



Applied Systems & Technology Transfer, LLC

GSA Schedule MAS Consolidated
SIN 333249
3D Printing and Additive
Manufacturing Solutions

GSA Contract No. GS-03F-108DA

Applied Systems & Technology Transfer
Youngstown, OH

Contract Period of Performance:
5/27/2016 to 5/26/2026

POC Details:

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Executive Summary

Applied Systems & Technology Transfer (AST2) was awarded a contract under General Services Administration (GSA)'s Multiple Award Schedule (MAS). The Schedule includes a number of additive manufacturing (AM), also known as 3D printing, and ancillary equipment including subtractive equipment, prototyping laboratories, professional services, training programs, and spare parts. Prototyping laboratories are designed to work as stand-alone full-service facilities and can be customized to meet individual customer requirements. Schedule also provides discounts from commercial price list and volume discounts.

AST2's primary business focus is professional services related to prototyping, maintenance and sustainment; in particular for workforce training for AM design and manufacture. AST2 has teamed with Robert C Byrd Institute (RCBI) for Advanced Manufacturing and developed a multi-tiered training and certification program (T&CP). The program leverages virtually unlimited training content available on Society of Manufacturing Engineers (SME)' Tooling U and other training developed under DARPA's MENTOR and other programs. T&CP is an apprenticeship program, integrates web-based training and virtual, instructor-led training to make it accessible to anyone with access to internet, and leads to Certification at all levels with final Certification as the Industry Standard AM Technician (pending approval by the Department of Labor). Members leverage on-line training to acquire basic skills prior to in-person and supervisor-led training for cost-effectiveness.

Products and services offered under the MAS are summarized in this document.

Contract duration: May 27, 2016 to May 26, 2026

Contract Terms and Conditions: Please see Appendix A.



1. Product Descriptions

Additive manufacturing requires a number of ancillary equipment, particularly for prototype design and manufacturing purposes. Tables 1 through 9 provide a listing of all items offered by AST2 for this purpose.

Individual Tables are summarized below.

- Table 1: 3D Printing Equipment
- Table 2: 3D Printing Supplies
- Table 3: Other Prototyping equipment
- Table 4: 3D Scanners
- Table 5: IT equipment for design, integration and networking
- Table 6: Design software
- Table 7: Fab Labs
- Table 8: Tools including hand tools
- Table 9: Supplies including personal protection equipment
- Table 10: Test equipment



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Table 1 3D Printing Equipment

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Ultimaker	Ultimaker2 +	3D Printer with one hot end	3D printer, bed volume 8.75 x 8.75 x 8 in.	\$3,581.86
	Ultimaker2 + Extended	3D Printer with one hot end	Lrger 3D printer, bed volume 8.75 x 8.75 x 12 in.	\$4,171.28
	Ultimaker3 +	3D Printer with dual hot ends	Larger 3D printer, bed volume 8.75 x 8.75 x 12 in.	\$4,171.28
	Ultimaker3 + Extended	3D Printer with dual hot ends	Dual Extrusion 3D printer, bed volume 8.75 x 8.75 x 8 in.	\$5,123.43
	Maintenan ce Kit	Set of spare parts	Maintenance Kit	\$272.04
LulzBot	TAZ 6	3D Printer with one hot end	The LulzBot TAZ 6 3D printer is a versatile, easy to use, and highly dependable 3D printer. The TAZ 6 features an all-metal HotEnd to print Nylon, Polycarbonate, ABS, Wood, HIPS, and more	\$2,901.76
	1 Year Extended Warranty		Extended warranty	\$453.40
	2 Year Extended Warranty		Extended warranty	\$906.80
	3 Year Extended Warranty		Extended warranty	\$1,269.52



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Table 2. 3D Printing Supplies

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Keene Village Plastics	Koll PLA	Standard PLA Filament coil	1 KG, Standard PLA 10 colors, 1.75 mm and 2.88 mm Filament coil	\$36.27
	Koll PPLA	Performance PLA Filament Coil	1 KG, Performance PLA 10 colors, 1.75 mm and 2.88 mm Filament Coil	\$45.34
	Koll ABS	ABS, Filament Coil	1 KG, ABS, 10 colors, 1.75 mm and 2.88 mm Filament Coil	\$36.27
	Koll PETG	KEPG, Filament Coil	1 KG, KEPG, 10 colors, 1.75 mm and 2.88 mm Filament Coil	\$45.34
	Koll PC	Plycarbonate Filament Coil	1 KG, Plycarbonate, 10 colors, 1.75 mm and 2.88 mm Filament Coil	\$54.41
	3D Solve	Support Material	1 KG, Standard PLA 10 colors, 1.75 mm and 2.88 mm Filament	\$90.68
	Standard PLA	Filament	1 KG, Standard PLA 10 colors, 1.75 mm and 2.88 mm Filament	\$40.81
	Performance PLA	Filament	1 KG, Performance PLA 10 colors, 1.75 mm and 2.88 mm Filament	\$45.34
	ABS	Filament	1 KG, ABS 8 colors, 1.75 mm and 2.88 mm 3D Printer Filament	\$45.34
	PETG	Filament	1 KG, PETG, 7 colors, 1.75 mm and 2.88 mm 3D Printer Filament	\$45.34
	Polycarb	Filament	1 KG, Polycarbonate 6 colors, 1.75 mm and 2.88 mm Filament	\$45.34
	Nylon	Filament	1 KG, Nylon, 3 colors, 1.75 mm and 2.88 mm Filament	\$45.34
	HIPS	Filament	1 KG, High Impact Polystyrene 10 colors, 1.75 and 2.88 mm Filament	\$90.68
	Tru Bronze	Filament	1 KG, 70% Bronze + 30% PLA, 1.75 mm and 2.88 mm Filament	\$90.68
	Tru Copper	Filament	1 KG, 70% Copper + 30% PLA, 1.75 mm and 2.88 mm Filament	\$90.68
	TruWood	Filament	1 Kg Wood - 5 Tones, real wood fibers in a PLA base, 1.75mm and 2.88mm	\$54.41



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Table 2. 3D Printing Supplies (Cont.)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Ultimaker	PolyPlus	PolyMkaer PLA filament	750g PLA filament (multiple colors)	\$45.34
LulzBot	Enclosure	Taz 6 Enclosure	Taz 6 Enclosure	\$362.72



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Table 3. Other Prototyping Equipment

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
ShopBot (or equal)	10199	CNC Router, Ventilated and Anchored	Desktop D2418 router including spindle, enclosure and tool bits	\$9,974.81
ShopBot	18001	CNC Router, larger	D3624; provides much larger footprint	\$11,788.41
Centroform	EZForm SV 1217	Vacuum Former	Vacuum forming machine for plastics up to 1/4-in. and 12" by 17" forming area	\$1,768.26
HFT (Harbor)	60696	Abrasive blasting	110 lb pressurized abrasive blaster with dust collector and media (50 lbs)	\$226.70
Roland	MDX-40A	CNC Milling Machine	High accuracy Roland CNC MDX-40A mill	\$8,523.93
Roland	ZCL-40A	Rotary axis unit	Rotary axis unit for Roland CNC MDX-40A	\$4,171.28
Roland	SRM20	CNC Milling Machine	Roland CNC SRM20 mill	\$4,896.73
Roland	VersaStudio BN-20	Vinyl cutter, printer	Integrated printing and cutting in a 20-inch desktop inkjet including a supply of ink cartridges and print materials	\$10,881.61
Roland	CAMM GS-24	Vinyl cutter	The GS-24 leverages its completely re-designed cutting carriage and blade holder, accepting a wide range of materials (50 to 700mm wide). Vinyls. Paint mask. Twill. Heat transfer. Sandblast material.	\$2,267.00



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Table 3. Fabrication Equipment (continued)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Shopbot	PRSalph AGANTRY	Large (96 x 48) CNC Router	Alpha Gantry Details: 10632 - Table 96-48-8 002734 - Gantry 48 002742 - YZ Car 8" Z 12573 - HSD 2.2HP 220V 1PH PRS 40384 - CSxAR 4 Mtr 1Spd 2.2-3HP, 220V, 1Ø 17564 - Rail Set X96 PRS 004872 - Spring Assist Kit 2hp/Router 15224 - Dust Skirt PRS Front Spindle 001996 - Kit Push Bar 48 004991 - User Assembly Kit- Alpha. Also includes router bit starter kit, crating and shipping charges	\$30,241.81
Epilog Laser	M2 Fusion 40, 75W	75 W CO2 Laser	75W CO2 Laser system including Air Assist Pump, Spare parts kit, Rotary Attachment (for etching with round objects), Filtration system	\$43,073.05
Epilog Laser	M2 Fusion 40, 75W	75 W CO2 Laser	75W CO2 Laser system including Air Assist Pump, Spare parts kit, Rotary Attachment (for etching with round objects), Filtration system	\$43,073.05
Epilog Laser	Rotary	Rotary Rim Att.	Rotary Rim Att for Epilog Lasers	\$3,173.80



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Table 4: 3D Scanners

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Matter and Form	3D Scanner	Laser Scanner	Simple 3D scanner	\$589.42
HP Pro S3 (David)	SLS-2	Portable Scanner	Simple 3D scanner	\$3,627.20
HP Pro S3 Bundle	SLS-2	Portable Scanner	Includes scan lever, dual camera, turn table and calibration panels	\$5,894.21
3DSYSTEMS	Sense	3D Scanner	3D Scanner	\$498.74
Artec	Eva	3D Scanner	Handheld 3D Scanner	\$18,952.14
	Eva Bundle	3D Scanner, software and accessories	The Eva scanner bundle includes the scanner, 1-year license to Artec Studio software (professional), Artec battery, hard case, bag, USB cable and power supply	\$21,019.65
	Eva Lite	Eva Lite scanner	Simple 3D scanner	\$9,380.35
	Eva Lite bundle	3D Scanner, software and accessories	The Eva scanner bundle includes the scanner, 1-year license to Artec Studio software (professional), Artec battery, hard case, bag, USB cable and power supply	\$11,447.86
	Space Spider	3D Scanner	Advanced 3D Scanner	\$23,738.04
	Eva and Space Spider	Two 3D scanners	Combination of both handheld and advanced 3D scanners	\$34,267.00
	EVA Lite 3-yr Maint.	Maintenance Contract	Optional for maintenance over 3-years at the time of scanner purchase	\$1,407.05
	EVA 3-yr Maintenance	Maintenance Contract	Optional for maintenance over 3-years at the time of scanner purchase	\$2,842.82
	Apace Spider 3-yr Maint.	Maintenance Contract	Optional for maintenance over 3-years at the time of scanner purchase	\$3,560.71
	Scanner Special Maintenance	One time Maintenance of scanner	Service includes general check-up of the scanner, internal cleaning, recalibration, QA and pakcing. Shipping costs to and from Luxembourg are additional. Standards maintenance does not restart or extend warranty	\$3,828.72



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Table 5. IT Equipment for Design, Integration and Networking

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	TDFL-1	Digital Integration Equipment	Integrate all digital fabrication equipment into a local area network with virtual presence to enable users to seamlessly design, collaborate and manufacture. 6 sets of Intel processors, video and audio equipment, WiFi capability, Windows 10 OS. 10 STORM sensors for individual fab eqpt	\$11,788.41
AST2	TDFL-2	Local Area Network	A local area network and server integrating all equipment, allow storage and sharing of files for design, collaboration and manufacturing	\$3,627.20
AST2	TDFL-3	Design Station	Design Station (4 40" HD monitors and mounting equipment) for collaborative design and white boarding; will be hooked up with lap tops (from TDFL-4)	\$1,813.60
Commercial Vendor (Best Source)	TDFL-4	High power laptops Windows OS for design workstations and other uses	High power lap top computers with Windows OS for design workstations and other uses	\$906.80
Best Source	Laptop computer	8th Generation I7, 6 Core Lap Top Computer	8th Generation Intel I7, 4.1 GHz 6-Core Laptop with 32 GB RAM and NVIDIA GeForce for 3D Scanning and CAD	\$2,720.40



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Table 6. Design Software

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AutoDesk	9701-1001765	Product Design and Manufacturing Collection - includes CAM)software like Autodesk Inventor. Vertical solution AutoCAD, Inventor, Navisworks Manage, 3ds Max, and AutoCAD Mechanical	Three year renewal of a previous license for Product Design Suite that can be accessed by multiple users; however, only one user can use the software at a time.	\$10,273.50
	9701-1001780		One year license for Product Design Suite that can be accessed by s single user.	\$2,202.38
	9701-1001773		Two year license for Product Design Suite that can be accessed by s single user.	\$4,976.22
	9701-1001776		Three year license for Product Design Suite that can be accessed by s single user.	\$7,464.34
	9701-1001776		One year renewal of a prior license for Product Design Suite that can be accessed by s single user.	\$2,632.58
	9701-1001776		Two year renewal of a prior license for Product Design Suite that can be accessed by s single user.	\$5,265.17
	9701-1001776		Three year renewal of a prior license for Product Design Suite that can be accessed by s single user.	\$7,897.75
	Fusion 360		Fusion 360	One- year license for Fusion 360 that can be accessed by s single user.
	Fusion 360	Fusion 360	Two- year license for Fusion 360 that can be accessed by s single user.	\$680.10



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Table 6. Design Software (Cont)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Artec	Artec Studio Software Professional	Scanner software	1-year license to Artec scanners software	\$574.31
	Artec Studio Software Professional	Scanner software	5-year license to Artec scanners software	\$2,297.23
	Artec Studio Software Ultimate	Scanner software	1-year license to Artec scanners plus 3rd party scanners software	\$1,148.61
	Artec Studio Software Ultimate	Scanner software	5-year license to Artec scanners plus 3rd party scanners software	\$4,594.46
	DezignWorks	Scanner software	1-year license to Scanner/CAD software	\$7,652.64
Artec/3D Systems	GeoMagic Design X software	Scanner software	1-year license to Scanner/CAD software	\$19,095.72
	Geomagic Control Software	Scanner software	1-year license to Scanner/CAD software	\$15,219.14
	Geomagic Wrap Software	Scanner software	1-year license to Scanner/CAD software	\$9,093.20
	Geomagic for SolidWorks	Scanner software	1-year license to Scanner/CAD software	\$7,561.71
	Dangle for Software	Scanner software	Geomagic software provided with Dongle Option	\$574.31
	Geomagic for SolidWorks Renewal	License renewal	1-year renewal license to Geomagic for SolidWorks	\$1,148.61
	Geomagic Design X Renewal	License renewal	1-year renewal license to Geomagic for Design X	\$2,871.54
	Geomagic Control X Renewal	License renewal	1-year renewal license to Geomagic for Control X	\$2,297.23



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Table 7. Trailers

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Millenium Trailers	34-TTA3 (customized)	Custom Trailer (Millenium) 34'x8.5'x10' Bumper pull. Custom designed for fab lab use with insulation, sound, lighting and HVAC)	AC/Heat, electrical systems with 50 amp circuit, 12 V battery, work benches and furniture for design work station and fab equipment. Cabinets for storage. Also includes large projector screen and projector.	\$32,644.84
Falcon	TDFL-O-1 (customized)	40' Con-X	40' CON-X container, custom modified and equipped for use as a fab lab. Includes work benches and furniture for design work station and all fab equipment. Cabinets for storage. Also includes large projector screen and projector.	\$36,272.04
Falcon	P-20FO-ST (customized)	20-ft customized trailer	Customized 20-ft Con-X container (Falcon). Custom designed for fab lab use with insulation, sound, lighting and HVAC)	\$27,204.03



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Table 8. Hand Tools

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Pittsburgh (Harbor)	61591	Hand Tools for Fab Lab	105-pc tool kit with four drawer chest	\$136.02
Pittsburgh (Harbor)	67062	Electronic tool set	16-in-1 electronic repair kit	\$18.14
Chicago Electric (Harbor)	61170	Soldering tools	180 W industrial soldering gun with supplies	\$45.34
Chicago Electric (Harbor)	68850	Cordless drill	18 V, 1/2" cordless drill with drill bits	\$108.82
Central Machinery (Harbor)	93012	Scroll Saw	16" variable scroll saw with blades	\$136.02
Chicago Electric (Harbor)	68696	Drumel kit	Heavy duty industrial rotary tool kit	\$36.27
Pittsburgh (Harbor)	68304	Digital Caliper	6" digital caliper with SAE and metric readings	\$36.27
Chicago Electric (Harbor)	69343	Heat gun	1500 W 12 internal heat gun	\$45.34
Centech (Harbor)	60332	Digital scale	1000 g digital scale	\$22.67
Central Machinery (Harbor)	61317	Shop Vacuum	5-Gal wet dry shop vacuum	\$90.68
Centech (Harbor)	61593	Multi-meter	11 function digital multi-meter with audible functionary	\$68.01
HFT (Harbor)	61995	Extension cord	10 ft 16 gauge extension cord	\$9.07
HFT (Harbor)	96709	Extension cord	50 ft 12 gauge triple tap ext. cord	\$54.41
HFT (Harbor)	62438	Surge Protector	6 outlet power strip	\$8.16
Pittsburgh (Harbor)	61262	Hammer	10 Oz fiberglass hammer	\$18.14
Black & Decker		Hand vacuum	9.6 V Cordless Vacuum	\$27.20
Central Forge (Harbor)	67040	Vice	6" Bench mounted vice	\$90.68
Pittsburgh (Harbor)	69242	Level	24" Aluminum level	\$27.20



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Table 9. Manufacturing Supplies and Safety Equipment

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
Elenco	CK-1000	Electronic tool kit	Electronics components (resistors, capacitors, inductors, LEDs, etc.)	\$108.82
ATD Tools (Sears)	ATD-800	Fasteners kit	Fasteners (assorted screws, bolts, nuts, brads, & nails)	\$136.02
Harbor	Various	Sandpaper	Assortment of sand paper from extra fine to coarse, 10 ea	\$90.68
Harbor	61700	1 pair saw horses	Foldable saw horses	\$49.87
Harbor	69456	10x10 canopy tent	Pop up canopy	\$90.68
Harbor	Various	Safety Glasses	Assortment of UV and impact resistant safety glasses	\$2.72
Harbor	96365	Hearing Protection	Disposable Foam Ear Plugs, box of 50	\$9.07
Harbor	94334	Ear muffs	Foldable ear muffs	\$9.97
Harbor	Various	Cotton gloves	Assortment of work gloves	\$9.07
Harbor	Various	Nitrile Disposable Gloves Powder Free,	Assortment of sizes, medium to extra-large, 100 ea	\$16.32



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Table 10. Test Equipment

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
GW Instek (Test Eqpt Depot)	GDS-1152A-U	Digital Storage Oscilloscope	150 MHz Digital Storage	\$634.76
GW Instek (Test Eqpt Depot)	AFG-2125	Function Generator, 25MHZ, sweep, AM/FM	Function Generator, 25MHZ, sweep, AM/FM	\$544.08
HFT (Harbor)	60643	Magnifying light	Fluorescent magnifying light	\$54.41
Levenhuk	DTX30	Digital microscope	USB digital microscope	\$90.68



2. Total Solution Services and Description (SIN 333249)

AST2 offers total solutions that integrate 3D printers with ancillary services and other equipment that creates a full design and manufacturing capability. These services and products include the following:

- Development of customized solutions in the selection and integration of prototyping and larger-scale 3D printing and other equipment including scanners, CNC (computer numerically controlled) mills, multi-axis machines, laser cutters, and engravers.
- Development of rapid prototyping laboratories for use in fixed locations as well as transportable systems in trailers or other standard containers used by the DoD for storage and transportation (such as wheeled trailers or ISO containers)
- Research and development services to develop new fabrication equipment or modify existing equipment for customized requirements
- Information technology services for integrating 3D printers and other ancillary equipment including cloud services
- Development and delivery of training programs for design and manufacture using 3D printers and other ancillary equipment
- Design and production of prototype equipment or limited scale units using 3D printers and other ancillary equipment

AST2 has standard equipment that it recommends for full solutions; customers can choose any or all of the equipment on the pricelist. Full solutions also include consumable supplies. AST2 can work with any customer-supplied equipment (such as a trailer or manufacturing equipment) and integrate such equipment to develop a total solution.

Please see Table 11 for prices of laboratories. Please contact AST2 for additional details including full list of equipment and supplies.

Travel will be handled in accordance with clause C-FSS-370 Contractor Tasks/Special Requirements. Costs for transportation, lodging, meals and incidental expenses are allowable subject to the limitations contained in the Federal Travel Regulations and/or Joint Travel Regulations, and will be billed to customer in accordance with JTR and company G&A costs. No fee or profit will be applied to travel costs.

2.1 Digital Fabrication Laboratory

AST2 has developed a design for a digital fabrication laboratory (DFL) to equip into a customer facility. The layout and design will be customized based on available space, storage and infrastructure in collaboration with customer staff. Equipment will be procured by AST2 and may be shipped directly to customer location by various vendors and manufacturers. AST2 staff will work with customer staff to install all equipment, integrate them as appropriate.



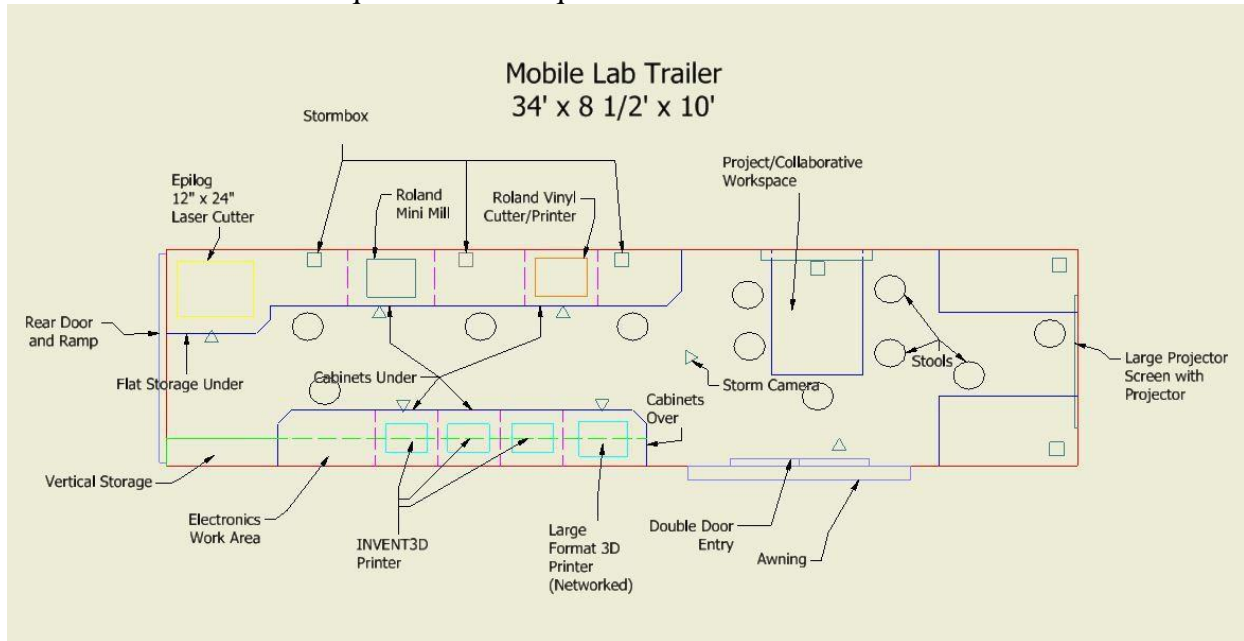
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Fabrication equipment constituting the DFL can also be assembled into a trailer (DLF-Trailer). If appropriate, some larger equipment (such as Shop Bot CNC Router) may be replaced with smaller items and other items may be stored/installed at customer facilities.

DFL includes a large number of supplies to meet most anticipated requirements.

2.1.1 Transportable Digital Fabrication Laboratory

AST2 offers a standard Transportable Digital Fabrication Laboratory (TDFL) with 3D printers and ancillary equipment. It is particularly suited for field or forward deployment by DoD for training and manufacture of desired components or replacement parts. The standard TDFL can also be customized for unique customer requirements.





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2.1.2 Mini-TDFL

AST2 also offers a smaller version of the TDFL in a 20-ft Con-X container, custom modified to function as a fabrication laboratory. It has a smaller number of equipment and capability.

2.2 3D Equipment for Field Logistics Support (3DEFLS)

AST2 developed a convenient system for field deployment of 3D printing technology. The system integrates:

- 3D printer, Lulzbot Taz 6
- 3D Scanner. Base unit comes with Artec EVA scanner. It can also be provided with Space Spider.
- Design Station. A custom, laptop with all required software. Standard unit comes with Autodesk Fusion 360. The design station can also be pre-loaded with SOLIDWORKS, Geomagic softwares (such as Geomagic for SOLIDWORKS, Wrap or DeisgnX).

The entire assembly is provided in a convenient, rugged pelican case, easy for transportation, storage, assembly and storage. Table 12 provides pricelist of DEFLS with varying options. Picture here shows 3DEFLS with standard equipment, Eva scanner and Lulzbot Taz 6.



The 3DEFLS can also be used for field training of military personnel in 3D printing, scanning, CAD, reverse engineering and related applications. AST2 may provide all the equipment for short-term field training.



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Table 11. Digital Fabrication Laboratories

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	DFL-0	Digital Fabrication Laboratory	A fully equipped, integrated and networked digital fabrication laboratory integrated at customer location.	\$248,603.90
AST2	DFL-Trailer	Digital Fabrication Laboratory with a Trailer	A fully equipped, integrated and networked digital fabrication laboratory integrated at customer location. Fabrication equipment is installed in a trailer (similar to TDFL-0) with additional equipment/supplies stored at customer facilities	\$253,476.59
Various	Fab Lab Eqpt	Common Fab Lab Equipment and Supplies	Common Fab Lab Equipment and Supplies shipped directly to customer site	\$184,559.94
AST2	TDFL-0	Transportable Digital Fabrication Laboratory	A fully equipped, integrated and networked digital fabrication laboratory.	\$173,292.28
AST2	Mini-TDFL-0	Mini-Transportable Digital Fabrication Laboratory	A Mini integrated and networked digital fabrication laboratory.	\$96,737.53



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Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	3DFFLS-Eva	3D Equipment for Field Logistis Support with Artec Eva	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sdudio Professional software and SOILDWORKS	\$31,738.04
AST2	3DFFLS-Spider	3D Equipment for Field Logistis Support with Artec Space Spider	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sdudio Professional software, SOILDWORKS and Geomagic for SOILDWORKS	\$36,272.04



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Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	3DFFLS -Eva SW	3D Equipment for Field Logistis Support with Artec Eva	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Eva scanner bundle including battery pack and 1-year license to Sstudio Professional software and SOILDWORKS	\$36,272.04
AST2	3DFFLS -Spider SW	3D Equipment for Field Logistis Support with Artec Space Spider and software	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sstudio Professional software and SOILDWORKS	\$41,712.85



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Additive Manufacturing Products and Service**

Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	3DFFLS -Spider SW DX	3D Equipment for Field Logistis Support with Artec Space Spider and software	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sdudio Professional software, SOILDWORKS and Geomagic Design X	\$60,755.67
AST2	3DFFLS -Spider SW CX	3D Equipment for Field Logistis Support with Artec Space Spider and software	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sdudio Professional software, SOILDWORKS and Geomagic Control X	\$57,128.46



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Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	3DFFLS -Spider SW Wrap	3D Equipment for Field Logistis Support with Artec Space Spider and software	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner bundle including battery pack and 1-year license to Sstudio Professional software, SOILDWORKS and Geomagic Wrap	\$51,687.66
AST2	3DFFLS -Eva Trg	3D Equipment for Field Logistis Support with Artec Eva. 6 weeks for training	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Eva scanner bundle, including battery pack and 1-year license to Sstudio Professional software. Shipping to and from pre-paid, and total duration of 6 weeks from date of shipping to return to AST2.	\$6,801.01



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Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	3DFFLS-Spider Training	3D Equipment for Field Logistis Support with Artec Space Spider; 6 weeks for training	Complete field deployable equipment for field ue of 3D printing; includes Lulzbot Ta 6 printer, a 3D scanner, Design Stations with 1-year Autodesk Fusion 360 and a APLM Filament Roll. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up. Comes with Artec Space Spider scanner. Shipping to and from pre-paid, and total duration of 6 weeks from date of shipping to return to AST2.bundle including battery pack and 1-year license to Sstudio Professional software.	\$7,707.81
AST2	TACFAB-LT Produce	3D Equipment for Field Logistis Support to produce components	Field deployable equipment for field ue of 3D printing; includes Lulzbot Taz Workhorse printer, Design Station, one APLM Filament Roll and other consumables. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up.	\$10,000.00



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Table 12. 3D Equipment for Field Logistics Support

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	TACFA B-LT Design	3D Equipment for Field Logistis Support to produce components	Field deployable equipment for field ue of 3D printing; includes Lulzbot Taz Workhorse printer, Design Station, SolidWorks Basic with One-year license, one APLM Filament Roll and other consumables. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up.	\$14,500.00
AST2	TACFAB -LT Create	3D Equipment for Field Logistis Support to produce components	Field deployable equipment for field ue of 3D printing; includes Lulzbot Taz Workhorse printer, Design Station, SolidWorks Basic with one-year license, Geomagic for Soildworks with a one-year license, Artec Space Spider 3D Scanner, Studio software with life-time license, one APLM Filament Roll and other consumables. Equipment provided in a rugged clamshell container for transportation, storage and easy set-up.	\$50,000.00



3. Education and Workforce Training (SIN 333249)

AST2 develops and offers a number of training programs to develop critical skills required to design and manufacture items using 3D printers. One-day or multi-day professional development or boot camps are organized by AST2 to train participants in basic design processes and in assembling a printer. AST2 can organize additional boot camps that are varying in duration, up to one week. Training programs are also offered at customer locations on design thinking, printer curriculum, and design basis analysis. The programs range in one to five days in duration, can be customized, and are charged on a per day basis for labor plus any other appropriate direct and travel costs. All prices are based on online training via internet. Additional charges apply for travel to customer site for additional labor and travel costs.

Please see Table 13 for training services. All training programs can be provided at the customer location that includes 1 or 2 instructors for the duration that accommodates 5 students or more; additional cost for travel time and allowable travel expenses and local per diem rates.

AST2 also supports customers with operation, maintenance and training support at customer locations. Labor rates are provided in Section 6; travel costs are included in accordance with JTR.



**GSA Contract No. GS03F108DA; SIN 333249
Additive Manufacturing Products and Services**

Table 13. Training Programs

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	TR-1	Printer Curriculum	1-day on line training by an instructor of printer curriculum explaining the functionality of 3D printer parts, programming, calibration, maintenance and use. Includes lecture material. Up to 20 users.	\$1813.60
AST2	TR-2	Design Thinking for Additive Manufacturing	2-day on line training by an instructor on the critical thinking processes for design and additive manufacturing. Includes lecture material. Up to 20 users.	\$3264.48
AST2	TR-3	Design Basis Analysis	3-day on line training by an instructor on design basis including the development of requirements, skill analysis, development of alternative design and manufacturing solutions, formulation and risk analysis of alternatives, development of optimal solution, documentation of all analysis for peer review and analysis. Includes lecture material. Uses a typical challenge experienced by DoD as an exercise. This is a problem-solving exercise with participation. Up to 20 users.	\$4534.01
AST2	TR-4	Design Basis Analysis; Customer Site Workshop	This program is based on training developed by AST2 under DARPA MENTOR2 program and complemented through a NAVAIR program. 3-day on line training by an instructor on design basis including the development of requirements, skill analysis, development of alternative design and manufacturing solutions, formulation and risk analysis of alternatives, development of optimal solution, documentation of all analysis for peer review and analysis. Includes lecture material. Uses a typical challenge experienced by DoD as an exercise. This is a problem solving exercise with participation. Cost does not include travel and per diem costs.	\$10,881.61
AST2	TR-5	Design Thinking for Additive Manufacturing; Customer Site Workshop	This program is based on training developed by AST2 under DARPA MENTOR2 program, and complemented through a NAVAIR program. 3-day workshop led by a 2-member team to learn all about 3D printing, printer maintenance and operations, and how to develop practical solutions to problems via design and 3D printing. Includes team projects, peer review and hands on production using 3D printers. Cost does not include travel and per diem costs.	\$10,881.61



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Table 13. Training Programs (Cont)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	TR-6	Combined/DBA T and DTA Workshop at Customer Site.	This program is based on training developed by AST2TIES and Fab Foundation under DARPA MENTOR2 program, and complemented through a NAVAIR program. Weeklong training, in a hands-on projects workshop, by 2-member instructors on to learn all about 3D printing, printer maintenance and operations, and how to develop practical solutions to problems via design and 3D printing. Program starts with printer basics, maintenance and operations, and follows into review of engineering processes including the development of requirements, skill analysis, development of alternative design and manufacturing solutions, formulation and risk analysis of alternatives, development of optimal solution, and documentation. Uses a typical challenge experienced by DoD as an exercise, and participants (in small teams) conceive solutions and proceed to design/analysis, brain storming, presentations, solution finalization and production using rapid prototyping equipment. Cost does not include travel and per diem costs.	\$12,695.21
AST2	TR-7	TDFL Training	This program is based on training developed by AST2 under DARPA MENTOR2 and NAVAIR programs.5-day training program on the use of all fabrication equipment, design basics, digital integration, and hands-on projects on the use of equipment provided with Transportable Digital Fabrication Laboratory. Requires the use of TDFL (or similar facilities) at customer location. Cost does not include travel and per diem costs.	\$12,695.21
AST2/ TIES	TR-8	Tools and Techniques; Customer Site Workshop	This program is based on modules developed by TIES and Fab Foundation under DARPA MENTOR2 program. In this first week-long course, participants are introduced to the basics of design and the basic skills needed to work with the design programs. Participants learn all the Fab Lab machines to the point where they can operate them with supervision. Program includes development of an understanding of the culture surrounding Fab Labs, engaging in and document a design thinking process, engaging in digital design, and running Fab Lab machines with supervision. Cost does not include travel and per diem costs.	\$12,695.21



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Additive Manufacturing Products and Services**

Table 13. Training Programs (Cont)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2/ TIES	TR-9	Physical Design; Customer Site Workshop	This program is based on modules developed by TIES and Fab Foundation under DARPA MENTOR2 program. In this second week-long course, participants choose a design challenge based on a kit to work on. They are introduced to project managements and project evaluation processes as a part of this instruction. Participants engage in and document a design thinking process, in digital design and fabrication (run Fab Lab machines without supervision), manage an engineering design project with support. Participants also learn about and apply knowledge of Physical Design to improve a base kit to better fit a design challeng, decide which fabrication process is appropriate for a given task, and make design choices to solve a defined problem. Cost does not include travel and per diem costs.	\$12,695.21
AST2/ TIES	TR-10	Mechanical Design; Customer Site Workshop	This program is based on modules developed by TIES and Fab Foundation under DARPA MENTOR2 program. In this third week-long course, participants learn about the Machines that Make Machines (MTM) project and construct the associated MTM kit. Participants then leverage knowledge of mechanical and kinematic designs to create their own machine over the course of the week. Throughout the week, participants deepen their project management and project evaluation skills as a part of this instruction. Cost does not include travel and per diem costs.	\$12,695.21
AST2/ TIES	TR-11	Mechanical Design; Customer Site Workshop	This program is based on modules developed by TIES and Fab Foundation under DARPA MENTOR2 program. In this fourth week-long course, participants engage in an individual project of their own design. Participants develop and pitch their project idea before the week starts and then build it out in the span of the week. Instructors act as facilitators and innovation coaches. Cost does not include travel and per diem costs.	\$12,695.21



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Additive Manufacturing Products and Services**

Table 13. Training Programs (Cont)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2/RCBI	TR-12-3	Tooling U	3-month single member access to AM and Adv Mfg trg on SME's ToolingU	\$453.40
AST2/RCBI	TR-13-12	Tooling U	12-month single member access to AM and Adv Mfg trg on SME's ToolingU	\$906.80
AST2	TR-14	AM Curriculum	Web-based training on 3D printer set-up, operation and maintenance	\$0.00
AST2	TR-15	3D Scanner Curriculum	Web-based training on the 3D scanner set-up, use and file management	\$0.00
AST2	TR-16	AM Integrated Projects	A variety of hands-on projects for learning 3D printing. Projects are of varied complexity and require 24 to 160 hours. Examples include production of a broken rudder control lever and prosthetic ear.	\$0.00
AST2	TR-17	CAD Basics and Intermediate	Web-based CAD training with hands-on projects	\$0.00
AST2/RCBI	TR-18	Establish AM Technician Apprenticeship Program	AM Technician program is a national standard (pending DOL approval) established in collaboration with RCBI, SME and America Makes. We will work with local management to customize the program for their mission requirements and train the trainers for about 80 hours.	\$9,068.01
AST2/RCBI	TR-19	Apprenticeship Fee	Fee for annual registration into DOL apprenticeship program	\$1,360.20
AST2	TR-20	Training Bundle	Dell workstation with LabView one year license	\$8,050.00



5. Professional and Engineering Services (SIN 333249)

AST2 offers professional and engineering services supporting 3D printing and ancillary services. Services include design and design support; training and education; 3D printing and ancillary post-printing processes, related other manufacturing including prototyping and engraving; assembly and fabrication of full solution prototyping or manufacturing equipment; and repair and maintenance.

Table 14 provides prices for Services. AST2 also supports customers with operation, maintenance and training support at customer locations. Labor rates are provided below; travel costs are included in accordance with JTR.



**GSA Contract No. GS03F108DA; SIN 333249
Additive Manufacturing Products and Services**

Table 14. Professional and Engineering Services

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	PES-1	Executive/Program Manager	Advanced degree in engineering or business plus at least 10 years management experience	\$109.75
AST2	PES-2	Senior Engineer	Degree in engineering plus a minimum of 5 years engineering; or MS in engineering with a minimum of 3 years exp	\$89.05
AST2	PES-3	Logistics/Junior Engineer	Degree in engineering or BS in nonengineering with at least 5 years exp or equivalent quals	\$50.30
AST2	PES-4	Technology Developer	Degree in computer science or a related discipline with experience in programming and networking	\$57.16
AST2	PES-5	Senior AM SME	PhD in Engineering with a minimum of 5 years experience in additive manufacturing	\$186.80
AST2	PES-6	AM SME	PhD in Engineering with a minimum of 5 years experience in additive manufacturing	\$168.12



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Table 14. Professional and Engineering Services (Cont)

Mfr. Name	Mfr. Part No.	Name & Description	Specification	Schedule Price with IFF, \$
AST2	PES-7	AM Specialist	Advanced degree in engineering plus a minimum experience of 2 years in Additive Manufacturing technology development	\$102.74
AST2/TIES	PES-8	Senior Maker Professional	BS Degree with a minimum of 5 years experience in design/prototyping	\$126.09
AST2/TIES	PES-9	Maker Professional	HS with a minimum of 5 years experience in design/prototyping	\$93.40
AST2/TIES	PES-10	STEM Specialist	BS Degree in science or eng with a minimum of 15 years experience in design/prototyping, STEM programs	\$233.50
Nonexempt				
AST2	PES-11	Lab Staff/Technician	High school diploma or 5 years related experience	\$34.29
AST2	PES-12	Administrative support	High school diploma or 2 years office experience	\$36.69
AST2/TIES/RCBI	PES-13	Project Support Specialist	Associate Degree with a minimum of 3 years experience.	\$93.40
AST2/RCBI	PES-14	Training Specialist	Minimum 5 years trg exp in adv mfg	\$102.74
AST2/RCBI	PES-15	5-Axis Programmer	Minimum 3 yrs exp with 5-axis CNC Mills	\$149.44
AST2/RCBI	PES-16	3-Axis Programmer	Minimum 3 yrs exp with 3-axis CNC Mills	\$102.74



Appendix A

Terms and Conditions

1a. Table of awarded special item number(s) with appropriate cross-reference to item descriptions and awarded price(s): [333249 3D Printing and Additive Manufacturing Solutions](#)

1b. Identification of the lowest priced model number and lowest unit price for that model for each special item number awarded in the contract. This price is the Government price based on a unit of one, exclusive of any quantity/dollar volume, prompt payment, or any other concession affecting price. Those contracts that have unit prices based on the geographic location of the customer, should show the range of the lowest price, and cite the areas to which the prices apply: [N/A](#)

1c. If the Contractor is proposing hourly rates, a description of all corresponding commercial job titles, experience, functional responsibility and education for those types of employees or subcontractors who will perform services shall be provided. If hourly rates are not applicable, indicate “Not applicable” for this item:

[Please see Table 14.](#)

2. Maximum order: [\\$750,000](#)

3. Minimum order: [\\$250](#)

4. Geographic coverage (delivery area): [CONUS. Contact contractor for other areas](#)

5. Point(s) of production (city, county, and State or foreign country):

[Applied Systems & Technology Transfer, LLC](#)
[241 W Federal St](#)
[Suite 505](#)
[Youngstown, OH 44503-1207](#)

6. Discount from list prices or statement of net price:
[Prices shown herein are net to the Government.](#)

Quantity discounts:

[Transportable Digital Fabrication Laboratory: 2% => 5](#)

[3D Filament: 10% => 12 of same color](#)

[Optional Training Programs: 10% > 5 students, 20% > 10 students](#)



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3. Prompt payment terms. Note: Prompt payment terms must be followed by the statement "Information for Ordering Offices: Prompt payment terms cannot be negotiated out of the contractual agreement in exchange for other concessions.":

[Contact Contractor for specifics](#)

9a. Notification that Government purchase cards are accepted at or below the micro-purchase threshold: [Yes](#)

9b. Notification whether Government purchase cards are accepted or not accepted above the micro-purchase threshold: [Not accepted above micro-purchase threshold](#)

10. Foreign items (list items by country of origin): [Please see listing for individual items](#)

11a. Time of delivery. [15 days to 6 months](#)

11b. Expedited Delivery. The Contractor will insert the sentence "Items available for expedited delivery are noted in this price list." under this heading. The Contractor may use a symbol of its choosing to highlight items in its price lists that have expedited delivery: [Contact contractor](#).

11c. Overnight and 2-day delivery. The Contractor will indicate whether overnight and 2-day delivery are available. Also, the Contractor will indicate that the schedule customer may contact the Contractor for rates for overnight and 2-day delivery: [Based on costs by preferred shipping company \(UPS or Federal Express\)](#).

11d. Urgent Requirements. The Contractor will note in its price list the "Urgent Requirements" clause of its contract and advise agencies that they can also contact the Contractor's representative to affect a faster delivery:

[Contact contractor](#).

11.e Drop Shipment. Equipment and supplies may be directly shipped from manufacturers and/or vendors to customer point of contact (POC) directly, particularly for items such as the Digital Fabrication Laboratories, for storage prior to installation and integration. AST2 will coordinate with customer POC and manufacturers to meet customer schedules and other commitments, and as close as possible to the required dates. AST2 does not anticipate any special storage requirements, and normal warehouse type storage shall be adequate.

12. F.O.B. point(s):

[Origin for DFL, TDFL, mini TDFL and trailer](#)
[Destination for other items](#)

13a. Ordering address(es):

[Applied Systems & Technology Transfer, LLC](#)



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241 W Federal St
Suite 505
Youngstown, OH 44503-1207

13b. Ordering procedures: For supplies and services, the ordering procedures, information on Blanket Purchase Agreements (BPA's) are found in Federal Acquisition Regulation (FAR) 8.405-3.

14. Payment address(es):

Applied Systems & Technology Transfer, LLC
241 W Federal St
Suite 508
Youngstown, OH 44503-1207

15. Warranty provision:

15.a AST2 manufactured Equipment: AST2 provides limited one-year warranty of products manufactured by AST2. AST2 equipment is designed for easy maintenance and parts that require maintenance are interchanged. Please see Appendix B for details.

15.b Other Manufacturers' Equipment: Equipment manufactured by others, including those that are integrated into TDFL and mini-TDFL, are covered by the original manufacturers of the equipment. AST2 will pass the warranty to customers, and customers shall complete warranty registration as required. AST2 will support customers in coordinating registrations and for warranty services.

16. Export packing charges, if applicable: [Contact contractor](#)

17. Terms and conditions of Government purchase card acceptance (any thresholds above the micro-purchase level): [Contact contractor](#)

18. Terms and conditions of rental, maintenance, and repair (if applicable):
[Contact contractor](#)

19. Terms and conditions of installation (if applicable):
[Contact contractor](#)

20. Terms and conditions of repair parts indicating date of parts price lists and any discounts from list prices (if applicable):
[Contact contractor](#)

20a. Terms and conditions for any other services (if applicable): [Contact contractor](#)



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21. List of service and distribution points (if applicable): [Contact contractor](#)

22. List of participating dealers (if applicable). [N/A](#)

23a. Preventive maintenance (if applicable):
[Contact contractor](#)

23b. Consumable Supplies
[Cost of consumables such as plywood, acrylic are included in TDFL and Mini-TDFL.](#)

24a. Special attributes such as environmental attributes (e.g., recycled content, energy efficiency, and/or reduced pollutants): [Contact contractor](#)

24b. If applicable, indicate that Section 508 compliance information is available on Electronic and Information Technology (EIT) supplies and services and show where full details can be found (e.g. contractor's website or other location.) The EIT standards can be found at: www.Section508.gov/.

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25. Data Universal Number System (DUNS) number: [964921063](#)

26. Notification regarding registration in Central Contractor Registration (CCR)
Database: [Registered and current](#)

27. Travel Costs: Travel will be handled in accordance with clause C-FSS-370 Contractor Tasks/Special Requirements. Costs for transportation, lodging, meals and incidental expenses are allowable subject to the limitations contained in the Federal Travel Regulations and/or Joint Travel Regulations (JTR), and will be billed to customer in accordance with JTR and company G&A costs. No fee or profit will be applied to travel costs.

28. Replacements: AST2 may replace some of the items with equivalent items based on market factors. AST2 will coordinate any required replacements (for non-consumable items) with customer representatives to ensure that replacements are acceptable.

[Contact contractor for additional products, training programs and services available under Schedule](#)