Statement of Work – PVD Laser Cleaning Service

SECTION I: Background

1.1 The Bureau of Engraving and Printing (BEP) is an agency within the Department of the Treasury that designs, engraves, and prints United States currency and other security products.

1.2 The Office of Engraving manages the pre-press operations at the BEP and produces engraved plates used in currency manufacturing.

1.3 This is a new requirement for ablative laser cleaning services for the IPC 1100 Physical Vapor Deposition (PVD) Machines in the BEP. PVD is used to create a high quality, thin coating on surfaces by converting solid material into vapor which then deposits onto a surface. The PVD machine is used by the BEP to coat intaglio plates with a thin chromium nitride layer.

SECTION II: Purpose

2.1 **Product, Service or Outcome Needed.**

The BEP requires ablative laser cleaning services for four (4) IPC 1100 PVD machines located in Washington, DC and Ft. Worth, TX. There is a critical need for an ablative laser cleaning solution for PVD machine components to replace labor intensive manual cleaning, thereby reducing equipment downtime and eliminating the risk of mechanical damage to sensitive vacuum surfaces.

2.2 **Scope of the Product, Service, or Outcome.**

The Contractor shall provide ablative laser cleaning services for BEP's IPC 1100 PVD machines. This service is required to replace manual, abrasive cleaning methods with a highly controlled, non-contact laser process. Routine ablative laser cleaning preserves the integrity of PVD machine components, ensuring the equipment operates at peak specifications to deliver the high quality chrome coatings required for intaglio plates.

SECTION III: Technical Requirements/Tasks/Outcomes

3.1 **Technical Requirements:**

3.1.1 The Contractor shall provide all labor and specialized ablative laser equipment necessary to remove chrome deposits from four (4) IPC 1100 PVD systems and its associated stainless steel components, as detailed in **Attachment 1_PVD Shield and Chamber Parts**. This shall occur once in the base year and bi-annual in the option years to include travel. This service must ensure the ~~complete~~ removal of chrome build-up without compromising the structural or vacuum integrity of the stainless steel substrates. Chrome removal will be inspected visually by the BEP for the following:

~~Operation of the laser ablation equipment shall not require the presence of more than one individual in the laser controlled area during use:~~

3.1.1.1 The chamber walls, removable shields, and carousel shall be free from any loose or flaking chrome deposits.

3.1.1.2 There should be no greater than 5 microns of deposited chrome remaining on the cleaned surfaces.

3.1.1.3 PVD component surfaces should present with the visual appearance of cleanliness.

3.1.2 The Contractor shall utilize an ablative laser cleaning system with a power output of at least 100W. The laser must provide uniform energy distribution to ensure consistent chrome removal without hot spots that could pit the substrate.

3.1.3 The laser ablation equipment shall fully comply with the construction, testing, classification, and labeling requirements of 21 CFR 1040.10 (Laser Products).

3.1.4 The ablative laser cleaning process shall be free of chemicals, solvents, or abrasive media to prevent the introduction of debris or chemical residue into the PVD vacuum chamber.

3.1.5 The cleaning process shall not increase the surface roughness of the stainless steel components beyond OEM specifications.

3.1.6 The Contractor shall physically mask all sensitive PVD components identified by BEP PVD Operators prior to directly cleaning non-removable internal surfaces. Components to be masked include, but are not limited to, optical viewports and sensors.

3.1.6.1 This requirement excludes removable stainless steel accessories.

3.1.6.2 All masking shall be performed using laser-opaque materials such as copper foil, specialized high-temperature laser tape, or physical metal shielding. Standard plastic or adhesive tapes are prohibited as they may melt or outgas under stray laser exposure.

3.1.6.3 BEP personnel must inspect and approve the masking of these critical components before the Contractor initiates the cleaning process.

3.1.7 To ensure laser-generated air contaminant (LGAC) control, the Contractor's ablative laser cleaning system must be integrated with a high-capacity LGAC extraction unit using a multi -stage filtration process (including a certified HEPA filter) to remove LGAC including, but not limited to, hexavalent chromium, chromium nitride, chromium, nickel, titanium, and oxides of nitrogen.

3.1.7.1 The LGAC extraction system must have a capture nozzle or an enclosing hood at the point of contaminant generation to maximize LGAC capture

3.1.7.2 Contractor personnel shall wear appropriate respiratory protection and other personal protective equipment (PPE) required in the site-specific safety plan, job safety analyses (JSAs), or SOPs while operating the laser ablation process at the BEP.

3.1.7.3 Concentrations of any fugitive LGAC shall not exceed one-half of the most stringent occupational exposure limit (OEL) identified from references (a), (b), and (c). Specifically, for the PVD operation at the DCF, this includes chromium species, nickel species, titanium, and oxides of nitrogen.

3.1.7.4 The contractor shall conduct initial personal exposure monitoring for representative employees during laser ablation activities to evaluate exposure to total and respirable particulate, chromium, hexavalent chromium, and nickel. Monitoring results shall be provided to the BEP COR within 5 days of receiving the results of the sampling. If exposure exceeds 50% of any applicable occupational exposure limit, the contractor shall reassess and improve engineering controls.

3.1.8 The Contractor shall perform on-site laser cleaning of the IPC 1100 PVD system at the BEP facility. For the removable stainless steel accessories listed in **Attachment 1 PVD Shield and Chamber Parts**, the Contractor may perform cleaning on-site at the BEP or transport the components to their own facility for off-site processing.

3.1.8.1 For BEP site visits, the Contractor shall establish a Laser Controlled Area (LCA) in accordance with ANSI Z136.1 (*Safe Use of Lasers*) to prevent accidental eye or dermal exposure to non-operators. The LCA must use laser protective curtains, barriers, and/or beam stops to protect bystanders from direct or diffuse beam hazards. Signage warning of laser operations must be posted at all entry points.

3.1.8.2 For on-site BEP service visits, the Contractor shall wear appropriate personal protective equipment (PPE) to protect themselves against laser, electrical, physical, and/or chemical hazards.

3.1.9 For components processed off-site, the Contractor shall manage all shipping and handling requirements. The Contractor is responsible for ensuring that all accessories are cleaned and returned to the BEP facility within 21 calendar days of the received date from the BEP.

3.1.10 The Contractor is responsible for the proper containment and labeling of all captured particulates and used HEPA filters. All captured waste shall be disposed under BEP's generator ID numbers for each site and turned over to the BEP for disposal. All waste must be handled as Hazardous Waste (Hexavalent Chromium) unless testing proves otherwise, and must be disposed of according to federal and local EPA regulations.

3.1.10.1 Spent filters and collected dust must be sealed in airtight, puncture-proof containers labeled as 'Hazardous Waste – Hexavalent Chromium' before being removed from the BEP workspace.

3.1.10.2 Any waste from cleaning that's done off-site from BEP properties would be the contractor's responsibility for disposal.

3.2 **Deliverables:**

3.2.1 The Contractor shall provide routine ablative laser cleaning services for four (4) IPC 1100 PVD machines based on operational hours of the PVD machines.

3.2.1.1 BEP will provide the Contractor with advance notice to schedule service visits at agreed intervals.

3.2.2 The Contractor shall submit a service report to summarize all work performed upon completion of the on-site visit.

3.2.3 Personnel performing laser ablation shall monitor exposure levels and submit all sampling results to the BEP COR within 5 days of receiving the results of the sampling.

3.2.4 The Contractor shall submit detailed Standard Operating Procedures (SOPs) covering equipment setup, pre-operational inspections, and ablation/cleaning processes.

Additionally, the Contractor shall provide comprehensive SOPs for all routine equipment maintenance tasks.

3.2.5 The Contractor shall submit a site-specific safety plan for approval prior to commencing work under this contract.

Special Delivery Instructions.
Any contractor tools or equipment that need to be shipped to the BEP ahead of service visit must be labeled "Attention: Office of Engraving". The contractor shall provide tracking information to the designated COR.

3.3 **Performance/ Delivery Period.** The Period of Performance will consist of one (1) 12-month base year and four (4) 12-month option years, from 30 September 2026 to 29 September 2031.

3.4 **Place/ Location of Performance/ Delivery.**
The Location of Performance shall be the BEP's DC Currency Facility (DCF) and Western Currency Facility (WCF).

- **Two (2) PVD machines located in DCF:** 301 14th Street SW, Washington DC, 20228
- **Two (2) PVD machines located in WCF:** 9000 Blue Mound Rd, Fort Worth TX, 76131

3.5 **Special Requirements.**

3.5.1 Contracting Officer Representative (COR): The (COR) will be identified by separate letter issued by the CO. The COR monitors all technical aspects of the Contract and assists in Contract administration. The COR is authorized to perform the following functions: assure that the Contractor performs the technical requirements of the contract; perform inspections necessary in connection with contract performance; maintain written and oral communications with the Contractor concerning technical aspects of the contract; issue written interpretations of technical requirements, including Government drawings, designs, specifications; monitor Contractor's performance and notifies both the CO and Contractor of any deficiencies; coordinate availability of government furnished property, and provide site entry of Contractor personnel. A letter of designation issued to the COR, a copy of which is sent to the Contractor, states the responsibilities and limitations of the COR, especially with regard to changes in cost or price, estimates or changes in delivery dates. The COR is not authorized to change any of the terms and conditions of the Contract.

3.5.2 Physical Security: The Contractor shall be responsible for safeguarding all government equipment, information and property provided for Contractor use under this Contract. This Contract requires access into the Controlled Industrial Area of the BEP. The Contractor personnel shall recognize that BEP deals with sensitive information and other proprietary information, which are valuable, special, and unique assets. All information pertinent to BEP's information technology resources is highly sensitive and may not be released to third parties without the express, written consent of BEP. This information requires strict control procedures to preclude unauthorized disclosure or dissemination. Information pertinent to personnel is protected from unauthorized disclosure under the provisions of the Privacy Act of 1974 (5 U.S.C. 552a). Contractor personnel shall not divulge, disclose, or communicate

in any manner, any information to any third party without prior written consent of the BEP. Contractor personnel shall protect information and treat it as strictly confidential and will abide by the security requirements of BEP. A violation of this paragraph shall be a material violation of this Contract. Should the Contractor receive or suspect they have learned of sensitive or classified information, the Contractor shall identify and report suspicions to the COR.

Contractor personnel performing work under this Contract shall be subjects of background investigations, conducted by BEP's Office of Personnel Security, prior to start of work under this Contract. Visiting foreign nationals must provide a copy of their passport 14 days in advance of their visit to the COR to receive security clearance to enter the BEP.

Contractor personnel performing work under this contract must adhere to BEP Security protocols and the direction of BEP police officers. All Contractors shall be escorted by BEP personnel at all times during their visit.

3.5.3 Identification of Contractor Employees: All contract personnel attending meetings, answering Government telephones, and working in other situations where their Contractor status is not obvious to third parties are required to identify themselves as such to avoid creating an impression in the minds of members of the public that they are Government officials. They must also ensure that all documents or reports produced by Contractors are suitably marked as Contractor products or that Contractor participation is appropriately disclosed. All Contractor personnel shall clearly identify themselves as a Contractor and shall be required to wear identification (ID) badges in a visible location on the front of exterior clothing, above the waist, (except when safety or health reasons prevent such placement). ID badges shall be worn at all times when performing work. ID badges shall have an identification picture, and shall state the name of the individual and the company they represent. Contractor personnel are prohibited from possessing weapons, firearms or ammunition, on themselves or within their Contractor-owned or privately owned vehicle while on BEP premises.

3.5.4 Organizational Conflict of Interest: Contractor and subcontractor personnel performing work under this Contract may receive, have access to or participate in the development of proprietary or source selection information (e.g., cost or pricing information, budget information or analyses, specifications or work statements, etc.) or perform evaluation services which may create a current or subsequent Organizational Conflict of Interests (OCI) as defined in FAR Subpart 9.5. The Contractor shall notify the CO immediately whenever it becomes aware that such access or participation may result in any actual or potential OCI and shall promptly submit a plan to the CO to avoid or mitigate any such OCI. The Contractor's mitigation plan will be determined to be acceptable solely at the discretion of the CO and in the event the CO unilaterally determines that any such OCI cannot be satisfactorily avoided or mitigated, the CO may affect other remedies as he or she deems necessary, including prohibiting the Contractor from participation in subsequent contracted requirements which may be affected by the OCI.

3.5.5 NON PERSONAL SERVICE STATEMENT**:** Contractor employees performing services under this Contract will be controlled, directed, and supervised at all times by management personnel of the Contractor. Contractor employees will perform their duties independent

of, and without the supervision of, any Government official or other Government Contractor. The tasks, duties, and responsibilities set forth in this Contract may not be interpreted or implemented in any manner that results in any Contractor employee creating or modifying Federal policy, obligating the appropriated funds of the United States Government, overseeing the work of Federal employees, providing direct personal services to any Federal employee, or otherwise violating the prohibitions set forth in Parts 7.5 and 37.1 of the Federal Acquisition Regulation (FAR). The Government will control access to its facility and will perform the inspection and acceptance of the completed work.

3.5.6 Environmental, Health, and Safety**:** Contracted services must be performed in a manner consistent with all EHS federal regulations, standards, and BEP policies (75B-07.0-06). Any proposed repairs should also adhere to all pertinent EHS requirements intended for large equipment purchases from the latest version of the EMS document 75B-07.0-06.

SECTION IV: Applicable Documents

4.1 All Contractors must comply with the requirements and procedures established through the BEP Environmental, Health, and Safety (EHS) document(s): 75D-07.0-04 EHS Contractor Requirements

SECTION V: Requirements for Handling Sensitive, Classified, and/or Proprietary Information

Not applicable.

SECTION VI: Government Furnished Resources and Information

6.2 The BEP shall provide the Contractor access to PVD machines and all related accessories for inspection and cleaning purposes.

ATTACHMENT 1: PVD Shield and Chamber Parts

REFERENCES:

(a) 29 CFR 1910.1000 Table Z-1 (Limits for Air Contaminants)
(b) American Conference of Governmental Industrial Hygienists. 2024 TLVs and BEIs Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices.
(c) National Institute for Occupational Safety & Health (NIOSH). NIOSH Pocket Guide to Chemical Hazards. Most current: Pocket Guide to Chemical Hazards | NIOSH | CDC