

Universal Scope Requirements

V3.8 – 8.1.22

(Mandatory Requirements that accompany all Scope of Work Templates)

Note: The PBS-P100 remains the paramount guidance document.

This document clarifies and expands upon certain requirements within the P100.

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Safety & Health

Section A – Safety and Health Program

- **Contact:** Robert Smith, Regional Industrial Hygienist 720.275.7459
robertv.smith@gsa.gov
- **Contractor Responsibility:** The Contractor shall assume full responsibility and liability for compliance with applicable codes, standards and regulations during execution of the Work, and shall hold the Government harmless for any action on the Contractor's part, or that of the Contractor's employees or subcontractors, that results in illness, injury or death.
- **References:** In addition to publications referenced in the Construction Contract Clauses, the following Code of Federal Regulations (CFR), publications apply to work conduct. State and local safety and health regulations that apply are not cited herein. Current editions at the date of the contract apply. The more stringent requirements apply.
 - 29 CFR Part 1910: Occupational Safety and Health Administration (OSHA) General Industry and Health Standards
 - 29 CFR Part 1926: OSHA "Safety and Health Regulations for Construction"
 - National Fire Protection Association (NFPA) 70E Electrical Safety Requirements for Workplace Safety.
- The Contractor shall submit for approval a written **Project Safety and Health Program**, including but not limited to the following:

<ol style="list-style-type: none"> 1. Occupational Noise Exposure 2. Fall Protection 3. Personnel Protective Equipment 4. Control of Hazardous Energy 5. Electrical Safety Related Work Practices 	<ol style="list-style-type: none"> 6. Lead 7. Asbestos 8. Polychlorinated Biphenyls (PCBs) 9. Respiratory Protection 10. Confined spaces 11. Hazard Communication.
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- Contractor shall additionally submit firm's **General Safety Plan** at the pre-construction conference listing emergency procedures and contact persons including home addresses and telephone numbers.

Section B – Asbestos (Pre-Alteration Assessments)

- **Contact:** Robert Smith, Regional Industrial Hygienist 720.275.7459
robertv.smith@gsa.gov
- **Asbestos Pre-Alteration Assessments**
 - To comply with 40 CFR 61.145(a), 41 CFR 102-80.15(c), Section 1.9.4.1.2 of the GSA PBS-P100, and Appendix A of PBS 1000.1, a pre-alteration asbestos assessment shall be required before any demolition or renovation activity where asbestos-containing materials are present, presumed, or suspected in the project the area. A state-certified asbestos building inspector must assess all areas within this scope and either test or assume positive all suspect materials for asbestos content that may be disturbed by the proposed renovation or demolition activity. GSA will provide any available relevant documentation related to the proposed demolition or renovation activity. Copies of the pre-alteration assessment report shall be provided to the GSA Project Manager, Building Manager, and Regional Industrial Hygienist.
 - The following pre-alteration assessment requirements shall be adhered to:
 - Destructive sampling of materials that will be disturbed as a result of the proposed project is authorized. Sample holes shall be temporarily patched or

covered with putty, tape, etc. Any residual debris generated as a result of the sampling shall be cleaned up and removed.

- The assessment shall be conducted in accordance with the "Project Design Survey" requirements of ASTM E2356 - 14 *Standard Practice for Comprehensive Building Asbestos Surveys* and pursuant with applicable federal, state and local regulations.
- Assessment and sampling protocols per ASTM E2356 – 14, AHERA sampling protocols at 40 CFR 763.86, and state/local asbestos regulations shall be followed with the following exception:
 - For Miscellaneous Materials, a minimum of two (2) samples per each Homogeneous Area (HA) shall be collected.
- The following sample analysis methodologies shall be used:
 - Bulk samples shall not be composited for analysis and shall be analyzed by polarized light microscopy (PLM) via EPA Method EPA/600/R-93/116.
 - Progressive sampling (i.e. positive stop) for each homogenous area (HA) is allowed.
 - All separable layers within a bulk sample shall be analyzed and reported individually. Drywall samples shall be reported both by layers for OSHA compliance as well as a composite sample as allowed by federal EPA NESHAP regulations.
 - If a sample of friable asbestos is estimated to be 1% or less asbestos by PLM via EPA/600/R-93/116, the sample shall be re-analyzed by EPA/600/R-93/116 with a 400-Point Count. If a result obtained by point count is different from a result obtained by visual estimation, the point count shall be used.
 - Asbestos bulk sample analysis shall be performed by an accredited analytical laboratory that participates in the National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos bulk sample analysis.
- A written assessment report shall be provided and contain the following content at a minimum:
 - The name and address of the building, structure or facility that was inspected. If less than the entire building, structure, or facility was inspected, the exact location of the area or component(s) inspected shall be listed.
 - The certified asbestos building inspector's name, signature, contact information, individual certification number, and state Asbestos Consulting Firm name and registration number (if applicable).
 - The date(s) the inspection/assessment was performed.
 - General description of building and its physical components, dates of construction and any known renovations, and description of mechanical systems such as HVAC and plumbing systems.
 - Description of assessment protocols, sample collection and analytical procedures
 - Summary of findings and table including: material description, HA, location in building, sample numbers, asbestos content, estimated quantities, friability, material condition-assessment
 - Summary of determined or assumed ACM materials that would be disturbed by proposed project activities and recommendations. Contractor shall also denote any non-ACM materials that would still be OSHA regulated (1% asbestos or less).
 - Figures

- Site location figure
 - Sample location figure(s)
 - Extent of each HA determined or assumed ACM figure(s)
- Photographic log with representative photos of each HA determined or assumed to be ACM
- Field notes
- Laboratory data packages, lab accreditations, chain-of-custody documentation
- Inspector and firm certifications.
- **Potential Disturbance or Removal Asbestos Containing Materials**
 - Requirements for the disturbance or removal of asbestos containing materials will vary due to differences in state regulations, field conditions, materials to be abated, abatement methodologies, etc. For project-specific requirements please consult with the GSA OFM Industrial Hygiene Team for guidance.
 - Projects with the potential to disturb or remove asbestos containing materials shall include the necessary controls to protect the construction contractor, building occupants, the public, and environment AND comply with all applicable regulations and policies including but not limited to:
 - 29 CFR 1910.1001: OSHA Asbestos in General Industry.
 - 29 CFR 1910.134: OSHA Respiratory Protection Standard.
 - 29 CFR 1926.1101: OSHA Asbestos in Construction Standard.
 - 40 CFR, Part 61 Subpart M: EPA NESHAPS National Emission Standard for Asbestos
 - 40 CFR 763: EPA Asbestos Hazard Emergency Response Act (AHERA)
 - 41 CFR 102-80.15: GSA Federal Management Regulation, Real Property, Safety and Environmental Management
 - State and local asbestos control statutes and regulations
 - GSA PBS 1000.1 Asbestos Policy.
 - Third-party industrial hygiene oversight and/or clearances may be required depending upon the type and quantity of material to be abated, abatement methodologies, site-specific circumstances and state-specific requirements. Please consult with the GSA Industrial Hygiene Team for guidance.
 - Contractor shall provide a written method of procedure (MOP) or asbestos abatement project design, as applicable, describing types, quantities and locations of asbestos to be removed; controls and work methods; phasing; disposal, etc. for GSA review and approval.
- **Specification of Asbestos-Free Building Materials**
 - Products containing any amount of asbestos are prohibited from use in construction of GSA-controlled Federal or leased facilities.

Section C – Lead Containing Paint / Lead Based Paint

- **Contact:** Robert Smith, Regional Industrial Hygienist 720.275.7459 robertv.smith@gsa.gov
- All coatings and paints in buildings built prior to 1978 are suspected to be lead containing. For alteration and demolition projects that require sanding, burning, welding, scraping, or otherwise impacting painted or coated surfaces in such buildings, the impacted paints or coats shall either assume to be lead-containing and managed as such **OR** have representative chip samples

collected by a qualified individual and submitted to an accredited analytical laboratory for analysis by Flame Atomic Absorption Spectroscopy (AAS) via EPA Method SW-846-7000B.

- The OSHA Lead in Construction Standard 29 CFR 1926.62 applies to disturbance of any paint or coating with any detectable concentration of lead. Any project that disturbs assumed or confirmed lead-containing paint must comply with this standard. Lead-containing paint that is intact and in good condition need not be abated unless required for alteration or demolition.
- Lead-based paint (>0.5% by weight) shall be abated in childcare centers. Refer to Section 10.1.10 of PBS-P140 for specific details.
- Lead-based paint in child-occupied facilities (childcare centers) and pre-1978 target housing (GSA-owned or maintained residential dwellings) shall be managed in accordance with 24 CFR 35 and 40 CFR 745 "Lead-Based Paint Poisoning in Certain Residential Structures."
- All lead-containing debris shall be double-bagged in 6-millimeter, labeled polyethylene bags, containerized, and transported and properly disposed of off-site at an appropriate facility. Contractor shall be responsible for the proper characterization and management of lead bearing waste in accordance with applicable federal, state, and local hazardous waste regulations including 40 CFR 260-299. Lead bearing waste shall be assumed to be hazardous waste due to the characteristic of toxicity (Lead, EPA Waste Code D008) or have representative wastestream samples submitted to an accredited analytical laboratory for analysis via EPA Method SW-846 Test Method 1311: Toxicity Characteristic Leaching Procedure (TCLP). As applicable, the waste characterization and manifest documentation shall be provided to GSA as part of the deliverable.

Section D – Fire & Life Safety

- **Contact:** Alan Antonio, Regional Fire Protection Engineer 720.284.9598
alan.antonio@gsa.gov
- Adhere to all applicable requirements of Chapter 7 of the P-100 for Fire and Life Safety.
 - Note: A registered Fire Protection Engineer is required in section 7.3.

Section E – Accessibility (ABAAS)

- **Contact:** Verna McCain, Designer 303.918.1991 verna.mccain@gsa.gov
- The Architectural Barriers Act Accessibility Standard (ABAAS) is mandatory for all GSA projects. Found at <http://www.access-board.gov/ada-aba/final.cfm>
- If local accessibility standards exist, the A/E must follow the more stringent requirements between the local standards and ABAAS.
- Accessibility in Federal Courthouses: Comply with Chapter 8, Design Standards for U.S. Court Facilities, Section 8.2, Planning for Accessibility, and Table 8.1, Accessibility Requirements.

Section F – Construction Indoor Air Quality (IAQ) Management Plan

- **Contact:** Robert Smith, Regional Industrial Hygienist 720.275.7459
robertv.smith@gsa.gov
- The General Contractor or other qualified party shall prepare and submit a Construction IAQ Management Plan to GSA for approval, for any construction project(s) involving:
 - Heating, ventilation, and air-conditioning (HVAC) modifications
 - Demolition
 - Paints, sealants, adhesives, etc. (commonly referred to as "wet work")
 - Anything else affecting indoor air quality.
- The Construction IAQ Management Plan shall meet the following criteria:

- Construction activities shall meet or exceed the standards included in Chapter 3 of the Sheet Metal and Air Conditioning National Contractors' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", 2nd Edition 2007
- Control pollution sources
 - Isolate areas of work to prevent contamination.
 - Pressure differentials shall be used where feasible to prevent migration of dust/contaminants.
- Protect existing building HVAC systems including
 - Shutting down systems where possible.
 - Protecting supply & return ducts within the work area by covering or filtering.
 - Filtration media shall be installed to protect ductwork and/or equipment used during the construction process using a minimum efficiency reporting value (MERV) 8 at each return air grille, per ASHRAE Standard 52.2-1999.
 - Replace all filtration media immediately prior to occupancy.
- Suppress dust
 - Apply wetting agents and/or sweeping compounds.
 - Interrupt dust pathways via dust curtains or temporary enclosures.
 - Pre-clean any dust-covered materials that will be disturbed during demo using an effective dust-collecting method (such as damp cloth, wet mop, etc.) and immediately bag, seal and remove this refuse from the project area.
- Protect materials
 - Develop a Sequence of Finish Installation Plan highlighting measures to reduce the absorption of VOCs by materials that act as 'sinks'.
 - Protect absorptive materials from moisture damage both when stored on-site prior to install and after installation.
- Immediately prior to occupancy, perform
 - An outside air flush out of the building (or of the immediate project area) **OR**
 - Pre-occupancy air-quality testing.
- Plan must be approved by GSA.

Energy, Sustainability, & Environmental

Section G – Sustainable Purchasing

- **Contact: Christie-Anne Edie**, Sustainability Specialist 303.335.7254
christie.edie@gsa.gov
- **See Sustainable Facilities Tool (www.sftool.gov) for green purchasing tools, resources, and guidance.**
- **Water-Efficient Products (Plumbing Fixtures)**
 - Purchase/install only water-conserving products, such as WaterSense and FEMP-designated products.
- **Energy Efficient Products & Appliances (if applicable)**
 - Any appliances (refrigerators, dishwashers, etc.) purchased by GSA and/or under GSA-operational control must be energy-efficient, meeting standards such as:
 - Environmental Protection Agency's (EPA) Energy Star-labeled
 - Federal Energy Management Program (FEMP) designated

- Other similar energy-efficient certifications.
 - Contractor must provide proof of compliance (standard construction submittal) for applicable products, equipment replacements, and installations.
- **Refrigerants Phase Out (if applicable)**
 - If any equipment/components are being replaced that contain ozone-depleting HCFC and HFC compounds and/or high GWP chemicals, these must be replaced with equipment containing non-HCFC and/or non-HFC refrigerants and/or SNAP-approved substitutes.
 - Accordingly, contractors shall comply with the Title VI of the Federal Clean Air Act **AND** 40 CFR Part 82.

Section H – Construction Waste Diversion

- **Contact: Christie-Anne Edie**, Sustainability Specialist 303.335.7254
christie.edie@gsa.gov
- **NOTE: Only required for projects \$50,000 and above.**
- **Construction and Demolition (C&D) Waste Protocol**
 - C&D waste is defined as non-hazardous waste generated by construction or demolition activities (such as furniture, appliances, carpet, sheetrock, fixtures, etc.)
 - Unless otherwise specified, all C&D waste material becomes the property of the contractor and shall be disposed of outside Government facilities and land.
 - Contractor shall provide dumpsters as necessary to handle all C&D waste - location of these dumpsters will need to be coordinated with GSA at the start of the project. Contractor is responsible for transportation of waste material to a landfill as well as any disposal costs. Contractor shall not stockpile demolition debris for more than 48 hours (outside a dumpster).
 - Contractor shall dispose of C&D waste at least monthly, in a legal manner, at a public or private dumping area.
 - Contractor must document disposal as outlined below.
- **Minimum C&D Waste Diversion requirement is 50 percent**
 - Diversion is defined as diverting materials from landfills and incinerators via methods such as recycling, reuse, repurposing, scrap, or donation.
 - Contractor shall use all reasonable means divert as much C&D waste as possible and is encouraged to exceed the minimum.
 - Diversion rates are calculated at end-of-project by weight of total non-hazardous waste generated by the project.
 - Further, the contractor shall employ processes to ensure the project generates as little waste as possible due to over-packaging, error, poor planning/layout, breakage, contamination, damage from weather, etc.
- **Required Submittals and Reporting Requirements**
 - **Waste Management Plan:** To demonstrate compliance, contractor shall submit a Waste Management Plan within 14 days of Notice to Proceed including:
 - List of the recycling facilities, reuse facilities, municipal waste landfills and other disposal area(s) to be used
 - Name, location, and phone number of each facility listed
 - A copy of permit or license for each facility listed
 - Identify materials that cannot be recycled or reused. Provide explanation or justification why they may not.
 - Plan may require revision and resubmission per GSA review and comment
 - Approval of Contractor's Plan does not relieve the Contractor of responsibility for compliance with applicable environmental regulations

- **Waste Reduction Calculations**
 - Before Substantial Completion, submit calculated end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated
- **Waste and Diversion Records**
 - Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by facilities licensed to accept them.
 - Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them.
 - Include manifests, weight tickets, receipts, and invoices.

Section I – NEPA (National Environmental Policy Act) and Site Work (Stormwater/Erosion, Soil Disturbance and Utility Locates)

- **NEPA**
 - **Contact: Derrick Rosenbach**, NEPA Compliance Specialist, derrick.rosenbach@gsa.gov
 - The National Environmental Policy Act (NEPA) requires that Federal agencies consider and document the environmental impacts of proposed actions as part of their decision process. As part of the NEPA process, GSA would issue either a Finding of No Significant Impact (FONSI) or a Record of Decision (ROD), both of which may contain legal commitments that GSA must incorporate into its project. GSA's design team must be aware of these commitments and must address them in the project design and/or construction documents.
- **Stormwater and Erosion Control**
 - **Contact: William Fieselman**, Stormwater Manager 303.356.5669 william.fieselman@gsa.gov or John Kleinschmidt, Regional Environmental Program Manager 303.868.0795 john.kleinschmidt@gsa.gov
 - For any project with potential to impact stormwater or the storm sewer system, follow all local codes/regulations.
 - An **Erosion Control/Stormwater Management Plan** will be a required as well as a dewatering permit as applicable. Standard Operating Procedures will be provided.
 - For projects involving ≥5,000 SF exterior site redevelopment, contact the Office of Facilities Management Environmental Programs Group for guidance on procedure and required forms.
- **Safe Digging**
 - Contractor shall follow all local codes/regulations for safe digging and construction dewatering. Contact the local municipality for applicable requirements.
- **Soil Disturbance Permit**
 - **Contact: Fritz Heneman** 720.518.9112 frederick.heneman@gsa.gov
 - Projects on the Denver Federal Center (DFC): Contractor shall obtain a Soil Disturbance Permit prior to performing any excavation or soil-disturbing work. Permits are issued by GSA's Environmental Protection Group (EPG), will reference any soil contamination in the area, and may require a health and safety plan.
- **Utility Locates**
 - Contractor shall be responsible for obtaining public and private utility locates prior to performing any excavation activities. Payment of fees associated with utility locates are the responsibility of the contractor and must be included in proposal submission.
 - Projects on the DFC
 - DFC pre-approved locate contractors must be used for private utility locates.
 - All utility locate information shall be provided to GSA. Any change to existing, addition of new, and/or discovery of known or previously unknown

or abandoned utilities will require as-builts and geomapping of said utility. Standard Operating Procedures will be provided.

Section J – Utility Rebates and Incentives

- **Contact: Bob Hughes**, Project Reviewer, 720.249.9167 robert.hughes@gsa.gov
- The Contractor shall pursue any and all utility rebate and incentive programs and any government grant or incentive programs at the local, state, and federal level. Contractor is responsible for researching, submitting, and ensuring collection of all applicable rebates. Rebate opportunities must be explored for all elements of the project including but not limited to resource-saving equipment, materials, design & services including (Re) Commissioning and other strategies & processes. Submit all rebate checks to:

General Services Administration
Attn: Lisa Haskins
One Denver Federal Center
Building 41, P.O. Box 25546
Denver, CO 80225-0546

Section K – Water Treatment for Building Mechanical Systems

- **Contact: Tyler Cooper**, Mechanical Engineer 303.335.7548 tyler.cooper@gsa.gov
- In addition to the GSA P100 5.3.5 water treatment guidance, the following must be included:
 - Project must include a licensed qualified water treatment service provider prior to the startup of new major heating and cooling system.
 - When final flush of systems has been performed, water treatment provider shall ensure all open and closed loop systems have been treated to industry standards.
 - The monitored reading of the water chemistry shall be documented, and a copy provided to the GSA Project Manager.
 - New installs, upgrades, modifications, or repair of existing closed loop systems:
 - “Coalescing” air & dirt separator media is to be installed into new or existing air separators of heating and cooling closed loop applications.
 - New installs, upgrades, modifications, or repair of existing cooling tower systems:
 - Install Full-flow or side-stream filtration to directly protect the heat exchangers and chillers such as screen (self-cleaning), centrifugal separators, cartridge, bag, sand media, or disc filters.
 - Project shall include water treatment services for 1 year from install.

Section L – Water-Efficient & Pollinator-Friendly Landscaping

- **Contact: Christie-Anne Edie**, Sustainability Specialist 303.335.7254 christie.edie@gsa.gov
- **Irrigation:** If facilities have ≥ 25,000 square feet of irrigated landscape, a separate outdoor water meter must be installed
- **Native & Adaptive Plants:** Implement native and adaptive plant species to the maximum extent economically preferable to GSA in an effort to reduce exterior water needs.
- **Pollinator-habitat**
 - Install plants beneficial to pollinators to the maximum extent economically preferable to the government.
 - Plant selection metrics should include:
 - Number of plant species, diversity and abundance of pollinators
 - Periods of bloom for the plant species

- Frequency of pollinator visits
- Capital and maintenance costs pre/post-planting.

Building Systems Integration

Section M – Commissioning (Cx)

- **Contact:** Jim Hauswirth, High Performance Building Operations Support, 917.232.7042, james.hauswirth@gsa.gov and Andrew Olsen, Regional Resource Efficiency Manager 303.236.5376 andrew.olsen@gsa.gov
- Commissioning (Cx) is a systematic process of ensuring by verification and documentation that the newly installed equipment and/or systems perform independently and interactively in accordance with the scope and project intent, and in accordance with the owner's operational needs to include training the equipment operators.
- Cx is required for any new construction or alteration work for any building system equipment including but not limited to any mechanical systems and the BMC/BAS.
- Please refer to the GSA/PBS Building Commissioning Guide for reference.
- **The Commissioning Authority (CxA)** must be hired prior to or in conjunction with design team. CxA can help write requirements for the design team RFP.
 - Depending on project size, the CxA shall be:
 - Large project with a CM: a 3rd party contracted through the CM.
 - Medium/large project without a CM: a 3rd party contracted via an entirely separate contract.
 - Small project: the contractor can self-perform Cx or if unqualified, contract with a subcontractor.
- **Commissioning Plan**
 - Contractor must create/submit the Commissioning Plan, process and documenting procedure prior to the start of installation or construction.
 - This plan must be approved by the Commissioning Authority (CxA) and GSA R8 Energy Team prior to the commencement of work.
 - The level of commissioning should be appropriate to the scope, size, and complexity of the project as determined by the CxA.
 - Cx must be conducted *after* all equipment and system components are installed and prior to project completion acceptance.
 - Cx shall comply with P-100, GSA Building Commissioning Guide, and ASHRAE 202 as appropriate to the scope.
- **Commissioning Documentation**
 - Cx documentation shall demonstrate and confirm equipment and/or systems were properly installed and are in functioning order and meet the project intent.
 - Cx documentation requires submission to the CxA for approval and GSA R8 Energy Team after all commissioning activities are finished.
- **Acceptance**
 - Cx must be accepted prior to the project being accepted as complete.
 - The Cx acceptance process may include visual inspection, functional testing, sequence testing (BAS) and confirmation of programming, graphics and BAS points added to the BAS dependent on the project scope.

Section N – GSA IT Network

- **Contact:** Todd Tangye, IT Technical Project Manager 303.941.1071 todd.tangye@gsa.gov

- Any Internet Protocol (IP) devices/equipment (HVAC, lighting controls, t-stats, meters, etc.) and/or software that requests to connect to or reside on the GSA Network, must follow the process for IT Security equipment scanning & approval outlined within **The Building Technologies Technical Ref Guide**. This includes devices related to both physical access and logical/network access.
- This process reveals, analyzes and provides the vendor or manufacturer with weighted determinations on any and all Federal and GSA vulnerabilities the product(s) may have and that must be remediated prior to placement onto the GSA Network.
- A catalog consisting of already-remediated products is available for review. Only GSA personnel can review this catalog and will do for the Contractor at the Contractor's request.
- Supporting Documents and Guidance
 - 140416 Telecommunications Distribution Design Guide (Building Technologies Technical Ref Guide)
https://insite.gsa.gov/portal/mediaId/664598/fileName/Building_Technologies_Technical_Reference_Guide_v12_092916.action
 - Security Language for IT Acquisition Efforts CIO-09-48
 - 140416 Telecommunications Distribution Design Guide
 - Technology Policy for PBS-Owned Buildings Monitoring & Control Systems

Section O – Building Automation Systems (BAS)

- **Contact: Dave Caldwell**, BAS Program Manager 720.243.0939 david.caldwell@gsa.gov
- All Mechanical/HVAC equipment and controls along with any associated equipment shall be integrated into the Building Automation System. All new equipment and controls shall conform to GSA R8 BAS standards as outlined in the Division 25 Specification document.
- Any IP devices added to the GSA Network must be approved devices on the GSA remediated devices list (see Section O – GSA IT Network). All equipment controllers shall be BACnet/MSTP enabled and listed with the BACnet Testing Laboratory.
- All devices and control and monitoring points, including point naming and graphics shall be submitted and approved by the GSA R8 BAS team. Integration into the BAS and with the GSA network shall be coordinated with the GSA R8 BAS team.
- Supporting Document and Guidance: **Division 25 00 00 -Integrated Automation v1.1**

Section P – Advanced Metering System (AMS)

- **Contact: Sarah Hernandez**, Metering Program Manager 720.289.2617
sarah.hernandez@gsa.gov
- Contractors are required to install water, electric, natural gas, BTU, etc. meters if appropriate to the building systems being installed/replaced.
- **For all meter installation or replacement work**, contractor is required to:
 - Coordinate with the R8 AMS Manager for placement of new meters
 - Install meters per manufacturer's recommendations to maintain warranty
 - Confirm appropriate meter size, pipe and flange sizes, and straight runs of pipe requirements for new meters. Meter size may be different from pipe size due to the building usage and data.
 - Install new Weld-o-let fittings, flanges, isolation valves, piping, hangers, supports, and insulation as needed and install a by-pass and isolation valves for the new meters if required, and space is available. Paint any new piping and add new or remove and replace insulation (if applicable).
 - Check all joints, fittings, flanges and piping for leaks.
 - Test operation of all new equipment.

- **Make new meters operable and with complete wiring** (including communication wiring) including:
 - Disconnect any digital input wiring at the AMS electric meter input prior to termination. Some electric meters are located in Medium/high voltage switchgear – safety precautions shall be enforced for access or work within these enclosures (NEC/OSHA arc flash requirements).
 - Coordinate with GSA prior to termination of meter communication wires.
 - Remove any old associated wiring back to the source and provide neat and clean communication cable routes.
 - Install wiring from new meters to the RS-485 input on the AMS electric meter.
 - Meet communication wiring requirements (24 Gauge twisted shielded pair).
 - Install all wiring in conduit. EMT is acceptable with set screw fittings unless building-specific requirements are more stringent. Final connections to the metering equipment can either be flexible conduit or seal-tight conduit.
 - Trim each wire and/or cable to proper length to reduce the excess - Note each wire and cable should be the same length when cut.
 - Daisy-chain multiple Modbus devices.
 - Label each end of the communication wire with strap-on or stick-on labels.
- Complete all graphics additions/changes, all application programming, and final commissioning of new/replaced meters.
- Label all meters installed.
- Supply all calibration data sheets to the AMS R8 Manager.
- **WATER METERS**
 - Contractor to Install (GSA Standard) Electro-Magnetic flow-type water meters.
 - Install dedicated 120V power supply and disconnect switch within 6 feet.
- **GAS METERS**
 - Install (GSA Standard) Nema 4-X Thermal Mass type Gas meters.
 - Coordinate with GSA and the local gas utility provider on the shutdown of gas or proposed piping location.
 - Test for leaks by utilizing a recently certified gas “sniffer” leak detector and provide leak test results.
- **CHW AND HW BTU METERS**
 - BTU meters are required in all new and retrofit installations where there is either a central utility plant or building-specific cooling and/or heating plant(s).
 - Install (GSA Standard) Energy-flow type BTU meters, including the CW and/or HW BTU meters, transducers and RTD's.
 - Test operation of the transducers, RTD's, and BTU processor.
 - Coordinate the placement of the BTU transducers with GSA and provide assistance with proper spacing at the time of commissioning prior to the pipes being insulated.
- **ADVANCED ELECTRIC METERS**
 - Install the latest GSA Standard electric meters.
 - The electric meters shall be located in compartments in the switchgear specifically designed for metering. PT's, CT's, shorting blocks, etc. shall be incorporated in the design and installation sized per industry standards.
 - Contractor shall be responsible for coordination with GSA IT to:
 - Confirm the switch and port locations for the electric meters
 - Pull new Ethernet cables from the pre-determined Ethernet switch to each electric meter utilizing 600vac rated Ethernet cabling
 - Obtaining the IP address, Subnet Mask, and, Gateway information from GSA IT and forward all this information to the AMS R8 Manager.

- The contractor shall be responsible for any polarity-sensitive wiring (ie. CT's) and verify phase terminations (A B C) and use the proper color-coded insulation (Grey for 277/480vac and White for 120/240vac).
- Contractor shall be experienced in all components of electrical metering and shall be responsible for complete and operational integrity.
- Contractor must adhere to Arc Flash rules.

Section Q – Building Information Modeling (BIM)

- **Contact: Timothy Kyer**, R8 BIM Manager 303.489.8347 timothy.kyer@gsa.gov
- GSA requires employing BIM in most project conditions in excess of Simplified Acquisition Threshold (SAT) and encourages its use below the SAT to help meet specific project needs or goals including use of:
 - 3D geometric models for visualization and communication with stakeholders
 - 4D models for phasing analysis
 - BIM for live collaborative design reviews
 - BIM for design and construction coordination and clash detection
 - BIM for an array of analyses.
- Contractor shall provide a BIM Execution Plan (BEP) following the project team kickoff meeting and prior to commencing design/modeling work. Working agreements between parties must be documented in the BEP. GSA has a BEP template and guidance available. Contractor may use their own BEP template if it includes the types of info in the GSA template and is pre-approved by GSA BIM Manager.
- Contractor shall review and understand the BIM Guide Series www.gsa.gov/bim, which provides additional information and requirements for specific BIM applications
 - BIM Guide 07 - Building Elements provides requirements for BIM-based design and BIM Execution Planning. At minimum, Contractor must comply with BIM Guide 07.
 - BIM Guide 02 - Spatial Program Validation defines how BIM is used to design for and validate spatial program requirements.
 - BIM Guide 08 - Facility Management provides requirements for GSA's use of BIM for facility management.
- Contractor shall submit BIM deliverables in agreed-upon authoring software platforms in native and IFC file formats for all project phases. If Autodesk Revit is used as the authoring platform, the Contractor shall also submit all BIM deliverables in native format (.rvt) in Navisworks (.nwc, .nwf, .nwd) and 3D-PDF (.pdf) formats as well. In the final deliverable, Contractor shall also submit an 'area plan' compliant with BOMI standards.
- Contractor shall prepare a BIM Manual summarizing the BEP. The BIM manual must contain all pertinent information about the models, jointly and severally, that follow-on project teams will need to successfully update and modify the Record Model with new project content.
- More specific language is available in the BIM Appendix available from the BIM Program Manager, which sets forth further requirements that the project team may choose to employ depending on project type and scope.

Section R – National Computerized Maintenance Management System (NCMMS)

- **Contact: NCMMS Program Office** R8NCMMS@gsa.gov
- Project Architects, Engineers, and/or General Contractors are responsible for providing complete updates for building Asset or Location records for items removed or added resulting from any construction, renovation, or refurbishment project. An Asset is defined

as any physical component of a building that GSA tracks and is maintained over its useful life.

- There are two methods for providing NCMMS update information, differentiated by the scope/scale of the project:
 - 1. NCMMS Upload Template
 - Generally used with smaller projects involving 50 or fewer physical assets.
 - The NCMMS Upload Template is an Excel Workbook with pre-defined information fields to be populated by the Contractor with support from the Building Manager and O&M Contractor [Example Template](#)
 - See COBie Specific-Submittals and COBie Formatted-Submittals in item #2 below for additional info required with NCMMS Upload Template.
 - **Substantial Completion & Final Inspection**
 - When project or designated portion of project is deemed complete by the contractor, the contractor shall request a final inspection. Upon receipt of this request, the Contracting Officer will proceed with the inspection within ten days of receipt of request or advise the contractor of items that prevent the project from being designated substantially complete.
 - The contractor shall provide all relevant documentation including:
 - Executed Warranties
 - Operation and Maintenance Manuals
 - Specifications/Cut Sheets
 - Photos of installed Assets (Nameplate, portrait view of installation).
 - 2. COBie Playbook
 - This method is primarily used with larger projects involving over 50 physical assets and/or reconfiguration of building layouts that add, change or delete designated (named) building locations.
 - The Construction Operations Building Information Exchange (COBie) is an industry-standard mechanism for exporting information from one system (i.e., AutoCAD or Revit) and importing it into another (GSA's NCMMS – Maximo).
 - Reference documentation can be found on the [COBie Playbook](#) page on the NCMMS Central Office website. The [Division One Specifications – Part 1 – General COBie Requirements](#) provide the required contract language for projects utilizing the COBie Playbook process.
 - Completes the COBie Information Delivery Plan (IDP) document including:
 - [COBie IDP Template](#)
 - [COBie IDP Appendix A – Responsibility Matrix](#)
 - [COBie IDP Appendix B – Asset Type Matrix](#)
 - **COBie-Specific Submittals** – Provide these at all pre-determined Project milestones (typically 30, 60, and 100% Design, Construction Mobilization, 60% Construction Completion, Beneficial Occupancy, and Fiscal Completion)
 - **COBie-Formatted Submittals** – Provide the following submittals, required elsewhere in this contract, in COBie-compatible format.

<ul style="list-style-type: none"> ○ As-Installed Equipment ○ Schedule As-Installed ○ Warranty Tags Approved ○ Submittals 	<ul style="list-style-type: none"> ○ Door Schedule ○ Room Finish Schedule ○ Hardware Schedule
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- Signage Schedule [NCMMS Locations must match]
- Spare Parts Schedule
- Warranty Certificates and Data
- Preventative Maintenance Plans
 - **Asset Record Details:** Refer to the NCMMS [Asset Record Standard](#) for additional details on the required/conditional record information fields. Asset Record fields include, but are not limited to:
 - Asset Type
 - Description
 - Manufacturer
 - Make
 - Model
 - Serial Number
 - Quantity
 - Location (see Standard)
 - Installation Date
 - Expected Life (in Years)
 - Lifecycle End Date (Installation Date + Expected Life)
 - Warranty End Date
 - Purchase Price
 - Attachments (see Standard)
 - Spare Parts (see Standard)
 - Specifications (see Standard).
- Diagnostic Testing Plans
- Repair and Replacement Plans
- Real Property Equipment Transfer Report
- Operations and Maintenance Manuals.

Design Elements

Section S – Historical Preservation

- **Contact:** Andrea Collins 303.726.2118 andrea.collins@gsa.gov or Christy Fockler 303.815.7798 christy.fockler@gsa.gov
- **General Historic Preservation Requirements**
 - Design development and final construction documents must adhere to any conditions and processes set forth in related Section 106 correspondence or formal agreements governing the undertaking. Include applicable construction specialist qualification requirements for repair, restoration or replication of historic materials, as specified in GSA Competency Specifications for Preservation Construction Contractors in www.gsa.gov/historicpreservation.
 - Construction execution must also allow for coordination with the preservation architect responsible for the approved preservation design solutions. Allow ample time for procurement of specialized materials required for work in restoration zones.
- **Criteria Governing Survey, Analysis, Recommendations and Design**
 - Services performed by the Architect-Engineer shall conform to all applicable requirements and criteria of the following laws, directives and guidelines and to the latest issuances of and changes thereto:
 - National Historic Preservation Act of 1966 (NHPA), as amended
 - ADM 1020.3 GSA Historic Preservation Procedures
 - GSA P100 Facilities Standards, provisions on Alterations to Historic Buildings for each applicable design category
 - The Secretary of the Interior's Standards for Rehabilitation and Guidelines for the Treatment of Historic Properties
 - GSA Technical Preservation Guidelines

- GSA Building Preservation Plan and Historic Structure Report, as available.
- **Section 106 Compliance**
 - Work in GSA historic buildings listed in or eligible for the National Register of Historic Places shall be consistent with the Secretary of the Interior's Standards for Rehabilitation, applicable GSA Technical Preservation Guidelines and GSA Building Preservation Plan recommendations. All work in a GSA historic property is subject to National Historic Preservation Act (NHPA) Section 106 compliance review, coordinated by GSA's Regional Historic Preservation Officer (RHPO). Contact RHPO in early planning to identify and address preservation issues the project may raise.
 - The RHPO must review and approve proposed alterations that may affect restoration or rehabilitations zones identified in a Building Preservation Plan (BPP) or Historic Structure Report (HSR) before GSA can commit to or initiate such alterations. If no HSR or BPP exists for the building, the RHPO will determine these zones.
 - Submit for RHPO review and concurrence, a completed 106 Compliance Form (or equivalent info) identifying historic spaces and materials that may be affected by planned alterations. Design development must explore alternatives that avoid or minimize adverse effects on the qualities that make the building eligible for the National Register. Preference will be given to alternatives that avoid adverse effects while meeting other project requirements.
 - Plans for any alterations that will result in adverse effects on historic property will require consultation with the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and interested parties. This process, initiated during concept design, includes public consultation with the goal of identifying alternatives for avoiding, minimizing, or mitigating adverse effects. Projects that will result in unavoidable adverse effects may require extended consultation to explore additional alternatives and prepare project documentation required by the SHPO.
 - Preservation design problem-solving and project documentation for 106 submissions must be undertaken by a qualified historic architect as described below. The Historic Architect must be integrally involved in the analysis and development of design solutions for work affecting restoration or rehabilitation zones to minimize adverse effects on historic materials and character.
 - Projects involving substantive ground disturbance for new construction, excavation, utility work or major landscaping (e.g. relocation of mature trees) must include provisions for compliance with the NHPA, NEPA, Archeological Resources Protection Act and other laws concerned with the protection of archeological resources, including advance assessment of archeological data potential prior to and provisions for responding appropriately to unanticipated discoveries.
- **Preservation Architect Requirements**
 - The Designer must have a member of their team with the following qualifications regarding work in historic buildings to be considered a Historic Preservation Architect and/or an Architectural Historian:
 - Professional degree in architecture or a State license to practice architecture plus one year of graduate study in architectural preservation, American architectural history, preservation planning or closely-related filed.

- A minimum of two years full-time professional experience working on preservation projects in eligible or National Register listed buildings.
- Past performance that visually and descriptively demonstrates successful experience consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties on three similar projects.
- The Historic Preservation Architect and/or an Architectural Historian must meet the professional qualifications as outlined in the Secretary of the Interior's Standards and Guidelines: Professional Qualifications Standards https://www.nps.gov/history/local-law/arch_stnds_9.htm and GSA Qualification requirements for Preservation Architects.

Section T – Energy Design

- **Contact: Andrew Olsen**, Regional Resource Efficiency Manager 303.236.5376 andrew.olsen@gsa.gov
- Any new building equipment, systems, and components as part of design must be 20% better than the most recent version of ASHRAE 90.1 Standard.
- For major renovations, any building equipment, systems, and components must be 30% better than the most recent version of ASHRAE 90.1 Standard.
- **GSA requires the best value, demonstrated by Life Cycle Cost Analysis (LCCA) for any equipment upgrades and additional equipment designed.**
 - Best Value as determined by LCCA is GSA's primary selection criteria for all projects, designs and technologies.
 - If alternative options are not available, equipment that complies with the most recent version of ASHRAE 90.1-2013 Standard is the base option.
 - The LCCA study period shall be the longest life expectancy of the equipment being compared (maximum 40 years). Equipment with lower life expectancies shall include replacement figured into that alternative's total cost of ownership. Refer to 42 USC § 8253 (g) for study period instruction.

Section U – Electrical Design

- **Contact: Phil Inman**, Electrical Engineer 406.422.3020 phillip.inman@gsa.gov
- **Arc Flash Study**
 - Whenever a transformer or Over-Current Protection Device (OCPDs) (including switchgear, main circuit breaker, fuse, and disconnect) is replaced or newly installed, a new ARC Flash Study is required.
 - Study shall include a new one-line and time-current curves of the affected OCPDs.
 - New Warning Labels shall be installed reflecting the required Personal Protection Equipment (PPE) category as defined in the current National Electric Code.
 - Study shall be distributed to the GSA Project Manager, Building Manager and Office of Facilities Management Electrical Engineer.
- New switchgear shall be tested according to NFPA 70B prior to energizing.
 - Test reports showing the acceptable limits and observed values shall be submitted.

Section V – Lighting Design

- **Contact: Tyler Cooper**, Mechanical Engineer 303.335.7548 tyler.cooper@gsa.gov
- **Interior Fixtures** must be High-efficiency LED light fixtures unless otherwise specified

- The major deviation of this rule is using High-efficiency T-8 or T-5 fixtures on a limited basis to match existing fixtures in a single open space.
- Another exception is LED is not cost-effective. In this case, the contractor must perform a Life Cycle Cost Analysis (LCCA) to prove a non-LED option is the best value (least life cycle cost) to the government.
- Physically clean all light fixtures (bulbs, lenses, reflectors, etc.) with a cloth or per specific fixture's instructions post-install and prior to occupancy.
- **Automatic Lighting Controls**
 - Per the most recent version of the ASHRAE 90.1 /IESNA/ANSI standards.
 - Provide ceiling-mount occupancy or vacancy sensors throughout the space in order to reduce the hours that lights are on when a space is unoccupied.
 - No more than 1,000 square feet shall be controlled by any one sensor.
 - Sensors must turn the lights OFF within 30 minutes of the space being vacated and feature a manual-ON or auto-ON to 50% operation option.
 - Sensors must be dual-sensing (ultrasonic & infrared) to prevent inadvertently turning off while space is occupied.
 - Occupancy/vacancy sensors in enclosed rooms shall continue to operate after the BAS has shut down the building at the end of the workday.
 - Lighting sensors should work independently per room configuration or via a lighting control system.
 - Contractor must demonstrate performance via commissioning or a function test of newly-installed equipment.
 - If occupancy/vacancy sensors are not economically-preferable to the government, scheduling controls through the building automation system (BAS) is a permissible minimum alternative.
- **Daylight-harvesting Controls**
 - Daylight-harvesting sensing and controls must be installed if cost-effective to the government. Cost-effectiveness is defined as if the product's payback within the current P-100 guidelines.
 - Daylight harvesting sensors can be integrated into fixtures or ceiling-mounted.
 - Sensors and controls shall maintain required lighting levels in workspaces.
 - Preference is given to daylight-dimming controls in atriums and within 15 feet of windows/skylights where daylight can offset lighting needs.

Section W – Mechanical Design

- **Contact: Andrew Olsen**, Regional Resource Efficiency Manager 303.236.5376
andrew.olsen@gsa.gov
- GSA has adopted the technical requirements of the International Code Council (ICC) family of codes (unless otherwise as noted). The latest edition of the International Mechanical Code (IMC) shall be used. The ICC family of codes is available at www.iccsafe.org
- See the latest edition of the PBS P-100 for detailed requirements for mechanical system modifications and new installations.
- Any new closed-loop systems (boilers, chillers, etc.) need to have an aeration filtration device installed.
- New boilers must feature direct-venting (as opposed to louvers).
- **Mechanical Equipment Change Out/Additions and Fuel/Oil Storage:** Replacement or installation of boilers, generators, or other applicable mechanical equipment on the DFC and all associated fuel storage containers (location and size) must be approved by

EPG to ensure compliance with GSA's state-issued air permit and spill prevention plan. Check with EPG for requirements outside of the DFC.

Section X – Seismic Safety Design

- See PBS P-100 for Seismic Resistance requirements based on geographic seismic risk and Tier level for architectural, mechanical, electrical and structural design requirements
- Seismic resistance design requirements include structural and non-structural elements

Section Y – Physical Security Performance Attributes

- **Contact: Michael Ortega**, R8 Security Specialist 303.579.1878
j.michael.ortega@gsa.gov
- GSA buildings shall meet the Interagency Security Committee's (ISC) standards and best practices for protecting Federal facilities.
 - Reference the ISC “Physical Security Criteria for Federal Facilities”.
 - This attribute relates to the design of the building’s physical security and its ability to resist Design Basis Threats. Design Basis Threats include but are not limited to blast, progressive collapse, vehicle ramming, and ballistics.
 - GSA buildings shall meet the ISC Security Criteria for that building’s Facility Security Level (FSL)
- Reference documents include:
 - ISC “Facility Security Level Determinations for Federal Facilities”
 - ISC “The Design-Basis Threat” report
 - General Services Administration Facility Security Requirements for Explosive Devices Applicable to Facility Security Levels III and IV
 - See PBS P-100 for application of requirements and further details

REFERENCES

- PBS-P100, Facilities Standards for the Public Buildings Service, current at the time of the award, including all applicable standards, criteria, and guides listed therein.
 - Design Stage submissions shall comply with PSB-P100 Appendix A unless otherwise indicated in this Statement of Work. (www.gsa.gov/p100)
- PBS P-120, Project Estimating Requirements for the Public Buildings Service
- PBS PQ-251, Value Engineering Program Guide for Design and Construction, Volume 2, Contracting Officers and Professional Services Contractors