	Show cooling capacity and operating parameters that will result in the performance indicated in the selected performance Tier.
Construction Verification	See M&V.

5.1.4 Heating Robustness (Redundancy)	
	Performance
Baseline	Failure of one machine (boiler, pump, etc.) will result in a building temperature drop of no more than 5°F.
Tier 1	Failure of one machine (boiler, pump, etc.) will not result in a drop of building temperature.
Tier 2	N/A
Tier 3	N/A
M & V	Commission heating system at the most extreme temperatures possible, measuring performance with one of each equipment type turned off. Only one piece of equipment (boiler or pump) should be turned off in each test.
Plans & Specs	

~~5.1 Mechanical Performance~~ Tables

5.1.2 Humidity Control

- require M&V for baseline and all tiers

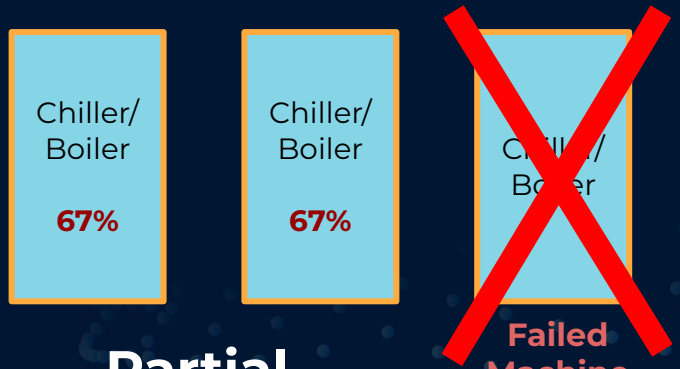
5.1.3 Cooling Robustness
5.1.4 Heating Robustness

NEW Section:

- Require cooling and heating plant equipment arrangement to be sized based on temperature and humidity criteria to cover the desired level of redundancy for the facility

Baseline

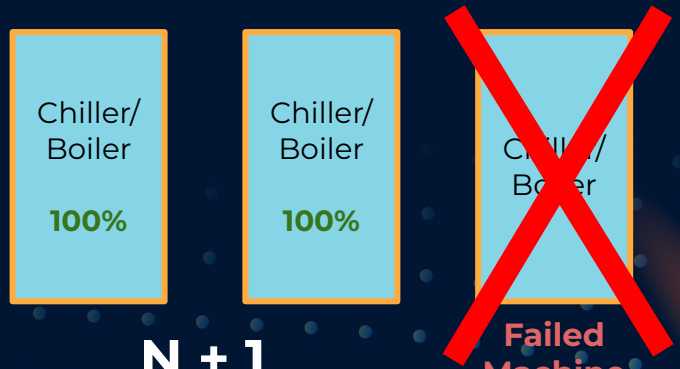
Failure of one (1) machine results in a temperature rise/drop of **NO MORE** than 5 degree Fahrenheit + RH less than or equal to 60%



Partial Redundancy

Tier 1

Failure of one (1) machine results **NO** temperature rise/drop + RH less than or equal to 60%



N + 1

5.1.8 Filtration

- MERV-A filter classifications are now required
- Added a Tier 1 filtration standard for Wildland Urban Interface areas, requiring filter racks and fan performance that can accommodate MERV-15 bag filters

References: MERV vs MERV-A Filter Efficiency Ratings Explained

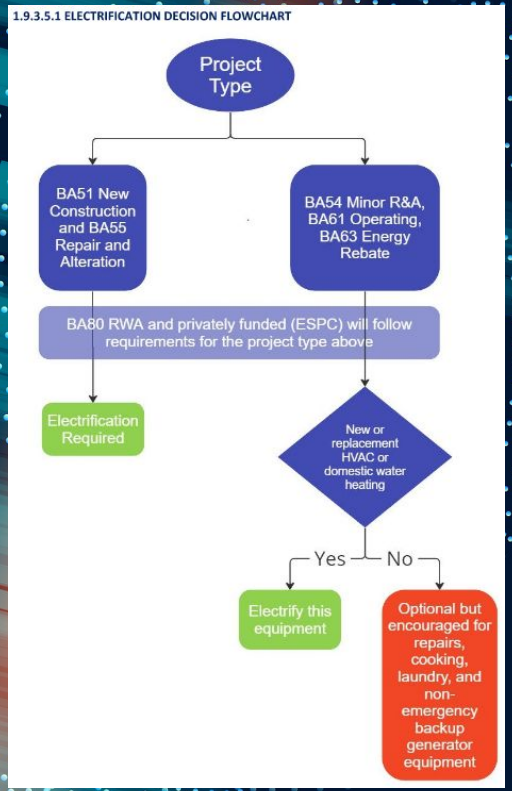
Image Source: https://www.camfil.com/en-us/products/general-ventilation-filters/compact-filter_-box-type/airopac-traditional/aeropac-_-47728

5.1.10 HVAC Operational Efficiency

- Revised requirement to comply with the more stringent version ASHRAE Standard 90.1 Minimum Efficiencies and require compliance with current version of FEMP Minimum Efficiency Requirements

5.2.8 Treating Biological Growth

- Added requirement to comply with *ASHRAE Standard 188, Legionellosis: Risk Management for Building Water Systems*



5.3.2 HVAC Systems

Revised Section:

- Expanded on GSA's electrification requirements by referencing the new 1.9.3.5 Electrification section of P100 and consolidating language in Chapter 5

1.9.3.5 ELECTRIFICATION

GSA defines building electrification of its owned inventory as the elimination of emissions generated directly by heating, ventilation, and air conditioning (HVAC), and by domestic water heating, cooking, laundry, and demand-response generators powered on site. Fossil fuel–powered emergency backup generators are not included in electrification requirements regarding these scope 1 emissions.

HVAC and domestic water heating system electrification analyses of alternatives must include Life Cycle Cost Analyses (LCCA) and operational (scope 1 and 2) greenhouse gas emissions of each alternative. Reference A.6 Life Cycle Cost Analysis Requirements. These analyses and LCCAs must include heat pump technologies. These selected systems may not use fossil fuels (per Table 1.2) and must be life cycle cost effective for implementation (including electric resistance heating).

Table 1.2 Electrification

Project Type Per Funding Code	BA51 New Construction and BA55 Repair and Alteration projects	BA54 Minor Repairs and Alterations, BA61 Operating Funds, and BA63 Energy Rebate Projects	Other funding legislation or sources including BA80 Reimbursable Work Authorization and privately funded projects (e.g. ESPCs)
Electrification	Required	Required for any new or replacement HVAC or domestic water heating equipment. Optional but encouraged for repairs, cooking, laundry, and non-emergency backup generator equipment.	Follow the electrification requirements for the project type (e.g. major R&A or limited scope) that aligns with funded scope

5.3.2.6 Roof-Mounted Equipment

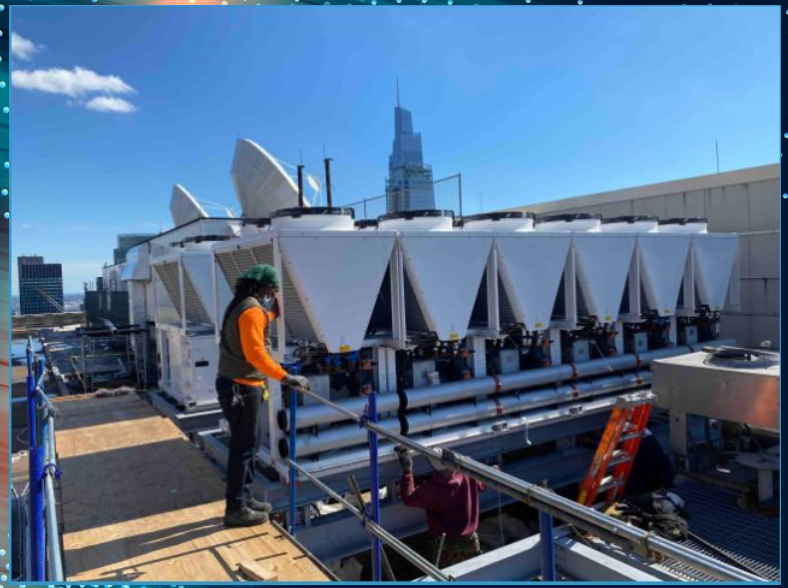


Image Source:
https://highmark.co/insights/case-studies/compact-flexible-aermec-nyb-chillers-installed-in-nyc-skyscraper/

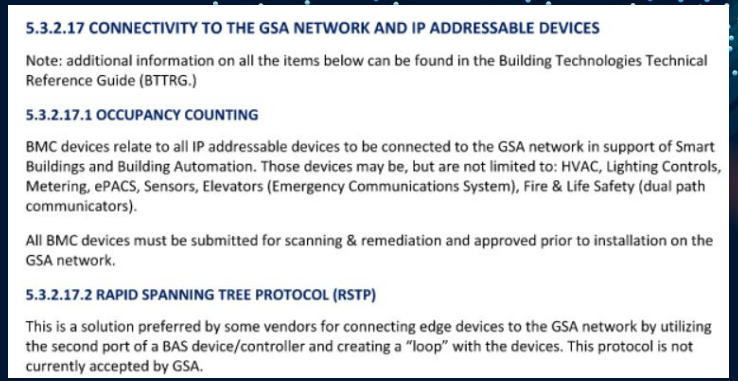
Revised Section:

- Added air-source heat pumps, condensing units and condensers to list of permitted roof mounted equipment
- Added reference to Chapter 3, Roofing and Horizontal Waterproofing-Membrane System for membrane requirements

5.3.xx Controls / Building Automation Systems

NEW Section + Subsections:

- Guidance on connectivity standards to GSA Network
- Additional information can be found in the Building Technologies Technical Reference Guide (BTTRG)
- Clarified the use of LonTalk protocol if existing systems is LonWorks



5.3.2.17 CONNECTIVITY TO THE GSA NETWORK AND IP ADDRESSABLE DEVICES

Note: additional information on all the items below can be found in the Building Technologies Technical Reference Guide (BTTRG.)

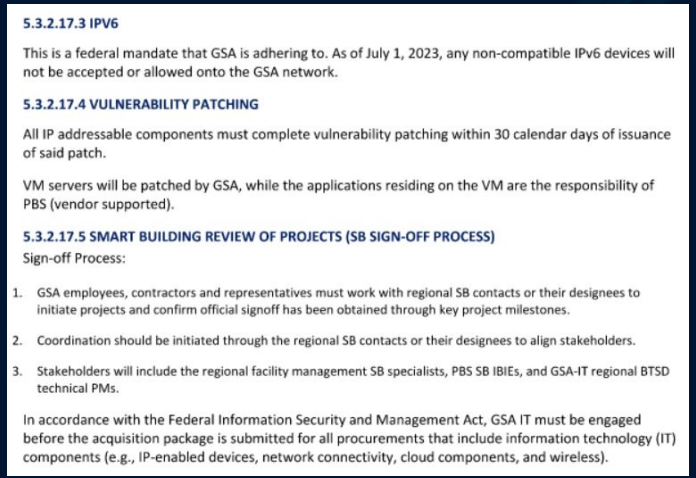
5.3.2.17.1 OCCUPANCY COUNTING

BMC devices relate to all IP addressable devices to be connected to the GSA network in support of Smart Buildings and Building Automation. Those devices may be, but are not limited to: HVAC, Lighting Controls, Metering, ePACS, Sensors, Elevators (Emergency Communications System), Fire & Life Safety (dual path communicators).

All BMC devices must be submitted for scanning & remediation and approved prior to installation on the GSA network.

5.3.2.17.2 RAPID SPANNING TREE PROTOCOL (RSTP)

This is a solution preferred by some vendors for connecting edge devices to the GSA network by utilizing the second port of a BAS device/controller and creating a "loop" with the devices. This protocol is not currently accepted by GSA.



5.3.2.17.3 IPV6

This is a federal mandate that GSA is adhering to. As of July 1, 2023, any non-compatible IPv6 devices will not be accepted or allowed onto the GSA network.

5.3.2.17.4 VULNERABILITY PATCHING

All IP addressable components must complete vulnerability patching within 30 calendar days of issuance of said patch.

VM servers will be patched by GSA, while the applications residing on the VM are the responsibility of PBS (vendor supported).

5.3.2.17.5 SMART BUILDING REVIEW OF PROJECTS (SB SIGN-OFF PROCESS)

Sign-off Process:

1. GSA employees, contractors and representatives must work with regional SB contacts or their designees to initiate projects and confirm official signoff has been obtained through key project milestones.
2. Coordination should be initiated through the regional SB contacts or their designees to align stakeholders.
3. Stakeholders will include the regional facility management SB specialists, PBS SB IBIEs, and GSA-IT regional BTSD technical PMs.

In accordance with the Federal Information Security and Management Act, GSA IT must be engaged before the acquisition package is submitted for all procurements that include information technology (IT) components (e.g., IP-enabled devices, network connectivity, cloud components, and wireless).

5.3.3.4 Cooling and Heating Coils

NEW text added to Section for coil protection from fossil fuel combustion products:

- For urban environments and combined urban/marine environments, aluminum fins with electro coating are preferable to copper fins for NOx/SOx corrosion protection from fossil fuel combustion products.

References:
NOx: nitrogen oxide
SOx: sulfur oxide
Whole Building Design Guide - Corrosion Toolbox

5.3.3.6 Copper Pipe Fittings

NEW text added to Section referencing refrigeration system safety standards:

- Installation must comply with all requirements of ASHRAE Standard 15 Safety Standard for Refrigeration Systems and ASHRAE Standard 34 Designation and Safety Classification of Refrigerants, refrigerant concentration limits and concentration limit calculations must be provided for each space containing refrigeration piping for each design phase submittal.

- Refrigerant piping must be installed in accessible areas (i.e. corridors, machine rooms, etc.) and be located at a ceiling height that would make the piping accessible for repair and replacement.

- Cooling coil condensate piping must be Type L copper.

5.3.4.3 Duct Construction

NEW section added:

- All conventional supply, return and exhaust air ductwork must be fabricated of galvanized sheet metal, unless otherwise indicated

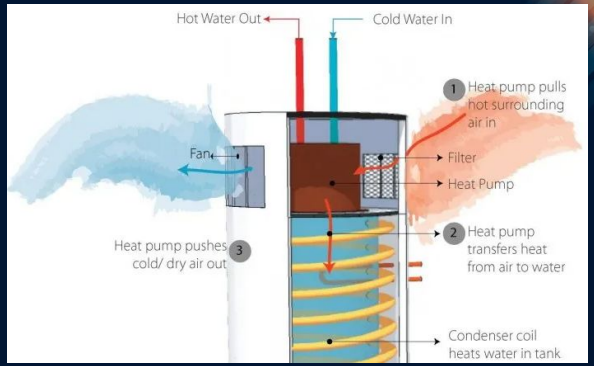
NEW section added:

- Flexible duct connectors must be limited to a maximum of 5-feet of distribution and are only permitted to make final connections between terminal branch ductwork and air outlet.
- The use of flexible ductwork is not permitted above hard ceilings that are not easily accessible.

5.3.3.13 Air Source Heat Pump Condenser Discharge for Domestic Hot Water Heaters

NEW section added:

- Expanded on GSA's electrification requirements, new section 1.9.3.5
- Where practical and cost effective, cold discharge air from an air source heat pump condenser operating in heating mode must be recovered and diverted into adjacent electrical rooms, mechanical rooms, I.T. / Telecom closets, etc. via ductwork and/or louvers, for supplemental cooling service.
- This supplemental source of cooling must not be the only means of cooling for the space, as it is intended to complement the primary cooling source as an energy recovery measure.



5.4 Plumbing

Added to section:

- Modifications to point-of-use water outlets used for human consumption or washing purposes must include post-installation flushing and testing procedures that comply with the most current version of the PBS Drinking Water Policy and Desk Guide.
- Dead legs are prohibited in potable water plumbing, to lessen the risk of Legionella proliferation.
- Janitorial closets must be provided with domestic hot and cold water.
- DOMESTIC WATER PIPING
    - Provide a recirculation loop on all cold-water risers and major branch distribution ends, for flushing purposes.

References:
Link to PBS Drinking Water Policy and Desk Guide

5.4.5 Plumbing Piping

Added to section:

DOMESTIC WATER PIPING

- Solid copper supply lines must be installed from the fixture shut off valve to the fixture connection. Flexible water connectors from the fixture shut off valve to the fixture connection are not permitted. Plumbing fixtures with factory provided flexible water connectors are not permitted.

Added section:

- Provide a recirculation loop on all cold-water risers and major branch distribution ends, for flushing purposes.

5.4.6 Isolation Valves

New section:

- Isolation valves must be provided on all lateral piping entering all bathrooms, mechanical rooms, kitchens, and other rooms provided with domestic water where there is at least more than one fixture.
- Accessible locations w/ signage
- Valves must be exercised regularly.
- For detention areas in courthouses, isolation valves must not be in prisoner holding cells.

5.4.7 Hose Bibbs

New section:

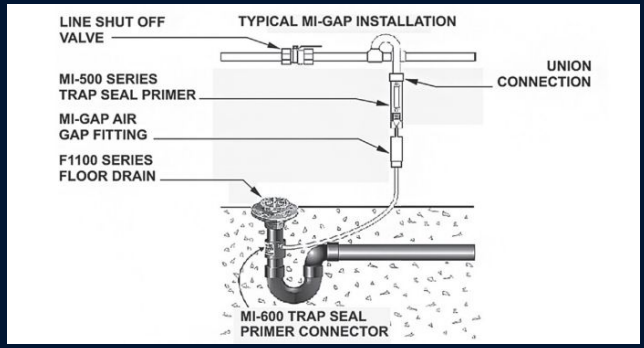
- Hose bibbs must be provided along all exterior facades at ground level and rooftop level of the building at a minimum increment of 100 FT on center.
- Distance to be determined based on design and input from the regional GSA facility management team.
- Must also be provided in mechanical rooms and parking structures.
- Ensure easily accessibility and able to be isolated for future repair/replacement

Min 100’ on center for ground level exterior facades and rooftop

5.4.8 Floor Drains

Added to section:

- Floor drains must be provided in all bathrooms, mechanical rooms, kitchens, **kitchenettes, lactation rooms** and other rooms provided with domestic water.



5.4.9 Overflow Pans

New section:

- Overflow pans are required to be furnished under all domestic hot water heaters. Pans are required to be equipped with water sensing controllers that will shut off water to the units and send an alarm to the BAS system, or produce an audible alarm if the BAS is not capable.

5.5.1 Accessible for Maintenance

Added to section:

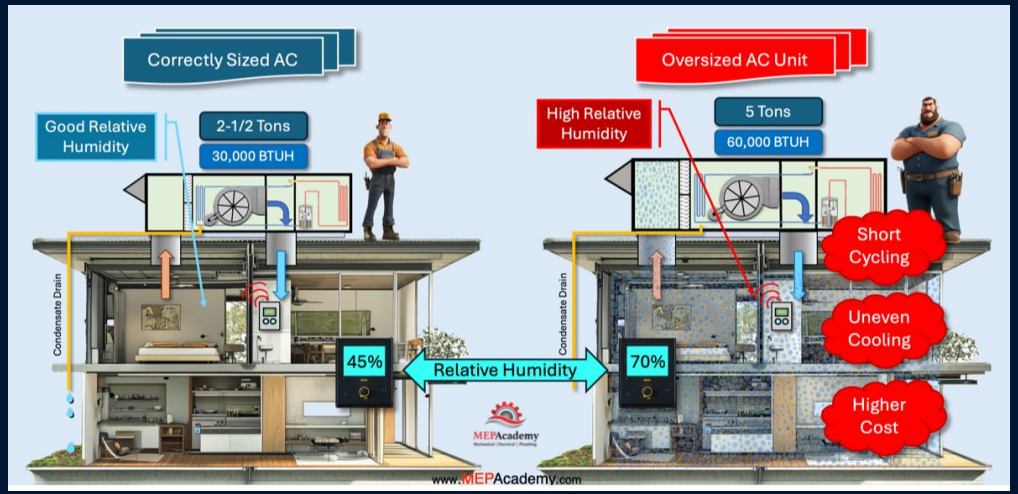
- Split air-cooled systems providing cooling to a space must reject heat outside of the building envelope.

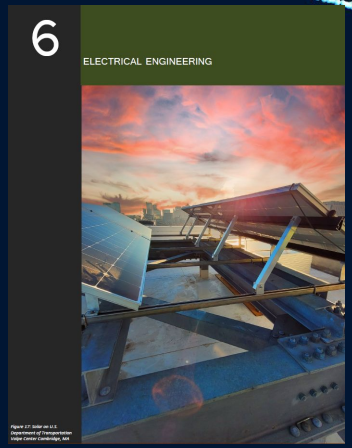
5.6 Alterations to Existing Buildings

Added to section:

- Direct replacement-in-kind of equipment that is aged out is prohibited.
- Any new equipment installation must be specifically sized for the current programmatic needs of the spaces served.

Project SOW should include new heating & cooling calculations for sizing new equipment





10 Electrical Engineering

Updates & Reminders

General Requirements

P100 Compliance & Waivers

- I encourage you to visit gsa.gov/p100 for access to the slides and recordings of the more in depth training we provided in August of this year.
- P100 compliance is mandatory.
- P100 waivers are considered for unique project specific circumstances.
- P100 waivers are for preinstalled deviations, they are not granted after the fact.
- P100 waivers are not granted for cost.
- We encourage those that may have a potential waiver request to reach out to us.
- We appreciate your suggestions and review them during our process.

Lighting

Updates Lighting Controls 6.3.2.5

- All new lighting must be LED
- DLC SSL updated from 5.0 to Version 5.1 (Efficacy, controllability, glare and distribution) as appropriate
- Luna 1.0 is new (Efficient exterior luminaires, minimizing light pollution while providing adequate visibility as appropriate
- In cases where luminaries meeting DLC requirements are not available, the lighting designer has to evaluate on a case-by-case basis

LIghting

Updates Lighting Controls 6.3.2.5

- Standardized Digital Protocols
- DALI-2 Standardized Digital Protocols
- Not required to install individually addressable luminaries
- D4i goes above and beyond DALI-2 standardized protocols for sensors drivers and luminaires.

LIghting - Updates

Updates - Power over Ethernet (PoE)

- Use red cabling for emergency lighting to differentiate from other lighting cabling
- Comply with UL924 where applicable for emergency lighting
- Cabling must be different in color from IT cabling for identification purposes, minimum CAT5e or above
- Limit cable bundles to 24 or less to reduce heat gain while increasing the systems longevity
- PoE systems shall adhere to the maximum power output of the switch and individual port used to power the luminaire

LIghting - Updates

Updates - Power over Ethernet (PoE) Continued

- Cable runs must be limited to 328 feet
- Comply with IEEE 802.3bt class 8, 90 watt standard
- Comply with NEC Articles 725 and 840
- All luminaires must be provided with dedicated drivers
- GSA IT must provide and maintain PoE switches

LIghting - Reminder

Retrofits

- UL rating maintained
- Retrofit kits must be DLC Standard
- Must have dimmable drivers
- Low risk level of flicker
- Meet IES Guidelines for tasks performed
- A mock up is required for typical areas within the building
- Must be reviewed and approved by the regional SME

LIghting - Updates & Reminders

Retrofit TLEDs

- Type A
  - Use existing ballast
    - Disadvantage ballast production is limited
- Type B
  - Update - Prohibited due to safety reasons and inability to be controlled
- Type C
  - Preferred
    - Replaces ballast with LED driver
    - Disadvantage few options for American made

Power - Secondary Distribution 6.5.6.2.1

Update

- Switchgear must meet UL 1558 and be provided for the service entrance equipment of any **service** ~~building~~ 1200 amps or greater.

Update

- All switchgear and switchboard panels must have hinged covers in lieu of removable covers for safety purposes.

Power - Spare Capacity Requirements Section 6.5.2.3.5

Reminders: ampacity and capacity

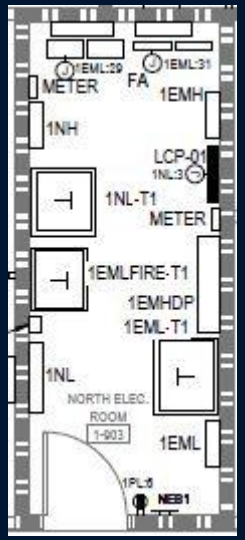
- Panelboards for branch circuits 50% & 35%
  - All Panelboards must be fully populated with both active and spare circuit breakers
- Panelboards for lighting circuits 50% & 25%
  - All Panelboards must be fully populated with both active and spare circuit breakers
- Switchboards 35% & 25%
  - One spare per each size or as directed by GSA
- Switchgear 25% & 25%
  - One per each frame size fully equipped

Power - Spare Capacity Requirements Section 6.5.2.3.5

Update

- Spare Capacity “new components of the electrical system”
- If a project is adding circuits to an existing panel this is why the spare requirement exists.
- If the project is adding a new panelboard switchboard etc. the spare is required within this new equipment

Power - Electric Room Requirements - Reminder Section 6.5.7.2



- Stacked in core areas
- Accessible by two perimeter walls
- Minimum Size 6’X10’
- Serves no more than 10,000 square feet
- Branch circuit 120’ or less
- 30% spare wall space

Power - Generators

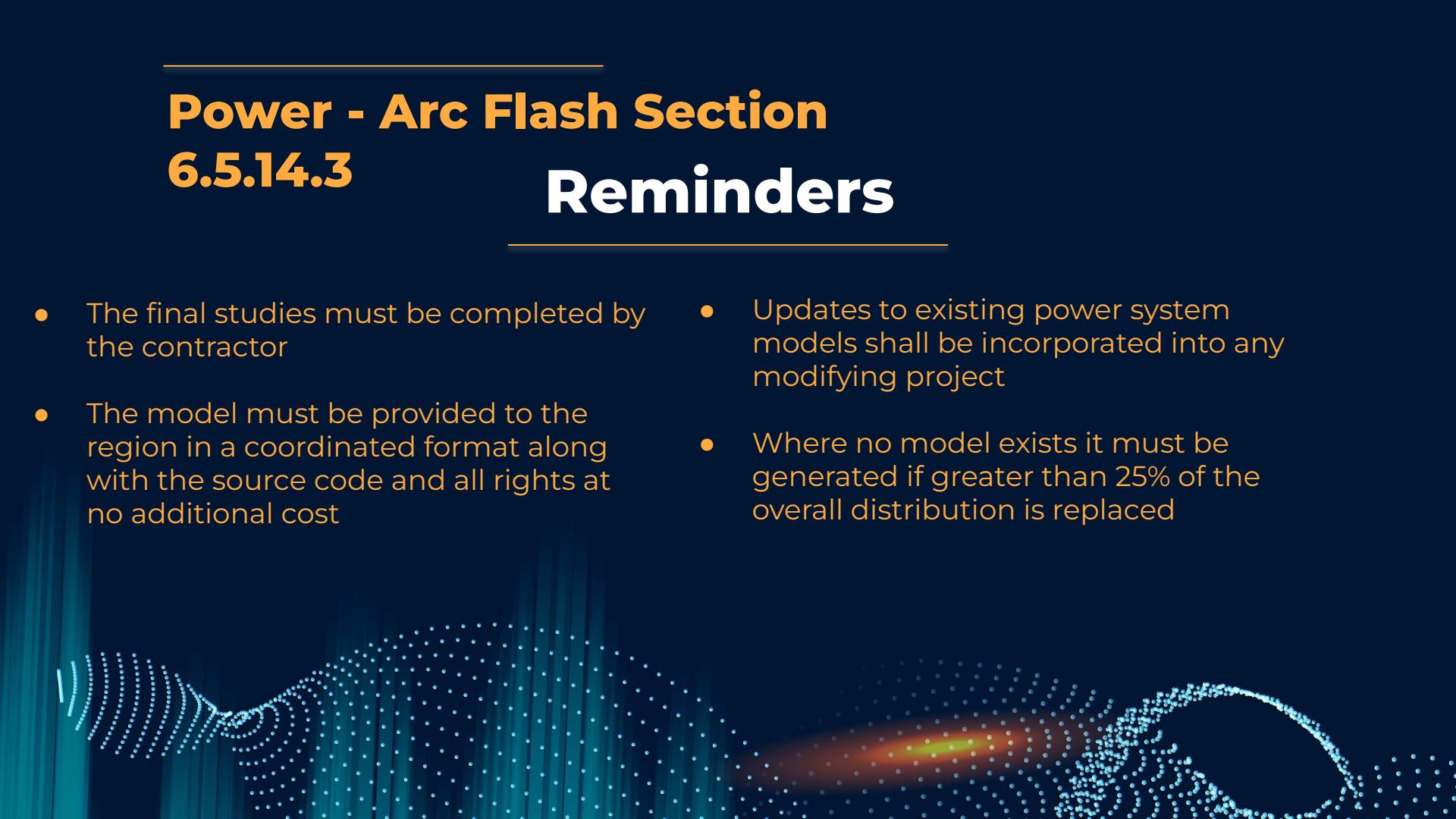
Reminders & Updates

- 6.5.11.1 Separation of systems Life safety, required standby and optional standby NEC 700-702
- Fuel storage 48 hrs instead of 72 hrs
- UL 1558 Emergency/Standby Switchgear is required for 1200 Amps or greater
- 6.5.11.2.2 Sized to 150% and operate at 60-80% of rated capacity.
- 6.5.11.2 Fuel Source diesel is recommended for generators larger than 500 kW
- 6.5.11.2.1 Load bank sizing 20% for gas and 75% for diesel

Power - Arc Flash Section 6.5.14.3

Reminders

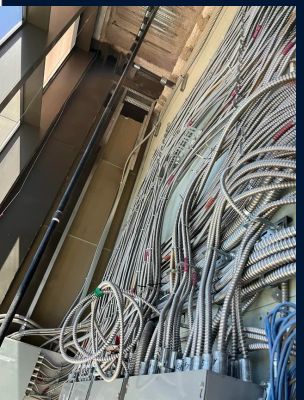
- The final studies must be completed by the contractor
- The model must be provided to the region in a coordinated format along with the source code and all rights at no additional cost
- Updates to existing power system models shall be incorporated into any modifying project
- Where no model exists it must be generated if greater than 25% of the overall distribution is replaced



Power - MC Cable Section 6.5.9.6.2

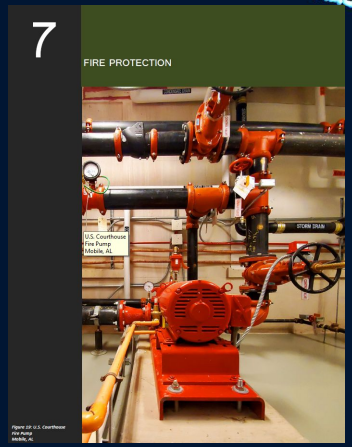
Permitted

- No more than 3 current carrying conductors
- #10 Maximum
- Labeled 3 feet
- Secured in accordance with the NEC



Not Permitted

- Highly finished spaces or embedded in concrete
- Wet, Damp or Hazardous Spaces
- Feeding critical equipment
- **Cannot terminate directly to a panelboard**



11 Fire Protection

Key Fundamental Topic

SECTION 7.1.3.2, ROLE OF GSA REGIONAL FIRE PROTECTION ENGINEER

- GSA Regional Fire Protection Engineer
  - For All projects, functions as responsible party to make interpretations and enforcement decisions regarding fire protection issues
  - Referenced in Codes as Building Official, Fire Code Official or Authority Having Jurisdiction (AHJ)

Key Fundamental Topic

SECTION 7.1.3.1, PROJECT TEAM FIRE PROTECTION ENGINEER

- Project Team Fire Protection Engineer
  - Must be qualified
    - Be a licensed engineer in fire protection
    - Have 3 consecutive years of experience in fire protection engineering
  - Must be full participant for the project
    - Be a full participant for each phase of project, concepts through occupancy

Key Fundamental Topic

SECTION 1.2.4.1, WAIVERS

- Fire Protection Waivers are **NOT** Permitted
- In Lieu of Waivers, an Alternative & Equivalency Compliance Solution Must be Submitted for Deviations From P100 Requirements
  - See Section 1.2.4.2, Alternative & Equivalent Compliance

Key Fundamental Topic

SECTION 1.2.4.2, ALTERNATIVE & EQUIVALENT COMPLIANCE

- Use in Lieu Of Waivers For Deviations From Fire Protection Requirements
- Proposed Alternatives Must be Recognized as Being an Equivalent Design Solution to Meeting Intent of P100 Requirements
- Requests Must Include a Concurrence Signature From the Regional Fire Protection Program Office & Follow a Similar Approval Process as the Waiver Process.

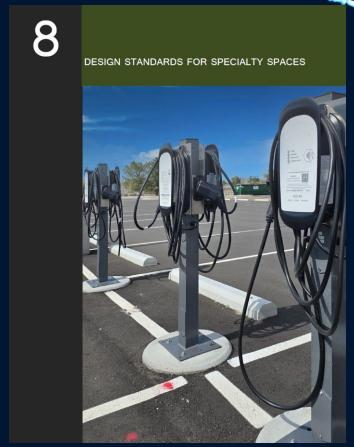
New Updates

- **Section 7.1.3.1: Project Team Fire Protection Engineer**
  - Four additional responsibilities for the project's team fire protection engineer
- **Section 7.11.12: Parking Structures**
  - All parking structures must be protected by an automatic sprinkler system and Class 1 standpipe system
- **Section 7.11.13: Modular Rooms**
  - Minimum separation distance of 18 inches

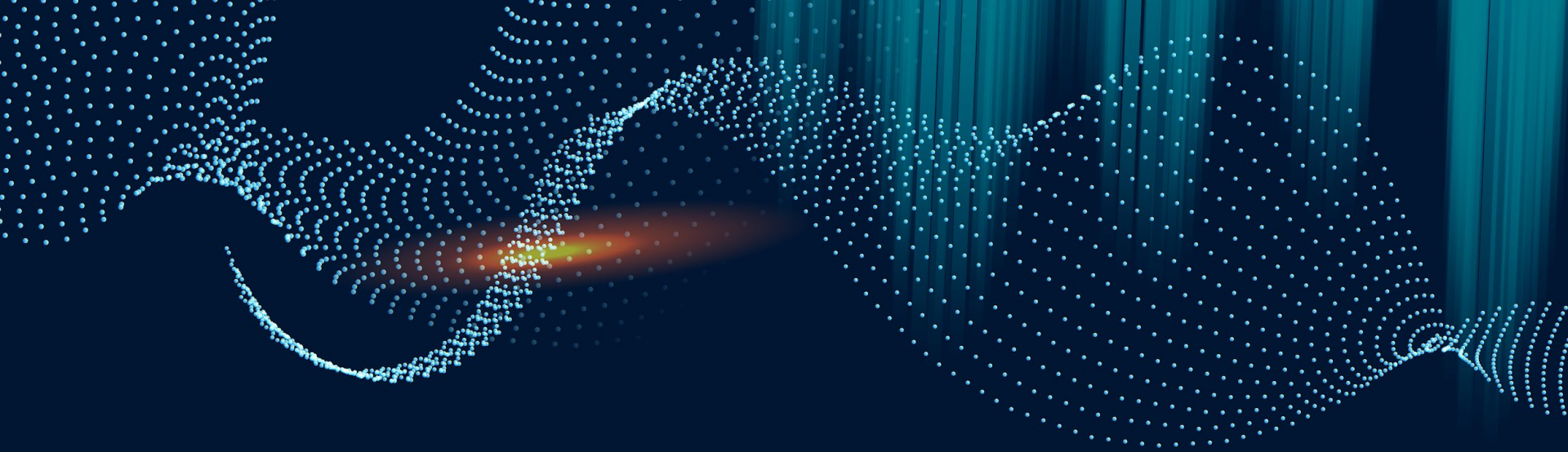
New Updates

- **Section 7.11.14: Sleep Pods**
  - Not permitted
- **Section 7.11.15: Electric Vehicle Supply Equipment (EVSE)**
  - See Chapter 8, for fire protection requirements for EVSE projects
- **P100 LiNK**:

  https://www.gsa.gov/real-estate/design-and-construction/engineering/facilities-standards-for-the-public-buildings-service



12 | Design Standards for Specialty Spaces



Specialty Spaces

8.1 U.S. Courts
8.2 LPOE (future)
8.3 Mailrooms
8.4 Indoor Firing Ranges
8.5 Electric Vehicle Supply Equipment

When to Include EVSE In A Project

EV chargers must be installed for GOVs for any project significantly modifying or installing parking lots or parking garages, including resurfacing.

Location Order of Preference:

1. Outside surface parking areas
2. Roof level of a parking structure
3. All other parking structure locations

Charger Quantities & Types (using the table)

Table 8.2 - Vehicle Charging		
Charger Quantities. Based on GOV Fleet Program Requirements		
Baseline		1 charging port for every 2 GOVs with 1 accessible charging facility
Tier 1		1 charging port for every 1 GOV with 1 accessible charging facility
Tier 2		> 1:1 ratio to allow for visiting EV charging with 1 accessible charging facility
Charger Types. Based on GOV Fleet Program Requirements		
Baseline		Mid Power AC Level 2 Charger: Minimum 6.6 kW at 208v or 7.2 kW at 240v
Tier 1		High Power AC Level 2 Charger: 8.0 kW - 20.0 kW range
Tier 2		Direct-Current Fast Charger (DCFC): Uses a 3-phase AC electric circuit but delivers direct current (DC) to the vehicle.
M & V		Not applicable
Plans & Specs		Yes
Calculations & Analysis		Provide analysis on quantity and capacity of chargers selected and how they relate to vehicle predicted usage patterns or tenant policy. Note: for level 2 and level 3 chargers, provide an accessible charging facility for each level of charging in one charging station
References		UL 1741, UL 2202, UL 2594, UL 9540
Basis of Design		Describe EV charging system requirements and how power sharing and/or charge management will be incorporated.
Construction Verification		Verify charge management controls for each charger.

8.5.1 EV Chargers

- EVSE Construction IDIQs must procure chargers from the EVSE Blanket Purchase Agreement
- Chargers to be network capable, be FedRAMP approved and be ATO certified before they can be installed in a GSA facility

8.5.2 GOV Requirements

Federal fleet EVSE build-outs must minimally include:

- Complete and operational charging ports.

- Quantity and configuration of chargers and ports must be designed to accommodate tenant vehicle types and usage.

- Power sharing allows multiple charging ports to share a single branch circuit and must be incorporated, where appropriate (e.g., where vehicles have a high overnight dwell time).

- Charge management capabilities must be included to limit expansion of the power distribution system and to limit exposure to peak demand charges. Common elements to include under charge management are delayed charging, staggered charging, and avoiding time-of-day peak rates.

- Limited chargers may be added to the Emergency Power Supply System (EPSS) where required by tenant policy and spare capacity is available. Where spare EPSS capacity is not available, a stand-alone Battery Energy Storage System (BESS) could be considered.

8.5.3 POV Requirements

Where no tenant policy on the number of POV EVSE requirements exists, provide the following EVSE infrastructure:

- For lots with fewer than 50 POVs, install infrastructure for two charging ports.
- For lots with 50-100 POVs, install infrastructure for six charging ports.
- For lots with greater than 100 POVs, install infrastructure for a quantity of charging ports representing 6% of the planned POV parking.

8.5.5 EVSE Accessible Charging

GSA facilities must provide an Accessible Charging Station (ACS) with mobility and reach range features when installing Electric Vehicle (EV) charging stations.

Refer to the U.S. Access Board (USAB) website USAB website link for recommendations regarding accessible components.

GSA EVSE policy differs in some ways from the USAB recommendations and current rulemaking

Per P100 Chapter 1- 1.3.5, The Architectural Barriers Act Accessibility Standard will be applied to all GSA facilities , if local accessibility standards exist and are more restrictive, GSA must follow the more stringent code requirements .

yes

no

8.5.6 EVSE Fire Protection

Automatic Sprinkler Protection (Parking Structures)

- Automatic fire sprinkler protection must be provided throughout parking structures where EV charging station(s) are installed or placed.

Standpipe Systems (Parking Structures)

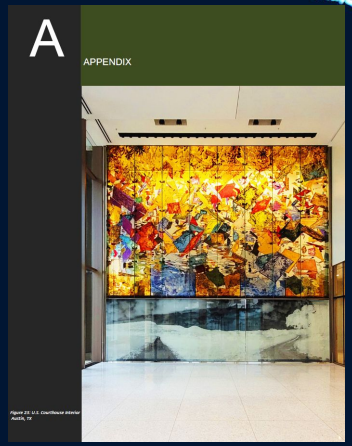
- A Class 1 standpipe system must be provided at an accessible location for use by fire department personnel where EV charging station(s) are installed or placed within a parking structure or on the roof level of a parking structure.

Outdoor Parking Areas

- The location for outdoor surface parking area must meet one of the 4 bullet requirements for horizontal separation distance, measured at a 90-degree angle from the EV parking area to the exterior wall of a building.

Manual Power Disconnect

- All Level 2 and Level 3 EV charging station installations must be provided with a manual power supply disconnecting means to disconnect the power supply to the EV charging stations.



13 Appendix and Tools

A.1 General Submission Requirements

P-100 HAS REQUIRED BIM SINCE 2009

BIM is the DESIGN model from which your Construction Documents are derived.

P-100 HAS REQUIRED EQUIPMENT MODELING “C O B i e” SINCE 2015

A.2 Performance Matrix

2024 P100 Performance Matrix	Place an **X** for each requirement					
Attribute	Baseline	Tier 1	Tier2	Tier 3	N/A	Notes (Describe how design meets performance or any waivers from a requirement)
1.9.1 Sustainable Performance Requirements						
Energy						
Energy Net Zero						
Water						
Water Net Zero						
High Performance Building Technologies						
GSA Pilot to Portfolio						
Fenestration						
Daylight and Views						
2.1 Urban Planning and Public Use Performance Requirements						
Sustainable Locations						

A.4 Submittal Matrix

Submittal Matrix

DELIVERY METHODS

Project Name

GSA

1 Design Bid Build

2 Design / Build

3 Design / Build / Bridging

4 Construction Manager as Constructor

The submittal matrix is provided to document the baseline submittal requirements for the four project delivery methods and funding codes.

Project teams must still provide the standard of care for a fully constructible set of documents.

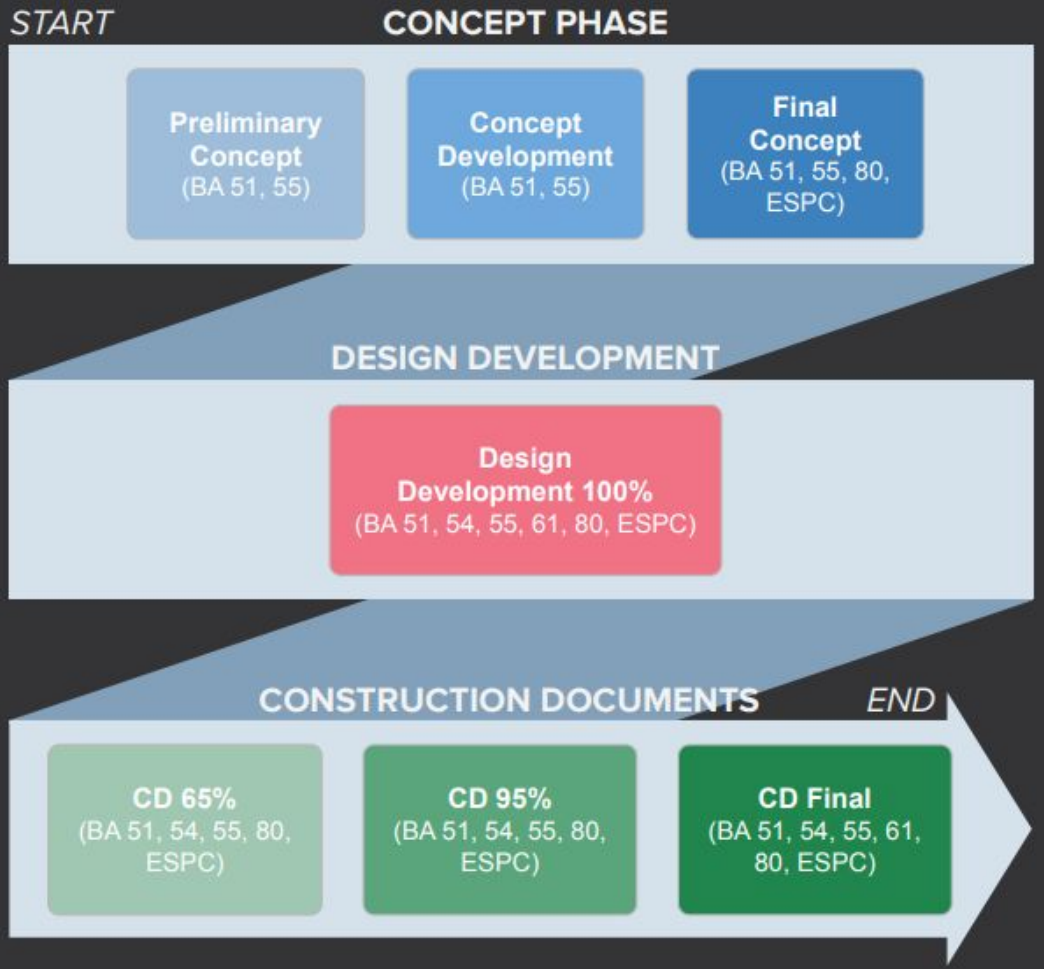
This matrix identifies items that GSA requires to validate that the project is moving forward while meeting the requirements of P100. Additional submittal requirements may be included in the project

1 Design Bid Build

2 Design / Build

3 Design / Build / Bridging

4 Construction Manager as Constructor



The submittal matrix is provided to document the baseline submittal requirements for the four project delivery methods and funding codes.

Project teams must still provide the standard of care for a fully constructible set of documents.

This matrix identifies items that GSA requires to validate that the project is moving forward while meeting the requirements of P100.

Construction Type

- 1 - DBB
- 2 - DB
- 3 - DB Bridging
- 4 - CMC

Project Phase

- Preliminary Concept
- Concept Development
- **Final Concept**
- DD - 100%
- CD - 65%
- CD - 95%
- CD - Final

Discipline

- General Information
- **Sustainability**
- Urban Development
- Building Enclosure Systems
- Architecture / Interiors
- Structural
- Mechanical
- Plumbing
- Electrical

Concept Design: Final Concept (BA 51, 55, 80, ESPC)

SUSTAINABLE STRATEGY NARRATIVE Chapter 1.7	❑ Clearly identify sustainable design strategies on the drawings.
ACHIEVABLE LEED GOAL Chapter 1.7.1	❑ Updated LEED scorecard showing enough points expected to meet contractual requirement.
ENERGY NET ZERO Chapter 1.7.2	❑ Finalized description of renewables planned for the project. ❑ Identify location and amount of any renewable equipment planned for post-project addition.
WATER NET ZERO Chapter 1.7.2	❑ Finalized water strategy, and clear designation of components within the drawings.
WASTE NET ZERO Chapter 1.7.2.1	❑ Finalized waste strategy, and clear designation of components within the drawings.
GUIDING PRINCIPLES FOR FEDERAL SUSTAINABLE BUILDINGS Chapter 1.7	❑ Update *Guiding Principles Checklist* if/as appropriate.
ENERGY USE TARGET/MODEL Chapter 1.8	❑ Develop Building Energy Model to compare to the design EUI. ❑ Energy consumption calculations and analysis

Appendix A.6 Life Cycle Cost Analysis Requirements

Tables A.6.1, A.6.2, A.6.3 and A.6.4 identify the;

- design alternatives
- proposed systems
- baseline systems

that must be included in the LCCA for each project phase and project delivery type

Example

A.6.1.3 LCCA DESIGN ALTERNATIVES, PROPOSED SYSTEMS AND BASELINE REQUIREMENTS

Table A.6.1 Delivery Method: Design Bid Build; Design Build Bridging; Construction Manager as Constructor

Funding Code:	BA51 New Construction, BA55 Major Repair and Alterations		
Project Phase [3]			
Preliminary Concept	Concept Development	Final Concept	Design Development 100%
Proposed Design and Alternatives			
• Three distinctly different architectural design schemes • Proven life cycle cost effective building enclosure system • Lighting system for each architectural design scheme One ASHRAE 90.1 Appendix G PRM for: • Lighting control system for each architectural design scheme [1,2] • HVAC system for each architectural design scheme [1,2] • Service water-heating system for each architectural design scheme	• Architectural design scheme • Three building enclosure system alternatives[2] • Lighting system • Three lighting control system alternatives [2] • Three HVAC system alternatives [2] • Service water-heating system	• Architectural design scheme • Building enclosure system • Lighting system • Lighting control system • HVAC system • Service water-heating system	• Architectural design scheme • Building enclosure system • Lighting system • Lighting control system • HVAC system • Service water-heating system
Baseline Systems			
One ASHRAE 90.1 Appendix G PRM baseline for: • Each architectural design scheme • Enclosure system for each architectural design scheme • Lighting system for each architectural design scheme • Lighting control system for each architectural design scheme • HVAC system for each architectural design scheme • Service water-heating system for each architectural design scheme	One ASHRAE 90.1 Appendix G PRM for: • Baseline building • Building enclosure system • Lighting system • Lighting control system • HVAC system • Service water-heating system	One ASHRAE 90.1 Appendix G PRM for: • Baseline building • Building enclosure system • Lighting system • Lighting control system • HVAC system • Service water-heating system	One ASHRAE 90.1 Appendix G PRM for: • Baseline building • Building enclosure system • Lighting system • Lighting control system • HVAC system • Service water-heating system

Footnotes:

1. The proposed system must be the ASHRAE 90.1 Appendix G PRM baseline system for the Preliminary Concept phase.
2. If the project scope of work is not a new building or retrofit of the existing architectural design scheme, then provide three proposed building enclosure system alternatives, three proposed HVAC system alternatives and three proposed lighting control system alternatives in the Preliminary Concept phase instead of the Concept Development phase.
3. Update the LCCA as the design progresses for the CD 65%, CD 95%, and CD Final project phase submissions.

C.1 Summary of

C.1 SUMMARY OF CHANGES FROM THE 2022 ADDENDUM

Section Number	Section Title	Summary of Change
Throughout	Standards	Removal of dates as latest version is designated
	Updating P100	New section on updating P100
1.1	Purpose of the Facilities Standards	Clarified the use of links throughout P100
1.2	Application of P100	Updated funding codes and information
1.2.1	Repair and Alterations	Clarified when to use and added abandonment in place requirements
1.3.2	Environmental Protection	Clarified applicable requirements
1.3.9.2	Critical Action Facilities	Updated flood requirements
1.3.9.3	Mission Critical Facilities	Added Data Center requirements
1.3.10	Prohibition of Forced or Child Labor	New section covering labor laws
1.4.8	ASHRAE 90.1	Clarified requirements
1.5.2	Zoning and Related Issues	Clarified use of local requirements
1.6.4	Security	Deleted section as information was in 1.4.7 Interagency Security Committee Risk Management Process for Federal Facilities
1.7.2	Special Exposures	Added information related to weather events
1.7.4.1.2	Asbestos Pre-alteration Assessments	Updated section
1.8.1	Construction Sign	Clarified requirements for rigid sign

Thank you for your attention!

P100, tools, training slides and videos
are available on

www.gsa.gov/p100