| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Army | Date: March 2024 |
|---|---|
| **Appropriation/Budget Activity**<br>2040: *Research, Development, Test & Evaluation, Army* / BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* |

| COST ($ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Program Element | - | 14.298 | 16.426 | 17.341 | - | 17.341 | 10.346 | 10.363 | 17.739 | 17.917 | 0.000 | 104.430 |
| CD4: *Counter Improvised-Threat Demonstration* | - | 14.298 | 16.426 | 17.341 | - | 17.341 | 10.346 | 10.363 | 17.739 | 17.917 | 0.000 | 104.430 |

**A. Mission Description and Budget Item Justification**

This Program Element (PE) develops prototypes and demonstrates technology for detecting and defeating Improvised Explosive Devices (IED). The goal of this Project is to mature technology to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and increase the rate of advance of route clearance missions. Additionally, the objective is to positively neutralize or mitigate the effects of IEDs with minimal collateral damage. Driven by the current threat facing deployed U.S. forces, this PE enables rapid development and delivery of capabilities that enable the detection, neutralization, and risk mitigation of IEDs and their effects. These technologies are intended to be matured and demonstrated for integration onto existing Department of Defense weapon systems.

This PE is coordinated with the Under Secretary of Defense for Research and Engineering (USD/R&E) and the Defense Threat Reduction Agency (DTRA).

Work in this Project is managed by Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) Center. Work is performed by Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Research, Development, Test and Evaluation (RDT&E) Enterprise with oversight from Assistant Secretary of the Army for Acquisition, Logistics and Technology for Research and Technology (DASA R&T).

| B. Program Change Summary ($ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 14.840 | 16.426 | 17.306 | - | 17.306 |
| Current President's Budget | 14.298 | 16.426 | 17.341 | - | 17.341 |
| Total Adjustments | -0.542 | 0.000 | 0.035 | - | 0.035 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -0.542 | - | | | |
| • Adjustments to Budget Years | - | - | 0.035 | - | 0.035 |

**Change Summary Explanation**

Funding increase is an economic adjustment.

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Army | | | Date: March 2024 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | Project (Number/Name)<br>CD4 / *Counter Improvised-Threat Demonstration* | |

| COST ($ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CD4: *Counter Improvised-Threat Demonstration* | - | 14.298 | 16.426 | 17.341 | - | 17.341 | 10.346 | 10.363 | 17.739 | 17.917 | 0.000 | 104.430 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**A. Mission Description and Budget Item Justification**

This Project develops prototypes and demonstrates technology for detecting and defeating Improvised Explosive Devices (IED). The goal of this Project is to mature technology to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and increase the rate of advance of maneuver forces. An additional goal is to positively neutralize IEDs with minimal collateral damage. Driven by the current threat facing deployed U.S. forces, this project enables rapid development and delivery of capabilities that enable the detection, neutralization, and mitigation of IEDs and their effects.

This Project is coordinated with the Under Secretary of Defense for Research and Engineering (USD/R&E) and the Defense Threat Reduction Agency (DTRA).

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| ***Title:*** Radio Controlled IED Detection Technology Demonstration<br>***Description:*** This effort demonstrates Radio Controlled IED detection exploiting advanced network techniques. This effort demonstrates the ability to detect Radio Controlled IEDs with minimal false alarms. | 1.823 | - | - |
| ***Title:*** Anti-Armor IED Detection Technology Demonstration<br>***Description:*** This effort demonstrates anti-armor IED detection using technologies to include high resolution electro-optical / infrared and other sensors to detect component characteristics to identify the location of IEDs prior to detonation.<br>***FY 2024 Plans:***<br>Will continue prototype development of unmanned system mounted multi-sensor detection and geo-location of IEDs at standoff distances. Will conduct testing to confirm detection performance.<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Effort completes in FY24. | 1.539 | 2.850 | - |
| ***Title:*** Personnel Borne IED Detection Technology Demonstration<br>***Description:*** This effort demonstrates Personnel Borne IED (PBIED) detection by aggregating information from a network of small, inexpensive sensor technologies including electro-optical and millimeter wave radar imagers to sense the presence of | 3.812 | - | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| PBIEDs attached to personnel through thin walls. This effort demonstrates the ability to aggregate sensor data to identify PBIEDs with minimal false alarms. | | | |
| ***Title:*** Off-Route IED Detection Technology Demonstration<br>***Description:*** This effort will demonstrate a proof of concept IED detection system using miniaturized sensors developed in the Counter-Improvised Threat Simulation Program Element 0603134A integrated with unmanned aerial systems to detect off-route IEDs to support combat maneuver forces. | 2.593 | - | - |
| ***Title:*** Water-Borne IED Detection Technology Demonstration<br>***Description:*** This effort conducts a technology demonstration to evaluate the performance of IED detection technologies in coastal water and water gap crossings. The focus is on detecting devices in water using detection mechanisms at standoff distances to protect troop landings and water gap crossings for the military. | 2.995 | - | - |
| ***Title:*** Teamed IED Detection Technology Demonstration<br>***Description:*** This effort demonstrates the teaming of small unmanned aerial and ground systems to cooperatively detect IED emplacements and indicators of IED emplacements. This effort optimizes unmanned system teaming to increase the confidence in IED detection using multiple platforms with multiple sensor modes, and integrating their information. This effort will conduct a demonstration in FY 2025 using multiple heterogeneous platforms to reduce false alarms for IED detection.<br>***FY 2024 Plans:***<br>Will continue maturation of teamed unmanned system detection of IEDs using multiple platforms, algorithms and sensors. Will evaluate coordinated maneuver schemes to optimize detection probability from multiple platforms leveraging work in PE 0603134A.<br>***FY 2025 Plans:***<br>Will demonstrate detection of IEDs utilizing teamed small, unmanned aerial and unmanned ground systems with improved detection performance and reduced false alarms in a relevant environment. Will evaluate potential data fusion techniques for improved detection performance and identify integration challenges and opportunities leveraging work in PE 0603134A.<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Funding increases in FY25 to evaluate data fusion techniques in support of improving detection performance. | 1.536 | 3.356 | 3.925 |
| ***Title:*** IED Detection Evaluation in Varied Environments | - | 2.118 | 6.455 |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| ***Description:*** This effort conducts characterization of mature IED detection system in in varying environments to ensure performance is known in various environmental conditions. Will conduct a series of annual assessments in varying environments, including hot, wet, and artic to ensure necessary performance.<br><br>***FY 2024 Plans:***<br>Will conduct evaluation of mature IED detection systems in arctic environments to assess performance and provide system optimization. Evaluation will be conducted using electro-optical, infrared and radio frequency, and other sensing modalities at appropriate test facilities.<br><br>***FY 2025 Plans:***<br>Will conduct evaluations of mature IED detection and neutralization systems in temperate and jungle environments to assess performance. Will evaluate multiple electro-optical, infrared, radio frequency, electromagnetic induction, and other sensing modalities at appropriate test facilities. Will assess detection performance against various IED components and emplacements.<br><br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Funding increased in FY25 due to completion of Anti-Armor IED Detection Technology Demonstration effort to conduct follow-on activities in IED detection, and realignment of priorities from Enhanced Personnel Borne IED Detection Prototyping. | | | |
| ***Title:*** Radio Controlled IED Interoperability Evaluation<br><br>***Description:*** This effort conducts regular assessments of interoperability of Radio Control IED neutralization technologies in the presence of battlefield and commercial radio frequency signals to ensure performance is maintained. This will be conducted with foreign partners and hosted by different countries.<br><br>***FY 2024 Plans:***<br>Will conduct an assessment of interoperability of Radio Control IED neutralization technologies in the presence of other radio frequency signals including participation from international partner systems to ensure function in the presence of battlefield and commercial signals. This will be conducted in the United States in coordination with foreign and industry partners.<br><br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Effort completes in FY24, with follow-on activity being conducted in Maneuver IED Detection and Mitigation Technology Demonstration effort. | - | 1.520 | - |
| ***Title:*** Enhanced Personnel Borne IED Detection Prototyping<br><br>***Description:*** This effort evaluates the performance of prototype millimeter wave radar and imaging infrared sensors to detect concealed Personnel Borne IEDs (PBIEDs) while deployed. The focus will be on low size, weight and power with high | - | 2.756 | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| probability of detection and low false alarm rates. This effort will evaluate mature solutions for applicability to PBIED detection in environments with both combatant and non-combatant populations.<br><br>***FY 2024 Plans:***<br>Will conduct evaluation of mature, lightweight, integrated millimeter wave and infrared radar systems to detect Personnel Borne IEDs. Will improve aided detection algorithms for increased detection capability against varied target configurations and clothing types.<br><br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Effort completes in FY24. | | | |
| ***Title:*** Maneuver IED Detection and Mitigation Technology Demonstration<br><br>***Description:*** This effort focuses on the challenges of the force to detect and mitigate hidden IEDs in a battlefield environment. The detection is focused on anti-armor threats with mitigation through device neutralization or marking. The demonstration will employ detection capabilities on multiple platforms, manned and unmanned, to integrate mature technologies for detection and neutralization of IEDs.<br><br>***FY 2024 Plans:***<br>Will integrate mature detection and neutralization technologies on manned and unmanned platforms for demonstration. Will develop scenarios to evaluate the integrated performance of IED detection sensors and radio controlled IED neutralization technologies.<br><br>***FY 2025 Plans:***<br>Will assess performance of IED detection sensors and radio controlled IED neutralization technologies in various scenarios. Will mature and evaluate emerging technologies for detection and mitigation of IED threats, including manipulation techniques, electromagnetic, optical, millimeter wave, nuclear quadrupole resonance, and harmonic sensors. Will assess performance of emerging technologies in complex electromagnetic environments.<br><br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>Funding increases in FY25 due to integration of advanced IED mitigation technologies previously conducted in the Radio Controlled IED Interoperability Evaluation effort. | - | 3.826 | 5.693 |
| ***Title:*** Neutralization and Mitigation Technology Evaluation in Varied Environments<br><br>***Description:*** This effort will develop, mature and automate technologies capable of neutralizing IEDs with complex emplacements and configurations. It will evaluate and optimize neutralization capabilities in varied environmental conditions. | - | - | 1.268 |

| Exhibit R-2A, RDT&E Project Justification: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2023 | FY 2024 | FY 2025 |
|---|---|---|---|
| ***FY 2025 Plans:***<br>Will mature and evaluate electro-magnetic pre-triggering, kinetic devices, remotely operated manipulation, and precision placement technologies to neutralize IEDs with complex emplacements and configurations and/or within complex environmental conditions.<br>***FY 2024 to FY 2025 Increase/Decrease Statement:***<br>This is a new effort beginning in FY25. | | | |
| **Accomplishments/Planned Programs Subtotals** | 14.298 | 16.426 | 17.341 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The Army will coordinate plans with USD (R&E), DTRA, and other Services to prototype and demonstrate CIED technologies, with Army and Service Laboratories and/or industry performing the demonstration activities. The Army will use existing and new contracts to perform these efforts with selected industry partners based on solicitations issued. The Army will continue promising technology demonstrations started in FY20 by DTRA based on review with DTRA, USD (R&E) and other Services.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Army | | | Date: March 2024 |
|---|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* | |

**Product Development ($ in Millions)**

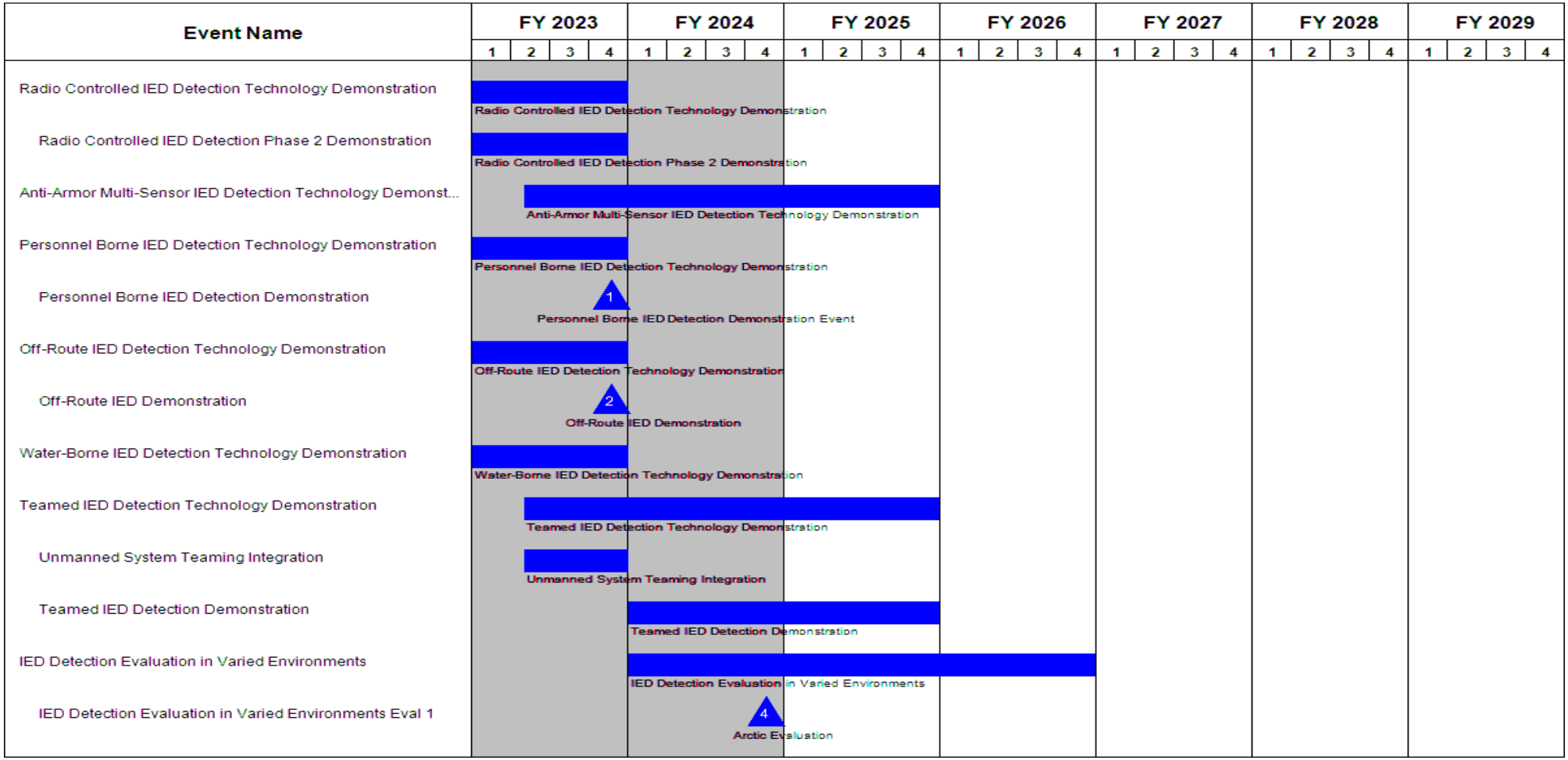
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2023 Cost | FY 2023 Award Date | FY 2024 Cost | FY 2024 Award Date | FY 2025 Base Cost | FY 2025 Base Award Date | FY 2025 OCO Cost | FY 2025 OCO Award Date | FY 2025 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Remote Controlled IED Detection Technology Demonstration | C/CPFF | PEO IEW&S : Aberdeen, MD | 4.383 | 1.823 | Jan 2023 | - | | - | | - | | - | 0.000 | 6.206 | - |
| Anti-Armor IED Detection Technology Demonstration | C/Various | DEVCOM C5ISR : Ft. Belvoir, VA | 4.228 | 1.539 | Feb 2023 | 2.850 | Feb 2024 | - | | - | | - | 0.000 | 8.617 | - |
| Personnel Borne IED Detection Technology Demonstration | C/Various | DEVCOM CBC : Aberdeen, MD | 4.809 | 3.812 | Dec 2022 | - | | - | | - | | - | 0.000 | 8.621 | - |
| Off-Route IED Detection Technology Demonstrator | C/Various | DEVCOM GVSC : Warren, MI | 3.173 | 2.593 | Dec 2022 | - | | - | | - | | - | 0.000 | 5.766 | - |
| Water-Borne IED Detection Technology Demonstration | MIPR | Office of Naval Research (ONR) : Arlington, VA | 2.245 | 2.995 | Jan 2023 | - | | - | | - | | - | 0.000 | 5.240 | - |
| Teamed IED Detection Technology Demonstration | TBD | DEVCOM GVSC : Warren, MI | - | 1.536 | Feb 2023 | 3.356 | Dec 2023 | 3.925 | Dec 2023 | - | | 3.925 | 0.000 | 8.817 | - |
| IED Detection Evaluation in Varied Environments | C/Various | ARL : Adelphi, MD | - | - | | 2.118 | Jan 2024 | 6.455 | Jan 2024 | - | | 6.455 | 0.000 | 8.573 | - |
| Radio Controlled IED Interoperability Evaluation | C/TBD | PEO IEW&S : Aberdeen, MD | - | - | | 1.520 | Dec 2023 | - | | - | | - | 0.000 | 1.520 | - |
| Enhanced Personnel Borne IED Detection Prototyping | C/TBD | DEVCOM CBC : Edgewood, MD | - | - | | 2.756 | Jan 2024 | - | | - | | - | 0.000 | 2.756 | - |
| Maneuver IED Detection and Mitigation Technology Demonstration | C/TBD | TBD : TBD | - | - | | 3.826 | Feb 2024 | 5.693 | Feb 2024 | - | | 5.693 | 0.000 | 9.519 | - |
| Neutralization and Mitigation Technology Evaluation in Varied Environments | C/TBD | TBD : TBD | - | - | | - | | 1.268 | Feb 2024 | - | | 1.268 | 0.000 | 1.268 | - |
| | | **Subtotal** | 18.838 | 14.298 | | 16.426 | | 17.341 | | - | | 17.341 | 0.000 | 66.903 | N/A |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Army | | | Date: March 2024 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | Project (Number/Name)<br>CD4 / *Counter Improvised-Threat Demonstration* | |

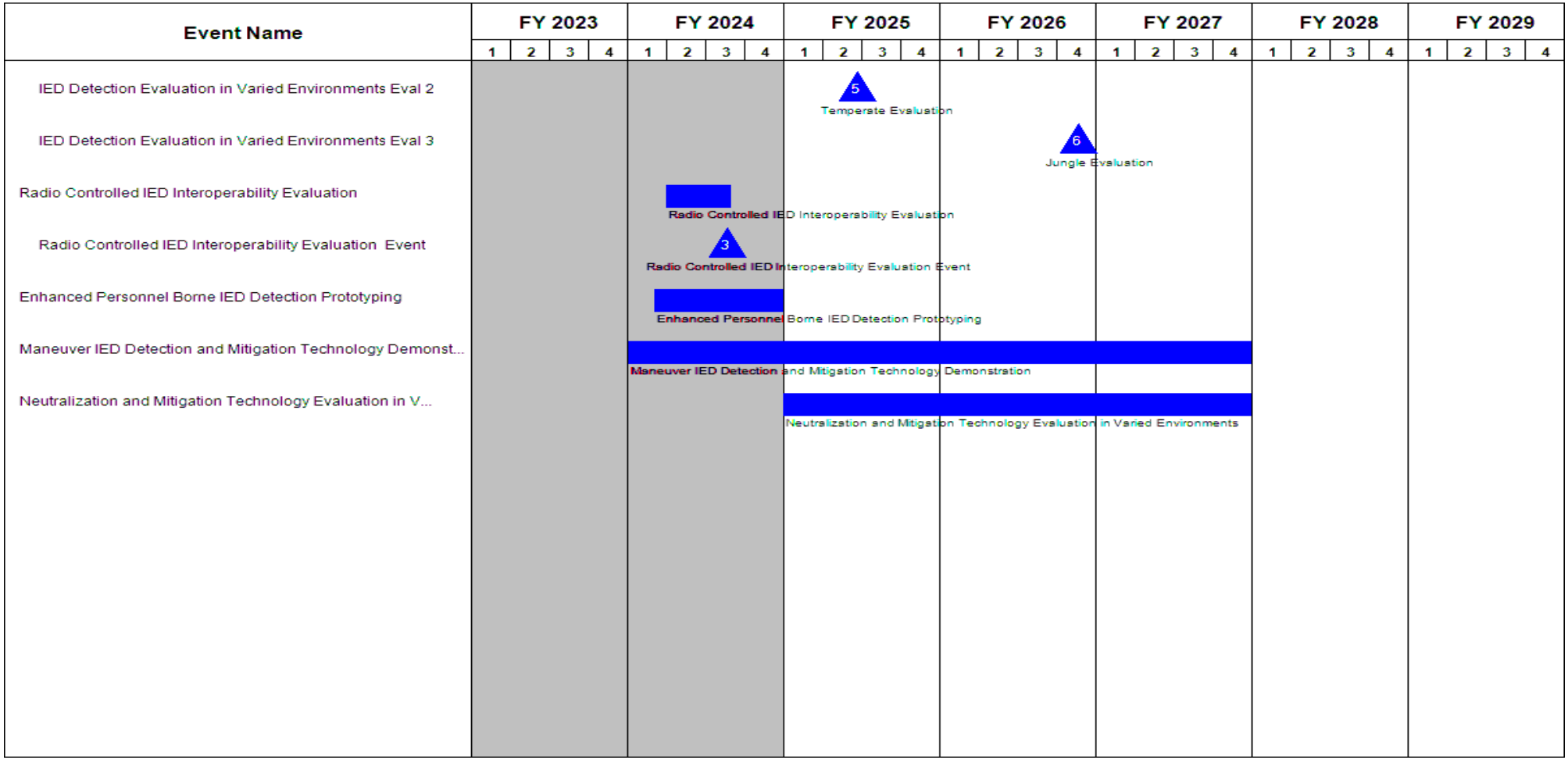
| | Prior Years | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 18.838 | 14.298 | | 16.426 | | 17.341 | | - | | 17.341 | 0.000 | 66.903 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |



| Exhibit R-4, RDT&E Schedule Profile: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Army | | Date: March 2024 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing* | **Project (Number/Name)**<br>CD4 / *Counter Improvised-Threat Demonstration* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| Radio Controlled IED Detection Technology Demonstration | 1 | 2021 | 4 | 2023 |
| Radio Controlled IED Detection Phase 2 Demonstration | 1 | 2022 | 4 | 2023 |
| Anti-Armor Multi-Sensor IED Detection Technology Demonstration | 2 | 2023 | 4 | 2025 |
| Personnel Borne IED Detection Technology Demonstration | 1 | 2021 | 4 | 2023 |
| Personnel Borne IED Detection Demonstration | 4 | 2023 | 4 | 2023 |
| Off-Route IED Detection Technology Demonstration | 1 | 2022 | 4 | 2023 |
| Off-Route IED Demonstration | 4 | 2023 | 4 | 2023 |
| Water-Borne IED Detection Technology Demonstration | 1 | 2022 | 4 | 2023 |
| Teamed IED Detection Technology Demonstration | 2 | 2023 | 4 | 2025 |
| Unmanned System Teaming Integration | 2 | 2023 | 4 | 2023 |
| Teamed IED Detection Demonstration | 1 | 2024 | 4 | 2025 |
| IED Detection Evaluation in Varied Environments | 1 | 2024 | 4 | 2026 |
| IED Detection Evaluation in Varied Environments Eval 1 | 4 | 2024 | 4 | 2024 |
| IED Detection Evaluation in Varied Environments Eval 2 | 2 | 2025 | 2 | 2025 |
| IED Detection Evaluation in Varied Environments Eval 3 | 4 | 2026 | 4 | 2026 |
| Radio Controlled IED Interoperability Evaluation | 2 | 2024 | 3 | 2024 |
| Radio Controlled IED Interoperability Evaluation Event | 3 | 2024 | 3 | 2024 |
| Enhanced Personnel Borne IED Detection Prototyping | 1 | 2024 | 4 | 2024 |
| Maneuver IED Detection and Mitigation Technology Demonstration | 1 | 2024 | 4 | 2027 |
| Neutralization and Mitigation Technology Evaluation in Varied Environments | 1 | 2025 | 4 | 2027 |