Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army												Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	281.637	415.846	40.597	-	40.597	42.661	44.700	52.667	50.502	0.000	928.610
BK8: *Robotics for Engineer Operations Adv Tech*	-	5.994	6.314	3.801	-	3.801	4.548	6.542	8.240	3.232	0.000	38.671
BK9: *Ground System Fluids and Fuels Adv Tech*	-	1.668	2.301	6.983	-	6.983	5.594	5.083	5.036	5.072	0.000	31.737
BL3: *Explosives Forensics Advanced Technology*	-	2.020	2.214	2.256	-	2.256	2.280	2.282	2.284	2.309	0.000	15.645
BL6: *Expedient Passive Protection Advanced Technology*	-	0.476	3.613	6.025	-	6.025	5.854	4.181	4.809	5.609	0.000	30.567
BL8: *Power Projection in A2AD Environments Adv Tech*	-	2.862	4.948	3.317	-	3.317	4.124	2.677	3.727	4.413	0.000	26.068
BM1: *Protection from Advanced Weapon Effects Adv Tech*	-	5.654	4.856	4.937	-	4.937	5.132	5.336	5.531	3.972	0.000	35.418
BO3: *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*	-	259.100	383.300	-	-	-	-	-	-	-	0.000	642.400
CJ9: *Ground Enabling University Adv Development*	-	3.863	3.896	4.214	-	4.214	6.036	6.137	6.140	6.207	0.000	36.493
CV5: *Engineer Enablers Maneuver, LOG, & Sustainment Adv*	-	-	2.539	3.313	-	3.313	4.808	2.700	5.557	5.532	0.000	24.449
DA2: *SAFR Alternatives for Readiness Advanced Tech*	-	-	1.865	2.926	-	2.926	4.285	9.762	11.343	14.156	0.000	44.337
DG2: *Advanced Development of Obscurants*	-	-	-	2.825	-	2.825	-	-	-	-	0.000	2.825

A. Mission Description and Budget Item Justification

This Program Element (PE) matures and demonstrates ground movement and maneuver technologies that support and enable the Army's modernization priority for the Next Generation of Combat Vehicles. This PE also matures, integrates and demonstrates advanced technologies that are necessary and foundational for legacy and future ground platforms and ground maneuver. These technology areas include: robotic and autonomous Army Combat Engineer equipment, liquid logistics (i.e.,

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603119A *I Ground Advanced Technology*

fuels, lubricants, and oils) and related monitoring and distribution, forensic analysis of explosives and other chemical materials, rapidly deployable passive protection technologies, entry and maneuver assessment technologies and structural hardening technologies to protect personnel and critical assets from advanced weapon effects.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas in support of the National Defense Strategy.

Research is performed by the United States (U.S.) Army Futures Command and the U.S. Army Engineer Research and Development Center.

Research in this PE complements PE 0602144A (Ground Technology), PE 0602145A (Next Generation Combat Vehicle Technology), and PE 0603462A (Next Generation Combat Vehicle Advanced Technology).

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	280.490	32.546	33.403	-	33.403
Current President's Budget	281.637	415.846	40.597	-	40.597
Total Adjustments	1.147	383.300	7.194	-	7.194
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	383.300			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.147	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	7.194	-	7.194

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: BO3: *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*		
Congressional Add: *Electrical System Safety and Reliability*	5.000	-
Congressional Add: *Cold Regions Research*	2.000	-
Congressional Add: *High-Performance Concrete Technology*	6.000	-
Congressional Add: *Secure Management of Energy Generation and Storage*	5.000	5.000
Congressional Add: *Composite Flywheel Technology*	7.000	-
Congressional Add: *Materials and Manufacturing Technology for Cold Environments*	4.000	4.000
Congressional Add: *Program Increase - Rapid Entry and Sustainment for the Arctic*	8.000	10.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603119A *I Ground Advanced Technology*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Program Increase - Water Quality and Resiliency*	5.000	7.000
Congressional Add: *Program Increase - Organic Light Emitting Diode*	5.000	-
Congressional Add: *Program Increase - Infrastructure Resilience and Flood Assessment*	3.500	-
Congressional Add: *Program Increase - Clean Modular Hydro Technology*	8.000	20.000
Congressional Add: *Program Increase - Accelerator Technology for Ground Maneuver*	5.000	4.000
Congressional Add: *Program increase - Autonomous Combat Engineering Solutions*	4.000	-
Congressional Add: *Program Increase - Coastal Terrain Hazard Research*	6.000	-
Congressional Add: *Program Increase - Impacts of Soil Structures on Hydrology*	5.000	6.000
Congressional Add: *Program Increase - Cross-Laminated Timber and Recycled Carbon Fiber Materials*	5.500	5.500
Congressional Add: *3D Printing of Concrete*	2.000	-
Congressional Add: *3D Printing of Infrastructure*	5.000	-
Congressional Add: *Additive Construction for Field Deployment*	4.000	-
Congressional Add: *Anticipating Threats to Natural Systems*	5.000	6.000
Congressional Add: *Army Visual and Tactical Arctic Reconnaissance*	2.000	4.000
Congressional Add: *Assessments and Monitoring Systems for Historic Structures*	5.000	-
Congressional Add: *Autonomous Construction and Manufacturing*	5.000	5.000
Congressional Add: *Biofuel*	6.000	-
Congressional Add: *Biomass Polymer Technology*	2.000	-
Congressional Add: *Cold Weather Energy Research*	5.000	-
Congressional Add: *Cold Weather Research*	3.000	4.000
Congressional Add: *Distributed Technologies for Steam Loop Replacements*	5.000	-
Congressional Add: *Electrochemical Conversion of Water Streams*	5.000	-
Congressional Add: *Entry Control Points at Installations*	5.000	-
Congressional Add: *Expeditionary Additive Construction*	15.000	15.000
Congressional Add: *Explosive Materials Detection*	3.000	-
Congressional Add: *Frost Heave Effects Monitoring*	4.500	6.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603119A *I Ground Advanced Technology*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Graphene Applications for Military Engineering*	10.000	10.000
Congressional Add: *Hardened Facility Standards*	4.600	5.500
Congressional Add: *High Power Fast Charging for Electric Vehicle Fleets*	3.000	5.000
Congressional Add: *Infrastructure Smart Technology*	5.000	-
Congressional Add: *Low Carbon Hydrogen Technologies*	10.000	10.000
Congressional Add: *Microgrid Reliability and Resiliency*	10.000	6.500
Congressional Add: *Military Waste Stream Conversion*	5.000	5.000
Congressional Add: *Partnership and Technology Transfer*	4.000	-
Congressional Add: *Power Generation for Increased Facility Resilience Pilot*	10.000	10.000
Congressional Add: *Power Projection*	7.000	5.000
Congressional Add: *Sustainable Smart Utilities*	5.000	-
Congressional Add: *Water Resiliency and Self Sufficiency*	4.000	-
Congressional Add: *Water Reuse Consortium*	10.000	10.000
Congressional Add: *Watercraft Simulator*	4.000	-
Congressional Add: *Program Increase - ADDITIVE MANUFACTURING AND 3D PRINTING FOR DEPLOYABLE SHELTERS*	-	6.000
Congressional Add: *Program Increase - ADDITIVE MANUFACTURING FOR WEAPONS AND ARMAMENTS COMPONENTS*	-	10.000
Congressional Add: *Program Increase - ADVANCED MULTI-STACK OLED MICRODISPLAYS*	-	8.800
Congressional Add: *Bio-derived coatings for high-performance applications*	-	2.000
Congressional Add: *Expanding engineering with nature installation capacity*	-	5.000
Congressional Add: *Mass timber applications for military construction projects*	-	12.000
Congressional Add: *Novel materials for smart infrastructure systems*	-	6.000
Congressional Add: *Rapid infrastructure development and engineering*	-	5.000
Congressional Add: *Ultra-high strength steels for construction applications*	-	6.000
Congressional Add: *Always ready distributed energy*	-	10.000
Congressional Add: *Self contained power for towers and sensors*	-	10.000
Congressional Add: *Ruggedized deployable solar generators*	-	10.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603119A *I Ground Advanced Technology*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *PFAS destruction industrial SCWO technology*	-	12.000
Congressional Add: *Sorbent enhanced clean hydrogen demonstration*	-	15.000
Congressional Add: *3D Printing of infrastructure - enabling cold weather construction capabilities*	-	5.000
Congressional Add: *Advanced coating development for infrastructure*	-	3.000
Congressional Add: *Arctic terrain sensing with drone platforms*	-	10.000
Congressional Add: *Cobalt free batteries*	-	3.000
Congressional Add: *Competition planning and evaluation infrastructure*	-	8.000
Congressional Add: *Delivered fuel decarbonization and resiliency*	-	5.000
Congressional Add: *Engineering practices for ecosystem design solutions*	-	6.500
Congressional Add: *Innovative design and manufacturing of advanced composites/multi material protective systems*	-	10.000
Congressional Add: *Logistically secure energy resources for resilient installation and mobility infrastructure*	-	5.000
Congressional Add: *Military Operations in permafrost environment*	-	3.500
Congressional Add: *Military training grounds research to support force readiness*	-	7.000
Congressional Add: *Operational and cyber resilient power for critical infrastructure*	-	8.000
Congressional Add: *Rapid Track repair*	-	3.000
Congressional Add: *Solid State rechargeable lithium batteries*	-	5.000
Congressional Add: *Sustainable distributed electric vehicle charging station*	-	3.000
Congressional Add: *Technology pilot for reliability, resilience, and energy efficiency*	-	3.000
Congressional Add: *Wildfire engineering for sustainability and resiliency*	-	6.000
Congressional Add: *Zero emission concrete*	-	3.000
Congressional Add: *National Hydrography Dataset*	2.000	-
Congressional Add Subtotals for Project: BO3	259.100	383.300
Congressional Add Totals for all Projects	259.100	383.300

Change Summary Explanation

the increase is due a focus on conducting demonstration and testing of fluids for vehicle electrification and smart fuel meeting and a new start enabling effort on vulnerability from advanced obscurants

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BK8 / *Robotics for Engineer Operations Adv Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BK8: *Robotics for Engineer Operations Adv Tech*	-	5.994	6.314	3.801	-	3.801	4.548	6.542	8.240	3.232	0.000	38.671
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates robotic engineer equipment capabilities that can remotely characterize the environment and operate in the battlespace for autonomous Combat Engineer actions. This Project provides technologies for Combat Engineer mission planning, creating or reducing barriers and obstacles, as well as maintaining, repairing, and constructing expedient infrastructure. These efforts will enhance Combat Engineer missions of mobility, counter mobility, and survivability through semi-autonomous or autonomous operations.

Work in this Project complements Program Element (PE) 0602144A (Ground Technology) / Project BK7 (Robotics for Engineer Operations Technology).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Army Science and Technology Ground Portfolio.

Work in this Project is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Beyond-Visual-Line-of-Sight Tele-operated Engineer Operations Demonstration	5.767	6.197	-
Description: This effort matures and demonstrates remote control and semi-autonomous behaviors on small scale construction equipment to provide information that scales to larger legacy equipment as well as assess the applicability of small scale equipment working in collaboration and coordination. ***FY 2023 Plans:*** Demonstrate operator assist capabilities for BVLOS execution of a Combat Engineer task. Validate capabilities for autonomous Engineer site characterization and BVLOS teleoperation of multiple pieces of heavy Engineer equipment in a Joint exercise supporting Multi-Domain Operations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects the planned lifecycle conclusion of this effort completing in FY2023 with products transitioned to United States Army Facilities Components System. Resources are realigned to PE0602144A (Ground Technology) / Project BK7 (Robotics for Engineer Operations Technology) / task Semi-Autonomous Engineer Operations and PE 0603119			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BK8 / *Robotics for Engineer Operations Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
(Ground Advanced Technology) / Project BK8 / (Robotics for Engineer Operations Adv Tech) Task Semi-Autonomous Engr Ops Demonstration.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	0.227	0.117	-
Title: Semi-Autonomous Engr Ops Demonstration ***Description:*** This effort matures and demonstrates machine tool behaviors to perform semi-autonomous shaping of the terrain through physical interaction with the environment (push, pull, lift, and dig). The effort develops the necessary decision-making, data fusion, localization, and inter-platform communication to allow semi-autonomy on commercial off the shelf (COTS) equipment. ***FY 2024 Plans:*** Will implement, mature, and demonstrate the required sensor payload, onboard processing, and control algorithms on heavy Engineer equipment to enable semiautonomous operations within an area of interest; mature and demonstrate semi-autonomous execution of a simple Engineer task. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new effort in FY24 to mature and demonstrate semi-autonomous terrain shaping using commercial off the shelf (COTS) equipment.	-	-	3.801
Accomplishments/Planned Programs Subtotals	5.994	6.314	3.801

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BK9 / *Ground System Fluids and Fuels Adv Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BK9: *Ground System Fluids and Fuels Adv Tech*	-	1.668	2.301	6.983	-	6.983	5.594	5.083	5.036	5.072	0.000	31.737
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates liquid logistics technologies such as enhanced jet fuels, lubricants, oils, powertrain fluids, coolants, bulk fluid treatment, monitoring, metering, storage, and distribution in support of established Army regulations and requirements. This Project improves products and technologies to optimize fuel efficiency, meet new hardware fluid requirements, modernize fluids, ensure bulk fluid meets quality requirements, and provide bulk fluid asset visibility, to optimize logistics and reduce logistics requirements. This Project executes the demonstration of enhanced jet fuels for ground systems, enhanced performance coolants, fluids for vehicle electrification, and smart bulk fuel metering and monitoring technologies. This Project improves liquid logistics products and technologies that are critical enablers for multi-domain operations requiring semi-independent operations to enable dispersed operations to extend operational reach, prolong endurance and allow freedom of action for the Joint Force.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project supports the Army Science and Technology Ground Portfolio.

Research is performed by the United States (U.S.) Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Ground System Fluids and Fuels	1.668	2.301	6.983
Description: This effort focuses on reducing the logistics footprint, improving fuel efficiency, and ensuring mobility by maturing and demonstrating technologies in areas such petroleum quality monitoring, filtration, storage and distribution, hydraulic fluids; enhanced jet fuels and fuel additives, lubricants, oil, powertrain fluids and coolants. Validates candidate engine coolants that extend change intervals, reduce corrosion, and minimize incompatibility issues for military use. Establish performance requirements for new military thermal fluids that enable emerging vehicle electrification technology. Integrate smart fuel metering technology into self-correcting devices that automatically report fuel quantity and conduct fuel filter effectiveness testing to establish fuel particle contamination limits for new fuel monitoring technology.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BK9 / *Ground System Fluids and Fuels Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Correlate fuel lubricity additive concentration to fuel injection pump performance from the bench scale through test rig evaluation to full engine demonstrations for improved durability and operation using aviation fuels. Complete enhanced performance engine coolant candidate fluid testing and candidate down selection. Conduct testing to evaluate and establish smart meter performance baseline and initiate effort to transfer data via the server to a fuel dashboard. ***FY 2024 Plans:*** Will verify the fuel lubricity additive correlation from bench scale through test rig by assessing a second type of pump design; conduct field demonstration of selected engine coolants; conduct bench top testing of thermal management fluids for vehicle electrification to evaluate and down-select fluid candidates; update smart meter design based on baseline evaluation, add tank level monitoring, and assess fuel dashboard and data transfer performance. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase funding is to support investment in fuel metering to provide fuel asset visibility.			
Accomplishments/Planned Programs Subtotals	1.668	2.301	6.983

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BL3 / *Explosives Forensics Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BL3: *Explosives Forensics Advanced Technology*	-	2.020	2.214	2.256	-	2.256	2.280	2.282	2.284	2.309	0.000	15.645
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates instrumentation and algorithms required to provide improved point, proximity, and stand-off detection of explosives and precursor materials to enable the warfighter to integrate chemical and explosive hazard detection equipment. This Project integrates explosive detection into the family of Chemical, Biological, Radiological, and Nuclear point and stand-off sensors, alternative chemical detection modalities and algorithms that will improve the probability of detection and attribution of an explosive hazard or Home-made Explosive manufacturing/assembly location.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project supports the Army Science and Technology Ground Portfolio.

Research is performed by the United States (U.S.) Army Engineer Research and Development Center and coordinated with the U.S. Army Futures Command.

Research in this Project is related to, and fully coordinated with Program Element (PE) 0602144A (Ground Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Detection Mechanisms for Contaminants	2.020	2.133	2.256
Description: This effort matures and demonstrates improved point and standoff detection of military and homemade explosives and their precursors, and other chemicals and hazardous materials. ***FY 2023 Plans:*** Demonstrate improved point and standoff detection of military homemade explosives and other chemical threats to facilitate chemical explosives reconnaissance focusing on integration to unmanned ground platforms. Evaluate integrated systems for semi-autonomous trace level detection of surface threats and vapor phase explosive and chemical threats. Integrate maturing technologies in hyperspectral imaging, portable mass spectrometry, and advanced optical methodologies for sensor development. ***FY 2024 Plans:*** Will demonstrate second generation build of Portable Chemical Fingerprint Identification System (PCFIS) for trace level chemical hazard detection of contaminated surfaces; demonstrate improved explosive and chemical vapor detection utilizing first of its			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BL3 / *Explosives Forensics Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
kind waveguide enhanced Raman spectroscopy portable device; continue advancements of novel optical and non-optical sensor methodologies for trace and forensic level information more forward in the field. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.081	-
Accomplishments/Planned Programs Subtotals	2.020	2.214	2.256

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BL6 / *Expedient Passive Protection Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BL6: *Expedient Passive Protection Advanced Technology*	-	0.476	3.613	6.025	-	6.025	5.854	4.181	4.809	5.609	0.000	30.567
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates rapidly deployable protection solutions to protect small distributed units; decision support applications and software; and tactics, techniques, and procedures to increase the survivability of personnel, critical assets, and facilities from a range of threats. Force protection technologies will be matured and demonstrated for applications in complex and urban environments to protect against advanced energetic threats, large caliber rockets and missiles, and other emerging weapons.

Work in this Project complements Program Element (PE) 0602144A (Ground Technology) / Project BL5 (Expedient Passive Protection Technology).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Army Science and Technology Ground Portfolio.

Work in this Project is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Protection Against High Trajectory Large Caliber Rocket and Missile Threats ***Description:*** This effort matures and demonstrates expedient force protection solutions for emerging threats such as large caliber rocket and missile weapon effects. This effort also demonstrates decision support tools to aid the warfighter in selecting protection schemes for survivability from emerging threats supporting All-Domain/Multi-Domain Operations.	0.458	-	-
Title: Assessments of Solutions for Survivability from Emerging Threats Demonstrations ***Description:*** This effort matures and demonstrates both legacy and newly developed expedient force protection solutions for emerging threats such as large caliber rocket and missle weapon effects and UAV threats. This effort also demonstrates algorithms for decision support applications and software; and inform tactics, techniques, and procedures (TTP's) to increase the survivability of personnel, critical assets, and facilities against emerging threats to enable the Warfighter to select protection schemes for survivability from emerging threats supporting Multi-Domain Operations. ***FY 2023 Plans:***	-	3.546	6.025

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BL6 / *Expedient Passive Protection Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Mature and demonstrate rapidly deployable protection systems (expedient barriers, expedient personnel shelters, and expeditionary bunkers) to protect critical semi-fixed assets and facilities from emerging threats such as large caliber rockets and missiles to establish baseline performance so these systems can be optimized to provide tailored protection. ***FY 2024 Plans:*** Will optimize protective designs of expedient protective structures; will demonstrate capabilities of expedient protective structures to defeat blast and fragmentation effects of emerging threats; and will demonstrate fast-running algorithms to predict emerging threat effects. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects investments required to conduct field demonstrations to evaluate rapidly deployable retrofits and expedient protective structures.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	0.018	0.067	-
Accomplishments/Planned Programs Subtotals	0.476	3.613	6.025

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BL8 / *Power Projection in A2AD Environments Adv Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BL8: *Power Projection in A2AD Environments Adv Tech*	-	2.862	4.948	3.317	-	3.317	4.124	2.677	3.727	4.413	0.000	26.068
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates remote assessment technologies to determine entry and maneuver corridors, provides site selection tools and decision support technologies for all climates in all season conditions including aviation site- selection tools, enhanced automated route reconnaissance technologies, mobility models for extreme climates, and road capacity assessment technologies. These technologies reduce reliance on manned on-site reconnaissance for force projection assessments and provide all-season predictions to ensure air and ground battlespace entry and maneuver. This Project also matures and demonstrates material solutions to repair, rebuild, and construct infrastructure required for movement and maneuver in highly contested, complex operational environments such as Anti-Access/Area Denial.

Work in this Project complements Program Element (PE) 0602144A (Ground Technology) / Project BL7 (Power Projection in A2AD Environments Technology).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Army Science and Technology Ground Portfolio.

Work in this Project is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Entry and Sustainment in Complex Contested Environments Demonstrations	1.465	3.242	-
Description: This effort matures and demonstrates geospatial planning tools to expand engineering analysis of ground surfaces for entry, sustainment, and maneuver operations and to automate processes for selecting suitable maneuver corridors. ***FY 2023 Plans:*** Mature and demonstrate planning capabilities for predicting route deterioration from military ground vehicles; and demonstrate methods for assessing ground mobility across snow-covered terrain and thawing artic soils to inform Army tactics, techniques, and procedures (TTP). ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects the planned lifecycle conclusion for this effort with transition of technologies to United States Army Maneuver Support Center of Excellence.			
Title: Engineering for Battlespace Maneuver Demonstrations	1.289	1.601	3.317

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BL8 / *Power Projection in A2AD Environments Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: This effort demonstrates material solutions and techniques for expedient repair to rapidly repair and upgrade damaged infrastructure along mobility corridors and restaging areas to maintain and enhance freedom of maneuver achieving overmatch and tactical advantage in contested complex environments. ***FY 2023 Plans:*** Demonstrate effectiveness of material additives for stabilizing reclaimed pavement materials; mature and demonstrate equipment solutions for expedient road repair. ***FY 2024 Plans:*** Will demonstrate mechanical reinforcing materials for ground / soil stabilization; demonstrate matting solutions for supporting military vehicle loads over soft soils; finalize techniques for chemical soil stabilization agents. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort required to conduct a large-scale field validation exercise to demonstrate new mechanical stabilization techniques.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	0.108	0.105	-
Accomplishments/Planned Programs Subtotals	2.862	4.948	3.317

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) BM1 / *Protection from Advanced Weapon Effects Adv Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BM1: *Protection from Advanced Weapon Effects Adv Tech*	-	5.654	4.856	4.937	-	4.937	5.132	5.336	5.531	3.972	0.000	35.418
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates structural hardening solutions and force protection technologies to increase survivability of facilities and provide critical updates to protective design specifications and guidance. Additionally, this project matures and demonstrates passive protection technologies and provides protective design criteria advancements to mitigate attack from emerging advanced threats.

Work in this Project complements Program Element (PE) 0602144A (Ground Technology) / Project BL9 (Protection from Advanced Weapon Effects Technology).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Army Science and Technology Ground portfolio.

Work in this Project is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Defeat of Complex Attack Demonstrations	5.440	4.787	-
Description: This effort demonstrates force protection technologies that mitigate the effects of emerging peer and near peer adversaries advanced penetrating threats and high yield blast effects by optimizing high-performance, logistically feasible material solutions and processes. ***FY 2023 Plans:*** Demonstrate full scale structural hardening solution against emerging complex weapon attack scenario. Demonstrate enhanced algorithm for structural hardening and damage prediction from peer and near peer adversaries' precision strike penetrating weapons. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects planned lifecycle completion of this effort with transition of technologies to United States Army Corps of Engineers Protective Design Center and to United States Air Force Research Laboratory, Munitions Directorate.			
Title: SBIR/STTR Transfer	0.214	0.069	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BM1 / *Protection from Advanced Weapon Effects Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Description: Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638			
Title: Protection from Advanced Penetrators Demonstration ***Description:*** This effort matures and demonstrates passive protective designs and concepts for hardened structures and critical assets that mitigate the effects of advanced precision threat weapons of peer and near peer adversaries through focused subscale to full-scale demonstrations. ***FY 2024 Plans:*** Will demonstrate protection of current structural hardening solutions against a sub-scale advanced penetrator to provide baseline performance and to identify and investigate current facility criteria deficiencies for advanced penetrating weapons. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** This is a new effort in FY 2024 progressing from the Defeat of Complex Attack Demonstrations effort.	-	-	4.937
Accomplishments/Planned Programs Subtotals	5.654	4.856	4.937

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army												Date: March 2023
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*				Project (Number/Name) BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
BO3: *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*	-	259.100	383.300	-	-	-	-	-	-	-	0.000	642.400
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Military Engineering Technology Demonstration.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Electrical System Safety and Reliability ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Electrical System Safety and Reliability	5.000	-
Congressional Add: Cold Regions Research ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Cold Weather Research Station	2.000	-
Congressional Add: High-Performance Concrete Technology ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for High-Performance Contrete	6.000	-
Congressional Add: Secure Management of Energy Generation and Storage ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Secure Management of Energy Generation and Storage ***FY 2023 Plans:*** Congressional Interest Item funding provided for Secure Management of Energy Generation and Storage.	5.000	5.000
Congressional Add: Composite Flywheel Technology ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Composite Flywheel Technology	7.000	-
Congressional Add: Materials and Manufacturing Technology for Cold Environments	4.000	4.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Materials and Manufacturing Technology for Cold Environments ***FY 2023 Plans:*** Congressional Interest Item funding provided for Materials and Manufacturing Technology for Cold Environments.		
Congressional Add: Program Increase - Rapid Entry and Sustainment for the Arctic ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Rapid Entry and Sustainment for the Arctic ***FY 2023 Plans:*** Congressional Interest Item funding provided for Rapid Entry and Sustainment for the Arctic.	8.000	10.000
Congressional Add: Program Increase - Water Quality and Resiliency ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Water Quality and Resiliency Technologies ***FY 2023 Plans:*** Congressional Interest Item funding provided for Water Quality and Resiliency Technologies.	5.000	7.000
Congressional Add: Program Increase - Organic Light Emitting Diode ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Organic Light Emitting Diode	5.000	-
Congressional Add: Program Increase - Infrastructure Resilience and Flood Assessment ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Infrastructure Resilience and Flood Assessment	3.500	-
Congressional Add: Program Increase - Clean Modular Hydro Technology ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Clean Modular Hydro Technology. ***FY 2023 Plans:*** Congressional Interest Item funding provided for Clean Modular Hydro Technology	8.000	20.000
Congressional Add: Program Increase - Accelerator Technology for Ground Maneuver ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Accelerator Technology for Ground Maneuver ***FY 2023 Plans:*** Congressional Interest Item funding provided for Accelerator Technology for Ground Maneuver.	5.000	4.000
Congressional Add: Program increase - Autonomous Combat Engineering Solutions	4.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Autonomous Combat Engineering Solutions		
Congressional Add: Program Increase - Coastal Terrain Hazard Research	6.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Coastal Terrain Hazard Research		
Congressional Add: Program Increase - Impacts of Soil Structures on Hydrology	5.000	6.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Impacts of Soil Structures on Hydrology		
FY 2023 Plans: Congressional Interest Item funding provided for Impacts of Soil Structures on Hydrology.		
Congressional Add: Program Increase - Cross-Laminated Timber and Recycled Carbon Fiber Materials	5.500	5.500
FY 2022 Accomplishments: Congressional Interest Item funding provided for Cross-Laminated Timber and Recycled Carbon Fiber Materials		
FY 2023 Plans: Congressional Interest Item funding provided for Cross-Laminated Timber and Recycled Carbon Fiber Materials.		
Congressional Add: 3D Printing of Concrete	2.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for 3D Printing of Concrete		
Congressional Add: 3D Printing of Infrastructure	5.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for 3D Printing of Infrastructure		
Congressional Add: Additive Construction for Field Deployment	4.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Additive Construction for Field Deployment		
Congressional Add: Anticipating Threats to Natural Systems	5.000	6.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Anticipating Threats to Natural Systems		
FY 2023 Plans: Congressional Interest Item funding provided for Anticipating Threats to Natural Systems.		
Congressional Add: Army Visual and Tactical Arctic Reconnaissance	2.000	4.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Army Visual and Tactical Arctic Reconnaissance ***FY 2023 Plans:*** Congressional Interest Item funding provided for Army Visual and Tactical Arctic Reconnaissance.		
Congressional Add: Assessments and Monitoring Systems for Historic Structures ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Assessments and Monitoring Systems for Historic Structures	5.000	-
Congressional Add: Autonomous Construction and Manufacturing ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Autonomous Construction and Manufacturing ***FY 2023 Plans:*** Congressional Interest Item funding provided for Autonomous Construction and Manufacturing.	5.000	5.000
Congressional Add: Biofuel ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Biofuel	6.000	-
Congressional Add: Biomass Polymer Technology ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Biomass Polymer Technology	2.000	-
Congressional Add: Cold Weather Energy Research ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Cold Weather Energy Research	5.000	-
Congressional Add: Cold Weather Research ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Cold Weather Research ***FY 2023 Plans:*** Congressional Interest Item funding provided for Cold Weather Research.	3.000	4.000
Congressional Add: Distributed Technologies for Steam Loop Replacements ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Distributed Technologies for Steam Loop Replacements	5.000	-
Congressional Add: Electrochemical Conversion of Water Streams	5.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Electrochemical Conversion of Water Streams		
Congressional Add: Entry Control Points at Installations	5.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Entry Control Points at Installtions		
Congressional Add: Expeditionary Additive Construction	15.000	15.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Expeditionary Additive Construction		
FY 2023 Plans: Congressional Interest Item funding provided for Expeditionary Added Construction.		
Congressional Add: Explosive Materials Detection	3.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Explosive Materials Detection		
Congressional Add: Frost Heave Effects Monitoring	4.500	6.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Frost Heave Effects Monitoring		
FY 2023 Plans: Congressional Interest Item funding provided for Frost Heave Effects Monitoring.		
Congressional Add: Graphene Applications for Military Engineering	10.000	10.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Graphene Applications for Military Engineering		
FY 2023 Plans: Congressional Interest Item funding provided for Graphene Applications for Military Engineering.		
Congressional Add: Hardened Facility Standards	4.600	5.500
FY 2022 Accomplishments: Congressional Interest Item funding provided for Hardened Facility Standards		
FY 2023 Plans: Congressional Interest Item funding provided for Hardened Facility Standards.		
Congressional Add: High Power Fast Charging for Electric Vehicle Fleets	3.000	5.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for High Power Fast Charging for Electric Vehicle Fleets		
FY 2023 Plans: Congressional Interest Item funding provided for Electric Vehicle Fleets.		
Congressional Add: Infrastructure Smart Technology	5.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Infrastructure Smart Technology		
Congressional Add: Low Carbon Hydrogen Technologies ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Low Carbon Hydrogen Technologies ***FY 2023 Plans:*** Congressional Interest Item funding provided for Low Carbon Hydrogen Technologies.	10.000	10.000
Congressional Add: Microgrid Reliability and Resiliency ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Microgrid Reliability and Resiliency ***FY 2023 Plans:*** Congressional Interest Item funding provided for Microgrid Reliability and Resiliency.	10.000	6.500
Congressional Add: Military Waste Stream Conversion ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Military Waste Stream Conversion ***FY 2023 Plans:*** Congressional Interest Item funding provided for Military Waste Stream Conversion	5.000	5.000
Congressional Add: Partnership and Technology Transfer ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Partnership and Technology Transfer	4.000	-
Congressional Add: Power Generation for Increased Facility Resilience Pilot ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Power Generation for Increased Facility Resilience Pilot ***FY 2023 Plans:*** Congressional Interest Item funding provided for Power Generation for Increased Facility Resilience Pilot	10.000	10.000
Congressional Add: Power Projection ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for Power Projection ***FY 2023 Plans:*** Congressional Interest Item funding provided for Power Projection.	7.000	5.000
Congressional Add: Sustainable Smart Utilities	5.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Sustainable Smart Utilities		
Congressional Add: Water Resiliency and Self Sufficiency	4.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Water Resiliency and Self Sufficiency		
Congressional Add: Water Reuse Consortium	10.000	10.000
FY 2022 Accomplishments: Congressional Interest Item funding provided for Water Reuse Consortium		
FY 2023 Plans: Congressional Interest Item funding provided for Water Reuse Consortium.		
Congressional Add: Watercraft Simulator	4.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Watercraft Simulator		
Congressional Add: Program Increase - ADDITIVE MANUFACTURING AND 3D PRINTING FOR DEPLOYABLE SHELTERS	-	6.000
FY 2023 Plans: Congressional Interest Item funding provided for ADDITIVE MANUFACTURING AND 3D PRINTING FOR DEPLOYABLE SHELTERS		
Congressional Add: Program Increase - ADDITIVE MANUFACTURING FOR WEAPONS AND ARMAMENTS COMPONENTS	-	10.000
FY 2023 Plans: Congressional Interest Item funding provided for ADDITIVE MANUFACTURING FOR WEAPONS AND ARMAMENTS COMPONENTS		
Congressional Add: Program Increase - ADVANCED MULTI-STACK OLED MICRODISPLAYS	-	8.800
FY 2023 Plans: Congressional Interest Item funding provided for ADVANCED MULTI-STACK OLED MICRODISPLAYS		
Congressional Add: Bio-derived coatings for high-performance applications	-	2.000
FY 2023 Plans: Congressional Interest Item funding provided for bio-derived coatings for high-performance applications.		
Congressional Add: Expanding engineering with nature installation capacity	-	5.000
FY 2023 Plans: Congressional Interest Item funding provided for Engineering with Nature.		
Congressional Add: Mass timber applications for military construction projects	-	12.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2023 Plans: Congressional Interest Item funding provided for mass timber applications for military construction projects.		
Congressional Add: Novel materials for smart infrastructure systems ***FY 2023 Plans:*** Congressional Interest Item funding provided for novel materials for smart infrastructure systems.	-	6.000
Congressional Add: Rapid infrastructure development and engineering ***FY 2023 Plans:*** Congressional Interest Item funding provided for novel materials for rapid infrastructure development and engineering.	-	5.000
Congressional Add: Ultra-high strength steels for construction applications ***FY 2023 Plans:*** Congressional Interest Item funding provided for ultra-high strength steels for construction applications.	-	6.000
Congressional Add: Always ready distributed energy ***FY 2023 Plans:*** Congressional Interest Item funding provided for always ready distributed energy.	-	10.000
Congressional Add: Self contained power for towers and sensors ***FY 2023 Plans:*** Congressional Interest Item funding provided for self contained power for towers and sensors.	-	10.000
Congressional Add: Ruggedized deployable solar generators ***FY 2023 Plans:*** Congressional Interest Item funding provided for ruggedized deployable solar generators.	-	10.000
Congressional Add: PFAS destruction industrial SCWO technology ***FY 2023 Plans:*** Congressional Interest Item funding provided for PFAS destruction industrial SCWO technology	-	12.000
Congressional Add: Sorbent enhanced clean hydrogen demonstration ***FY 2023 Plans:*** Congressional Interest Item funding provided for sorbent enhanced clean hydrogen demonstration.	-	15.000
Congressional Add: 3D Printing of infrastructure - enabling cold weather construction capabilities ***FY 2023 Plans:*** Congressional Interest Item funding provided for 3D Printing of infrastructure - enabling cold weather construction capabilities.	-	5.000
Congressional Add: Advanced coating development for infrastructure	-	3.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2023 Plans: Congressional Interest Item funding provided for advanced coating development for infrastructure.		
Congressional Add: Arctic terrain sensing with drone platforms	-	10.000
FY 2023 Plans: Congressional Interest Item funding provided for Arctic terrain sensing with drone platforms.		
Congressional Add: Cobalt free batteries	-	3.000
FY 2023 Plans: Congressional Interest Item funding provided for cobalt free batteries.		
Congressional Add: Competition planning and evaluation infrastructure	-	8.000
FY 2023 Plans: Congressional Interest Item funding provided for competition planning and evaluation infrastructure.		
Congressional Add: Delivered fuel decarbonization and resiliency	-	5.000
FY 2023 Plans: Congressional Interest Item funding provided for delivered fuel decarbonization and resiliency.		
Congressional Add: Engineering practices for ecosystem design solutions	-	6.500
FY 2023 Plans: Congressional Interest Item funding provided for Engineering practices for ecosystem design solutions.		
Congressional Add: Innovative design and manufacturing of advanced composites/multi material protective systems	-	10.000
FY 2023 Plans: Congressional Interest Item funding provided for innovative design and manufacturing of advanced composites/multi material protective systems.		
Congressional Add: Logistically secure energy resources for resilient installation and mobility infrastructure	-	5.000
FY 2023 Plans: Congressional Interest Item funding provided for logistically secure energy resources for resilient installation and mobility infrastructure.		
Congressional Add: Military Operations in permafrost environment	-	3.500
FY 2023 Plans: Congressional Interest Item funding provided for Military Operations in permafrost environment.		
Congressional Add: Military training grounds research to support force readiness	-	7.000

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2023 Plans: Congressional Interest Item funding provided for Military training grounds research to support force readiness.		
Congressional Add: Operational and cyber resilient power for critical infrastructure ***FY 2023 Plans:*** Congressional Interest Item funding provided for operational and cyber resilient power for critical infrastructure.	-	8.000
Congressional Add: Rapid Track repair ***FY 2023 Plans:*** Congressional Interest Item funding provided for Rail Road Rapid Track repair.	-	3.000
Congressional Add: Solid State rechargeable lithium batteries ***FY 2023 Plans:*** Congressional Interest Item funding provided for Solid State rechargeable lithium batteries.	-	5.000
Congressional Add: Sustainable distributed electric vehicle charging station ***FY 2023 Plans:*** Congressional Interest Item funding provided for sustainable distributed electric vehicle charging station.	-	3.000
Congressional Add: Technology pilot for reliability, resilience, and energy efficiency ***FY 2023 Plans:*** Congressional Interest Item funding provided for technology pilot for reliability, resilience, and energy efficiency.	-	3.000
Congressional Add: Wildfire engineering for sustainability and resiliency ***FY 2023 Plans:*** Congressional Interest Item funding provided for wildfire engineering for sustainability and resiliency.	-	6.000
Congressional Add: Zero emission concrete ***FY 2023 Plans:*** Congressional Interest Item funding provided for zero emission concrete.	-	3.000
Congressional Add: National Hydrography Dataset ***FY 2022 Accomplishments:*** Congressional Interest Item funding provided for the National Hydrography Dataset.	2.000	-
Congressional Adds Subtotals	259.100	383.300

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** BO3 / *MILITARY ENGINEERING TECHNOLOGY DEMONSTRATION (CA)*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) CJ9 / *Ground Enabling University Adv Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CJ9: *Ground Enabling University Adv Development*	-	3.863	3.896	4.214	-	4.214	6.036	6.137	6.140	6.207	0.000	36.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Project matures and demonstrates advanced developments and technological innovations from academia, in the focus areas of ground autonomy, Artificial Intelligence / Machine Learning (AI/ML) and robotics, occupant/vehicle survivability and other ground platform technologies of importance to the Army, by maturing and demonstrating technologies with the goal of delivering technology to the warfighter more quickly. This Project matures and demonstrates advanced technologies with a focus on mid to far-term Army modernization priorities while also maintaining delivery of near-term technologies critical to the next generation combat vehicles. This Project focuses on maturation and demonstration of various advanced technologies originating from extramural applied research in academia pertaining to navigation/ routing, autonomous robotic vehicles with the use of artificial intelligence and machine learning as applied to ground mobility and maneuver, and other innovative ground enabling applied research technologies. This Project also matures and demonstrates advanced technologies leading to potential emerging capabilities in areas of strategic importance to the Army in autonomy, robotics and AI/ML, protection of both platform and occupant, and other ground platform technologies in propulsion, survivability, powertrain, etc., by bringing competitively selected Universities with research and development teams into Technical Alliances.

Work in this Project complements Program Element (PE) 0620144A (Ground Technology), PE 0602145A (Next Generation Combat Vehicle Technology) and PE 0603462A (Next Generation Combat Vehicle Advanced Technology).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Robust autonomous capabilities for ground vehicles	2.136	1.887	2.128
Description: This effort demonstrates AI/ML and autonomous mobility integrated into ground vehicles to conduct off-road maneuvers to enable the transition from teleoperation to autonomous or semi-autonomous scenarios. Research is conducted in collaboration with university partners to advance autonomous mobility and protection of both occupant and platform in optionally manned and autonomous ground vehicles.			
FY 2023 Plans: Will further mature, integrate and demonstrate use of AI/ML methods that enable robust, autonomous, tactical behaviors for multi-agent air and ground vehicle teams beyond existing behaviors on common software platforms and Army experimental platforms.			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** CJ9 / *Ground Enabling University Adv Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will continue to mature and demonstrate emerging autonomous technologies to increase the overall system performance of the autonomy software platforms through academia. ***FY 2024 Plans:*** Matures and demonstrates multiagent air and ground vehicle teams and situational awareness, beyond existing behaviors, including teams of up to three ground vehicles and five air vehicles. Matures and demonstrates marsupial robot deployment and recovery with increased automation and intelligence. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects planned lifecycle of this effort.			
Title: Human-robot/AI interactions ***Description:*** This effort matures, integrates, and demonstrates systems involving physical and cognitive levels of interactions between humans and robots, with the use of reinforcement machine learning which uses human feedback, learning from demonstrations, and safe human-aware controllers. Work is conducted in collaboration with university partners to advance autonomous mobility as well as other areas of ground platform technologies in propulsion, survivability, powertrain, sensing, and perception. ***FY 2023 Plans:*** Will further mature, integrate and demonstrate use of AI/ML methods to improve autonomous systems by capturing and learning from human teleoperation commands, human interventions, and other forms of human interaction. Will mature and demonstrate tactics and algorithms on common software platforms and Army experimental platforms through academia while working fully autonomously around humans for extended periods of time. ***FY 2024 Plans:*** Demonstrates AI/ML methods for robust autonomous capabilities, cooperative tactical reasoning, real-time basic feature extraction, multi-robot long-term autonomy, human-AI collaboration, human-in-the-loop ML for autonomous navigation. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects planned lifecycle of this effort.	1.727	1.867	2.086
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	0.142	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** CJ9 / *Ground Enabling University Adv Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	3.863	3.896	4.214

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) CV5 / *Engineer Enablers Maneuver, LOG, & Sustainment Adv*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
CV5: *Engineer Enablers Maneuver, LOG, & Sustainment Adv*	-	-	2.539	3.313	-	3.313	4.808	2.700	5.557	5.532	0.000	24.449
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates joint contested logistics operations technologies and provides capabilities to operate in disbursed battlefield operations and support sustainment operations through predicted dynamic scenario development that provides critical vulnerabilities assessment and methods/equipment to mitigate potential issues.

Work in this Project complements Program Element (PE) 0602144A (Ground Technology) / Project CV3 (Engineer Enablers Maneuver, LOG, & Sustainment Apl).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Army Science and Technology Ground portfolio.

Work is performed by the United States Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Sustainment Planning Tool	-	2.446	2.884
Description: This effort will mature and demonstrate map-based sustainment running estimates with preposition of survivable material stockpiles based on synchronized ops/intel/log running estimates and informed by artificial intelligence (AI) based edge computing analyses. ***FY 2023 Plans:*** Mature and optimize the existing Joint Planning Services (JPS)-developed Sustainment Quick Estimate model to connect to appropriate authoritative data sources and provide more robust capabilities for Sustainment Running Estimates (SRE). ***FY 2024 Plans:*** Will conduct agile design review with Program Manager Mission Command to evaluate optimized estimation model within Joint Planning Services. Will further mature and optimize with authoritative data sources in advance of integrating capability to the Command Post Computing Environment (CPCE). ***FY 2023 to FY 2024 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** CV5 / *Engineer Enablers Maneuver, LOG, & Sustainment Adv*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding increase reflects the planned lifecycle of this effort.			
Title: Planning Logistics Analysis Network System Advanced Research ***Description:*** This effort demonstrates new engineering applications and methodologies that support improved distributed logistics planning via multi-modal transportation networks to improve the efficiency and effectiveness of the planning decision making during contested logistics scenarios. ***FY 2024 Plans:*** Will improve system performance through integration of transportation throughput options through the nodes and routes. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects planned lifecycle initiation of this effort in FY24.	-	-	0.429
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.093	-
Accomplishments/Planned Programs Subtotals	-	2.539	3.313

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) DA2 / *SAFR Alternatives for Readiness Advanced Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DA2: *SAFR Alternatives for Readiness Advanced Tech*	-	-	1.865	2.926	-	2.926	4.285	9.762	11.343	14.156	0.000	44.337
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project demonstrates cross-cutting, safer alternative advanced technologies that enable readiness. These technologies also support product availability, Soldier and worker safety, and a reduced environmental footprint in the manufacturing, maintenance, and use of ground vehicles and other Army weapon systems. The Project matures and optimizes safer alternatives in technology areas including surface finishes, coatings, solvents, refrigerants, and fire suppressants. This research addresses the growing impacts to health and readiness associated with carcinogens such as hexavalent chromium, global warming chemicals including hydrofluorocarbons (HFCs), and forever chemicals such as like per- and polyfluoroalkyl substances (PFAS). This Project enables the Army to assess and resolve these types of emerging and continually evolving risks throughout the full life cycle of Army systems.

The effort is consistent with the Army Modernization Strategy and provides enabling technologies in support of all Cross Functional Teams.

Research in this Project is performed by the United States (U.S.) Army Combat Capabilities Development Command (DEVCOM) Army Research Laboratory, Aberdeen Proving Ground, MD; the Armaments Center, Picatinny Arsenal, NJ; the Aviation and Missile Center, Huntsville, AL; the Soldier Center, Natick, MA; and the Ground Vehicle Systems Center, Warren, MI; and is coordinated with the United States (U.S.) Army Futures Command.

This Project complements and transitions technologies developed under Program Element (PE) 0602144A (Ground Technology).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Safer Alternatives for Readiness (SAFR) Advanced Technology	-	1.797	2.926
Description: Demonstrate safer alternative advanced technologies to replace hexavalent chromium, cadmium and other harmful chemicals during surface finishing; reduce the use of volatile organic compounds and other hazardous materials in coating and depainting processes; and ensure the availability of compatible next generation refrigerants and fire suppressants with low global warming potential.			
FY 2023 Plans: Demonstrate advanced non-chromium surface finishing techniques for use on ground systems; will mature non-chemical depainting alternatives to n-methyl pyrrolidone; and optimize the performance of HFC alternatives against military-unique requirements for refrigerants and fire suppressants.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** DA2 / *SAFR Alternatives for Readiness Advanced Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will mature lead-free rocket motor propellants; demonstrate novel nitration methods for energetic materials; optimize more efficient fuels and lubricants to reduce emissions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.068	-
Accomplishments/Planned Programs Subtotals	-	1.865	2.926

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603119A / *Ground Advanced Technology*	Project (Number/Name) DG2 / *Advanced Development of Obscurants*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
DG2: *Advanced Development of Obscurants*	-	-	-	2.825	-	2.825	-	-	-	-	0.000	2.825
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In Fiscal Year (FY) 2024, funding realigned from Program Element 0603119 / Project BG9 (Obscuration Advanced Technology)

A. Mission Description and Budget Item Justification

The Project matures and demonstrates obscurant technologies with potential to enhance personnel and platform survivability by degrading threat force surveillance sensors and defeating the enemy's target acquisition devices, missile guidance, and directed energy weapons. Dissemination systems for new and improved obscurants are developed with the goal of providing efficient and safe screening of deployed forces.

Work in this Project compliments Program Element (PE) 0602144 (Ground Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project supports the Next Generation Combat Vehicle Army Modernization Priority.

Work is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Obscuration	-	-	2.825
Description: This effort matures and demonstrates the dissemination of new and advanced obscurants. ***FY 2024 Plans:*** Will further explore bi-spectral, millimeter wave, and multi-spectral obscurant materials; explore cost effective methods for material drying and packaging in order to further enhance performance against current capability for potential implementation into existing obscuration systems and examining the feasibility of use in future systems currently in development. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding in this effort is realigned from Program Element 0603462 / Project BG9 (Obscuration Advanced Technology)			
Accomplishments/Planned Programs Subtotals	-	-	2.825

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603119A / *Ground Advanced Technology*	**Project (Number/Name)** DG2 / *Advanced Development of Obscurants*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A