



**Army Standard Family
Of
Rigid Wall Shelters
(ASF-RWS)
Capability Development Document
(CDD)**



Agenda



- Purpose**
- Program Summary**
- Analysis**
- System Capabilities (KPPs, KSAs, and Attributes)**
- Schedule**



Purpose



The purpose of this CDD is to:

- Convert the ASF-RWS Required Operational Capability (ROC) (25 March 1987, CARDS #1658) into the new Joint Capabilities Integration and Development System (JCIDS) format for historical continuity and to document new capability requirements.
- Update, replace and add to the number of standard RWS available to materiel developers for land based use.
- Included shelters developed using this CDD in the Joint Committee on Tactical Shelters (JOCOTAS) standard family of tactical shelters.
- Support future systems requiring RWS at a reduced development cost, with improved logistics supportability, commonality of components, and improved energy efficiency.
- Support materiel developer requirements across the Army and other Services, freeing the system materiel developer to concentrate on systems capabilities rather than the design of the shelter.



Program Summary



- This is not an acquisition program. This is a Research, Development Test and Engineering (RDT&E) effort that develops, tests, and finalizes a technical data package that will be used to support customers.
- ASF-RWS will be developed in the following sizes and configurations that can be used to provide Twenty-foot Equivalent Units such as Triple Containers (TRICON), Bisected Containers (BICON), twenty foot shelters, and Vehicle Mounted Shelters. Each of these sizes may include various configurations that can be expanded/non-expanded, panelized, collapsible, or height reducible.
- Procurement is customer funded by materiel developers.
- Add-on technologies to be developed include:
 - Collective Protection Kit
 - Electromagnetic Kit
 - Ballistic Protection Kit



Analysis



Cost-Benefit Analysis (C-BA)

- Alternatives:
 - Do nothing (Retains current family of RWS but does not enable updates to latest technologies and advances).
 - ASF-RWS (Eliminates the proliferation of non-standard shelters and their associated logistics burden and prevents the duplication of shelter research and development efforts).
 - Each PM developing their own RWS. (Allows proliferation of non-standard shelters and their associated logistics burden and duplication of shelter research and development efforts).
- Objective of the C-BA is to select the best alternative.
- Criteria: Each of the three alternatives will be evaluated to compare four identified Measures of Performance (MOP):
 - Power consumption
 - Payload
 - Years of Service
 - System component compatibility



Analysis Conclusion



Payoffs for this capability:

- Eliminates the proliferation of non-standard shelters and their associated logistics burden and prevents the duplication of shelter research and development efforts



System Capabilities

Key Performance Parameters (KPPs)



KPP	Developmental Threshold	Developmental Objective
KPP 1 - Energy Efficiency	The ASF-RWS shall be 20% more energy efficient than the equivalent legacy ASF-RWS. This energy efficiency pertains to the shelters ability to maintain a temperature of 70 degrees F, with an Environmental Control Unit (ECU) and applicable lighting turned on across the entire operating temperature range for a minimum of 24 hours .	40% or more energy efficient
KPP 2a. - Transportability	The ASF-RWS shall be capable of military and commercial transport by highway, rail, sea, and air (C130 and larger aircraft). The ASF-RWS shall meet the requirements for helicopter lift and for cargo lift and tie down.	The ASF-RWS shall have a 1c variant that includes a bale bar for direct Heavy Expanded Mobility Tactical Truck-Load Handling System compatibility.
KPP 2b. - Transportability	The ASF-RWS shall be compatible with military transport systems. Shelters intended for transport using commercial intermodal transport systems shall comply with the ISO exterior dimensions and exterior load requirements and shall be Convention for Safe Containers (CSC) certified in the 1C (8' x 8' x 20') configuration. The 1C configured shelter shall meet the ISO nine-high stacking requirement.	T=O



Key System Attributes (KSAs)



- **KSA 1a. Power:** The ASF-RWS, with the exception of vehicle mounted shelters, shall have the flexibility to accept 50/60 Hertz (Hz), 120/208 volt, three-phase power from the DOD standard family of military power sources, to include tactical (up to 200 kW) and prime power (> 200kW) to operate all the shelter lights, controls, outlets and standard military environmental control systems. User equipment to be integrated or used within the shelter must be compatible with the power type being supplied to the shelter (T). The ASF-RWS, with the exception of vehicle mounted shelters, shall integrate flexibility to operate from any power source of either 120/208 volt, three-phase; 240/416 volt, three-phase; or multi-national power sources (commercial or military) if power characteristics compare favorably with DOD standard sources and/or recognized international electrical power quality standards (O). ASF-RWS shall integrate flexibility to use renewable energy that reduces reliance on liquid fuels (O).
- **KSA 1b. Power (Electrical Panel):** The ASF-RWS, with the exception of vehicle mounted shelters, shall have a minimum of two locations in the shelter for modular/replaceable power panel interfaces. A power panel or a blank panel shall be provided for each power panel interface location. The configuration/combination of the power panels or blank panels shall be determined by the end item user. Power panels shall include exterior power connectors and an interior load center. Exterior power connectors shall be 208 Volt, 3 Phase, Class L bulkhead connectors to be used to connect to power distribution cables or environmental control units. The interior load center shall be appropriately sized for the power input connector, shall contain circuit breakers, shall be designed to readily adapt to the basic internal shelter wiring (e.g. lights and convenience outlets) and shall provide additional circuit breaker space to be used to connect to the shelter integration electrical system. Blank Panels shall be designed to fill the interface opening when no power panel is required. Power panels shall be interchangeable to allow modification of the power capabilities as the mission requirements evolve. Power panel interfaces shall be available with five combinations of power input/output connectors and appropriately sized load centers: 1) 100 amp input, 60 amp input and 60 amp output, 2) a 60 amp input and 60 amp output, 3) a 100 amp input with no output 4) a 60 amp input with no output and 5) a panel blank. (T=O)



KSAs (cont.)



- **KSA 1c. Power (Load Balancing):** The ASF-RWS, with the exception of vehicle mounted shelters, shall balance the power drawn on each phase of a 3-phase system manually (T), automatically (O), without disrupting the equipment connected to the power distribution system.
- **KSA 1d. Power (Outlets-1C Configuration):** The ASF-RWS 1C configuration, with the exception of vehicle mounted shelters, shall provide twelve (12) each protected ground fault circuit interrupter (GFCI) and arc fault circuit interrupter (AFCI) as appropriate 120 V, 20 A duplex outlets evenly distributed around the perimeter of the shelter interior while in the erect/expanded configuration (T), or twelve (12) each 120 V, 20 A quad outlets (O).
- **KSA 1e. Power (Outlets-Collapsible and Panelized):** The collapsible and panelized shelters shall have at least one duplex receptacle box (T) one quad receptacle box (O) for each 75 square feet of floor space (approximately every 8.5 linear feet) evenly distributed around the perimeter of the shelter interior while in the erect/deployed configuration.
- **KSA 2a. Chemical, Biological, Radiological, and Nuclear (CBRN) Survivability:** The ASF-RWS, with the exception of the collapsible and panelized configurations, shall be CBR survivable and be compatible with CBR kits. The ASF-RWS shall be decontaminable using standard decontaminants and procedures while in the closed (transit mode) configuration (T). The exterior surfaces of the ASF-RWS shall be decontaminable in the open or closed configuration (O).
- **KSA 2b. CBRN Survivability (Radiation Protection Factor):** During test and evaluation phase of the ASF-RWH system, the radiation protection factor (PF) shall be measured and recorded. The ASF-RWS system provides its occupants with shielding from penetrating radiation hazards. (T=O)



Attributes



- APA 1a. Climatic Conditions (1C and Vehicle Mounted)
- APA 1b. Climatic Conditions (Collapsible and Panelized)
- APA 2a. Shelter leveling and erection/expansion (1C Configuration)
- APA 2b. Shelter leveling and erection/expansion (Collapsible and Panelized)
- APA 2c. Shelter leveling devices
- APA 2d. Shelter Erect/Strike Cycles
- APA 3a. Shelter Life (Operational)
- APA 3b. Shelter Life (Storage)
- APA 4a. Lighting
- APA 4b. Lighting: Emergency Exit Lighting
- APA 4c. Lighting: Blackout Lighting
- APA 5. Entryways/Exitways
- APA 6a. Weight (1C Configuration)
- APA 6b. Weight (Vehicle Mounted)
- APA 6c. Weight (Collapsible and Panelized Configuration)
- APA 7. Floor Support
- APA 8. Floor and Roof Surfaces
- APA 9. Standardization
- APA 10. Panel Fasteners
- APA 11. Complexing
- APA 12. Asset Visibility



Attributes (cont.)



- APA 13a. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (MANPRINT Compliance)
- APA 13b. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (Shelter Cleaning)
- APA 13c. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (Shelter Material Characteristics)
- APA 13d. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (Electrical Hazards)
- APA 13e. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (STC)
- APA 14. Data Communication
- APA 15a. Add-on Kit (Collective Protection)
- APA 15b. Add-on Kit (Electromagnetic Interference {EMI})
- APA 15c. Add-on Kit (Ballistic Protection)



Schedule



Initial Operational Capability (IOC) - Family of RWS	Quarter/ Fiscal Year
Family of Vehicle Mounted RWS (TDP)	3QFY18
Family of Expandable/Non-expandable 20' RWS (TDP)	4QFY19
Family of Collapsible & Panelized RWS (TDP)	2QFY22
Family of Expandable/Non-Expandable Bicon/Tricon RWS (TDP)	4QFY22

Note: IOC occurs when the first ASF-RWS TDP is available for PMs systems integration.

ASF-RWS CDD	Tentative Quarter/Fiscal Year
Worldwide Staffing/Adjudication	Completed 18 OCT 13
ARCIC Validation	Submit 1QFY14
HQDA 1 Star Staffing/Adjudication	2QFY14
HQDA 3 Star Staffing/Adjudication	2-3QFY14



Questions



BACK-UP Slides



APA 1a. Climatic Conditions (1C and Vehicle Mounted) The 1C and vehicle mounted ASF-RWS shall be suitable for erection/expansion, operation, storage, and transit in the climatic design types of hot, basic, cold, and severe cold. (T=O)

APA 1b. Climatic Conditions (Collapsible and Panelized) Collapsible and panelized configurations shall be suitable for erection/expansion in the climatic design types of hot, basic, cold, and for operation, storage, and transit in the climatic design types of hot, basic, cold, and severe cold. (T=O)

APA 2a. Shelter leveling and erection/expansion (1C Configuration) The 1C configured Shelters, once emplaced by Material Handling Equipment (MHE), shall be capable of being leveled, erected/expanded while on the ground (T) and erected/expanded while mounted on a vehicle or trailer (O). Leveling and erecting/expanding shall be accomplished without the use of special tools within sixty minutes by four soldiers (T), thirty minutes by two soldiers (O).

APA 2b. Shelter leveling and erection/expansion (Collapsible and Panelized) Collapsible and Panelized shelters, once emplaced by MHE, shall be capable of being leveled, erected/expanded while on the ground without the use of special tools by six soldiers in eight hours (T), four soldiers in six hours (O).

APA 2c. Shelter leveling devices The 1C configured, collapsible, and panelized shelters deployed on the ground shall be equipped with manual devices (T), automatic devices with manual backups (O), capable of leveling shelter over a variation of terrain up to 18 inches.

APA 2d. Shelter Erect/Strike Cycles If the Shelter is of the expandable type it shall be capable of being subjected to 52 (T), 73 (O), erect/strike cycles per year. Collapsible and panelized shelters shall be relocated once every 3 years (T) year (O).

APA 3a. Shelter Life (Operational) All ASF-RWS, with regular preventative checks and services performed, shall have a minimal useful life of 15 years (T), 20 years (O), of actual field use. This requirement does not apply to any equipment which may be integrated or housed in the shelter which will have its own intended useful life expectancy requirements.

APA 3b. Shelter Life (Storage) The ASF-RWS with regular Care of Supplies in Storage (COSIS) functions performed shall have a minimum useful life of 20 years (T), 25 years (O), when in open storage. This requirement does not apply to any equipment which may be integrated or housed in the shelter which will have its own intended useful life expectancy requirements.

APA 4a. Lighting The ASF-RWS, with the exception of vehicle mounted shelters, shall have lighting fixtures with adjustable lighting of 50 to 75 ft-candles (T), 100 ft-candles (O) that provide adequate lighting for medium bench work 30 inches above the floor.

APA 4b. Lighting: Emergency Exit Lighting The 1C, collapsible, and panelized configured ASF-RWS shall provide interior emergency lighting compatible with blackout operations (T=O).

APA 4c. Lighting: Blackout Lighting The 1C, collapsible, and panelized configured ASF-RWS shall have a manual (T), automatic with manual override (O), provision for blackout lights at a wavelength of 500 nanometers.



APA 5. Entryways/Exitways The ASF-RWS shall have a minimum of one entry door and one alternate egress, not located on the entry door wall, for any shelter in which personnel work. (T=O).

APA 6a. Weight (1C Configuration)

The ASF-RWS intended for intermodal transport in the 1C configuration shall be equal to or less than the current tare weight with a gross weight of 22500 pounds (T), 5% reduction in tare weight with a gross weight of 25000 pounds (O).

APA 6b. Weight (Vehicle Mounted)

Vehicle mounted ASF-RWS shall have a 5% (T), 10% (O), reduction in tare weight with a gross weight compatible with the payload capacity of the prime mover when fully up armored.

APA 6c. Weight (Collapsible and Panelized Configuration) When packaged for shipping, the collapsible and panelized structures shall be in shipping units that are less than 10,000 pounds. (T=O)

APA 7a. Floor Support The ASF-RWS shall have a floor capacity capable of supporting a uniform load of 80 (T), 120 (O), pounds per square foot of the floor without structural damage. ASF-RWS floors shall be capable of supporting a point load of 125 pounds over a one square inch area (T=O). In addition the 1C configured shelter floors shall be capable of supporting a concentrated load of 2500 (T), 3000 (O), pounds over a four square foot area at the center of the floor.

APA 7b. Roof Support

The roof assembly of the ASF-RWS shall withstand a snow load of 40 pounds per square foot and a personnel load of 660 lb static over 2 square feet (T=O).

APA 8. Floor and Roof Surfaces The ASF-RWS shall have a floor and outside roof surface with sufficient impact resistance to prevent penetration or damage which negatively affects form, fit, or function by objects weighing 70 pounds for the 1C configured shelter and 30 pounds for the collapsible, panelized, and vehicle mounted shelters falling from a height of 36 inches over an area of 3 inch diameters. (T=O)

APA 9. Standardization To the maximum extent possible ASF-RWS shall have standardized items such as doors, light fixtures, panel sections, removable panels for environmental control connections and ventilation; electrical connections; communication connections and hardware (e.g. hinges, handles, latches), applicable throughout the family and shall not require the use of special tools for operation, maintenance, repair or replacement. Shelters shall utilize commercial mechanical hardware (e.g. nuts, bolts, fasteners) and electrical equipment (e.g. outlets, circuit breakers, panel boards) to the maximum extent possible. (T=O)

APA 10. Panel Fasteners The ASF-RWS roof, wall and floor panels shall be of adequate strength and construction to accept the installation of fasteners capable of supporting the attachment of integrated equipment. The following sized fasteners, where installed, shall withstand the torque and pullout loads as specified in the following Table. (T=O)



APA 11. Complexing The ASF-RWS shall possess the ability to complex or connect together with other ASF-RWS or soft wall shelters either through the use of vestibules compatible with the current complexing kits (T) or directly without the need for complexing kits (O).

APA 12. Asset Visibility The ASF-RWS shall incorporate item unique identification (IUID), as well as, the capability to host smart Radio Frequency Identification Devices (RFID) when prepared for shipping (T) and include inventory processing technologies to improve accountability of subsystems and components (O).

APA 13a. Force Health Protection, Hazardous Material Protection, Manpower and Personnel Integration (MANPRINT), and General Safety (MANPRINT Compliance) The ASF-RWS shall comply with applicable MANPRINT requirements throughout its life cycle and as a minimum, a Health Hazard Assessment shall be requested from the United States Army Public Health Command (USAPHC) during development (T=O).

APA 13b. Force Health Protection, Hazardous Material Protection, MANPRINT, and General Safety (Shelter Cleaning) The ASF-RWS shall be easily cleaned and disinfected, resistant to water, mold, mildew, and bodily fluids (T), include a biocidal capability integrated in the materials to neutralize common illness-causing bacteria to a harmless level (O), in 24 hours (T) and less than 30 minutes(O).

APA 13c. Force Health Protection, Hazardous Material Protection, MANPRINT, and General Safety (Shelter Material Characteristics) The ASF-RWS shall be fire retardant and shall not possess toxicity characteristics. All finishes/chemicals used to process the shelter material should be identified and accompanied by the appropriate Material Safety Data Sheet (MSDS) (T=O).

APA 13d. Force Health Protection, Hazardous Material Protection, MANPRINT, and General Safety (Electrical Hazards) The ASF-RWS shall protect personnel from electrical related hazards and mitigate risk of fire (T=O).

APA 13e. Force Health Protection, Hazardous Material Protection, MANPRINT, and General Safety, Sound Transmission Class (STC) The ASF-RWS shall have a minimum STC rating of 30 (T) and 40 (O).

APA 14 Data Communication If required by the end item user, the 1C configuration ASF-RWS shall be capable of hosting (supporting) two (2) separate ports for communication data cables on two (2) sides, at least one (1) foot above floor level; these cables shall interconnect between shelters without exposure to the elements; and accommodate the installation of up to two (2) data distribution systems (one (1) Secure Internet Protocol Router (SIPR) and one Non-Secure Internet Protocol Router (NIPR)), with their ancillary equipment (e.g., data cabinet, RJ-45 outlets, switches, routers, etc.) at any location inside the shelter while preventing signals from crossing between the two networks (T). The shelter shall accommodate data connections recessed into the walls, ceilings and roofs without interfering with power cables (O).



APA 15a. Add-on Kit (Collective Protection) The ASF-RWS, with the exception of the collapsible and panelized configurations, shall have collective protection kits as an add-on capability (T), shall be integrated into ASF-RWS materials at the customer's request (O).

APA 15b. Add-on Kit (Electromagnetic Interference {EMI}) The ASF-RWS, with the exception of the collapsible and panelized configurations, with the addition of an add-on kit, shall be EMI survivable and provide 60 decibels (db) (T) 80 db (O) attenuation.

APA 15c. Add-on Kit (Ballistic Protection) The ASF-RWS shall have ballistic protection kits as an add-on capability (T), integrated into ASF-RWS materials (O), to protect against small arms and small fragmenting munitions (T), high-powered rifles and medium fragmenting munitions (O), that is rapidly emplaced, blast resistant, ultra-violet resistant, flame resistant, moisture resistant, and non-degradable in extreme temperatures.