APPENDIX B: PRIME BASE ENGINEER EMERGENCY FORCE (BEEF)/RED HORSE CAPABILITIES DESCRIPTIONS[2]

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ENGINEERING

General Engineering

- **Base Denial**—Removal of resources from a threatened area, rendering resources unusable by fire or explosives, removal of parts, contamination (other than by nuclear, biological, or chemical means), immobilizing, partially or totally destroying military equipment, supplies or infrastructure.

- **Batch Plant Operations (Asphalt/Concrete)**—Performing batch plant operations, training, procuring, and maintaining batch plant, designing and planning asphalt/concrete batch mix and operations.

- **Contingency Contract Management**—Managing and inspecting construction and maintenance contracts. Interpreting plans, specifications, and other contract documents. Coordinating, evaluating, monitoring, and documenting contract activities and progress. Preparing recommendations for contract modifications. Reviewing material submittals for compliance with contract specifications. Conducting pre-final, acceptance, and post-acceptance inspections.

- **Directional Drilling**—Conducting limited directional drilling under existing pavements (roads, airfields) to install utilities such as water, sewer, electric, drainage, and communications lines.

- **Engineer Reconnaissance/Site Survey**—Conducting reconnaissance, site location, construction, and mapping surveys.

[2] Term descriptions in this appendix are provided to describe Air Force engineer capabilities to the COMAFFOR and staff for planning purposes. They are derived from multiple sources, including civil engineer working groups, career field analyst descriptions, the civil engineer supplement to the *War and Mobilization Plan* (WMP-1), Joint Capability Area taxonomy definitions, JP 3-34, *Joint Engineer Operations*, and US Central Command Regulation 415-1, *Construction and Base Camp Development in the US Central Command Area of Responsibility* ("The Sand Book").

- **Explosive Demolition Operations**—Conducting explosive demolition for construction purposes, quarry operations, facility demolition, or base denial.

- **Provide Technical Engineer Advice**—Providing technical advice on all matters pertaining to general engineering and installations support (e.g., force beddown and sustainment, capabilities and limitations, environmental concerns, installation geospatial data).

- **Quarry Operations**—Use of explosives, rock drilling, rock crushing, and conveyor operations to produce aggregate to support asphalt and concrete operations.

- **Staff Augmentation (Echelon Above Wing)**—Providing command force staff augmentation for operational planning, engineer management, technical design, construction management, C2 expeditionary site planning, and reporting in support of wartime or stability operations.

- **Targeting Assistance**—Providing advice on the effects of targeting to avoid unnecessary destruction of infrastructure and estimate repair efforts for friendly forces.

Develop and Maintain Facilities

- **Area Lighting**—Installing, operating, and maintaining remote area lighting systems.

- **Asphalt Paving Operations**—Designing and constructing asphalt paved surfaces.

- **Berm and Dike Construction**—Constructing and maintaining berms and dikes for force protection and control of other resources.

- **Concrete Paving Operations**—Designing and constructing concrete surfaces required for lines of communications and other purposes.

- **Construction Materials Testing**—Performing soils exploration, classifying soils in field conditions, and determining strength of materials.

- **Construction Surveying**—Determining distances, areas, and angles; establishing reference points for horizontal and vertical control; marking lines, grades, and principal points; preparing maps, layout structures; determining vertical and horizontal placement of utilities, etc.

- **Construct Temporary Facilities**—Erecting temporary facilities/equipment to include wooden structures, storage structures, underground water and power distribution systems.

- **Disease Vector Surveillance/Control**—Performing integrated pest management functions. Conducting pest management surveys. Determining pest management

actions needed to control and prevent infestations by plant and animal pests. Interacting and coordinating with medical personnel to control health hazards.

- **Erect Expeditionary Facilities**—Erecting expeditionary facilities and equipment to include deployable shelter systems, latrines, shower and shave units, environmental control units, generators, boilers, water production equipment, etc.

- **Expedient Locksmith**—Troubleshooting, repairing, and installing commercially manufactured locking devices such as keyed, combination, cipher, panic hardware/exit devices, and padlocks. This does not include General Services Administration certification unless line items require it.

- **Fire Protection Systems**—Inspecting, testing, repairing, and maintaining wet pipe, dry pipe, deluge, foam, and specialized fire protection systems.

- **Horizontal Construction**—Airfield repair/new construction, asphalt milling/paving, concrete repair, heavy earthwork including fuel/munitions berms, roads, and expedient airstrips and certain special capabilities quarry operations, asphalt batch plant operations, and concrete batch plant operations.

- **Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC/R) Systems**—Installing, operating, and maintaining HVAC/R systems, combustion equipment, and industrial air compressors.

- **Lightning Arresting Protection**—Installing, maintaining, testing, and troubleshooting lightning protection systems.

- **Master/Comprehensive Planning and Programming**—Performing comprehensive planning to address the full range of issues affecting or affected by the installation's development. Through this process, goals and objectives are defined, issues are identified, information is gathered, alternative solutions are developed, and a sound decision-making process is employed to select a preferred alternative for implementation.

- **Passive Defense Measures**—Ensuring appropriate standoff; designing effective facility and road layout; constructing berms, revetments, ditches and fences; employing barriers; installing lighting; assisting in asset dispersal, facility hardening, etc.

- **Pest, Animal, and Vegetation Control**—Performing integrated pest management functions. Conducting pest management surveys. Determining pest management actions needed to control and prevent infestations by plant and animal pests.

- **Power Generation/Distribution Systems**—Installing and operating electrical power production systems and equipment.

- **Project Management and Execution**—Planning, organizing, and overseeing installation facility and infrastructure projects, ensuring entire scope of work is accomplished in accordance with performance work statements and other predetermined criteria, on time and within budget.

- **Project Planning and Programming**—Providing quality facilities needed to perform the mission. Ensuring project requests meet validated requirements, are in compliance with all applicable standards, are programmed at the lowest life-cycle cost, achieve optimum resource efficiency and minimize damage to the natural and human environments, and are within authorities and available resources.

- **Service Contract Management**—Validating contract requirements, preparing performance work statements, preparing surveillance plans, and conducting quality assurance evaluations for facilities operation and maintenance activities.

- **Vertical Construction**—Managing, constructing, repairing, and modifying temporary or permanent structural systems and wooden, masonry, metal, and concrete buildings. Fabricating and repairing components of buildings, utility systems, and real property to include pre-engineered buildings and super spans.

- **Waste Collection/Disposal Systems**—Establishing and maintaining field sanitary landfills or other similar systems for disposal of trash and refuse. Providing design and construction services for waste collection disposal.

- **Waste Water Collection/Disposal Systems**—Installing, maintaining, and repairing wastewater collection systems. Does not include support to operate and maintain domestic wastewater treatment plants. Wastewater disposal limited to evaporation and facultative lagoons.

- **Water Production/Distribution Systems**—Operating and maintaining water production in field conditions. Installing, maintaining, and repairing water production system components (i.e., pumps, valves, motors). Does not provide support to operate and maintain domestic water treatment plants. Installing, maintaining, and repairing water distribution piping systems (i.e., valves, fire hydrants, booster stations, well pumps, and chlorination).

- **Well Drilling (up to 1,500 feet)**—Drilling and piping groundwater sources for the production of potable and non-potable water. Capacity is 6-inch diameter wells at a maximum depth of 1,500 feet.

Establish Lines of Communication (Airfields)

- **Aircraft Arresting System**—Installing equipment used to stop aircraft by means of absorbing its momentum via a mechanical/hydraulic/pneumatic breaking system in a routine/emergency landing or an aborted takeoff.

- **Airfield Assessment Repair, Initial (RED HORSE)**—Rapidly deploying to establish initial airfield operations with personnel from supporting units. Assessing airfield capabilities, preparing helicopter or aircraft landing areas, clearing obstacles, making expedient airfield damage repairs, and providing initial assessment of required follow-on forces and material resources to establish airfield operations. Does not include capture of airfields via forcible entry or operating on airfields controlled by other US or coalition forces or opening airfields not held by enemy forces.

- **Airfield Damage Assessment/Repair**— All actions including damage assessment, explosive ordnance reconnaissance, Minimum Airfield Operating Surface selection, unexploded explosive ordnance (UXO) hazard mitigation, pavement repair, airfield marking, airfield lighting, arresting system installation, and utility system repairs required to establish, sustain, or recover flying operations capability at an airfield.

- **Airfield Lighting and Marking**—Installing and maintaining airfield lighting to permit night flying and defining the boundaries on an aircraft landing strip or pad. Note: RED HORSE does not maintain this capability.

- **Airfield Pavement Evaluation**—Performing tests and training personnel in airfield pavement standards, procuring and maintaining equipment, generating reports.

- **Asphalt/Concrete Milling Operations**—Conducting asphalt/concrete milling operations. Heavy transport required for milling equipment.

- **Asphalt/Concrete Paving Operations**—Conducting asphalt/concrete paving operations to include roads, taxiways, runways, ramps, ramp expansions, airfield damage repair, and other concrete operations. Heavy transport required for paving equipment.

- **Improve Airfields**—Conducting pavement evaluations, expanding width and length of runways, reducing obstacles to air operations, improving runway surfaces, marking, lighting, arresting systems, etc.

- **Limited UXO/Explosive Ordnance Disposal (EOD)/Improvised Explosive Device (IED) Clearance**—Performing rapid narrow scoped clearance of UXO, EOD, and IEDs needed for initial bed-down/site survey operations. During this phase, initial EOD teams should conduct surveys to determine the need for follow-on forces, with additional resources (people, equipment, and explosives) to conduct large-scale, sustained operations.

- **Limited Firefighting/EMS**—Containing or hindering the spread of fires and assisting trained firefighters in protecting RED HORSE resources. While RED HORSE airborne contains limited firefighting capability to support the “Open the Base” mission, no other organic resources are available to provide major fire protection and prevention.

- **Limited Chemical, Biological, Nuclear, and Radiological (CBRN) Assessment/Support**—Conducting limited site assessments to determine presence of toxic industrial materials or CBRN hazards. Includes aircraft CBRN contamination assessments.

- **Revetments**—Assembling/erecting revetments to protect aircraft, critical equipment, and facilities.

- **Snow/Ice Control**—Maintaining continuous mission capability by removing snow and ice from airfields and base pavements.

Repair and Restore Infrastructure

- **Airfield Damage Assessment/Repair**—Assembling and placing fiberglass foreign object damage covers on runways, assembling and placing aluminum matting for taxiways and ramps. Performing airfield marking operations.

- **Area Lighting**—Installing, operating, and maintaining remote area lighting systems.

- **Facilities/Infrastructure Damage Assessment/Repair**—Inspecting damaged facilities, determining priority of repairs based on information provided from the emergency response plan and performing expedient repairs and permanent repairs at a later time.

- **HVAC/R Systems**—Repairing, HVAC/R systems, combustion equipment, and industrial air compressors.

- **Power Generation/Distribution Systems**—Maintaining, modifying, and repairing electric power generating and control systems.

- **Waste Collection/Disposal Systems**—Providing design and construction services for waste collection disposal.

- **Waste Water Collection/Disposal Systems**—Providing design and construction services for waste water collection disposal.

- **Water Production/Distribution Systems**—Repairing water production system components and water distribution piping systems. Providing design and construction support for water distribution.

- **Well Drilling (up to 1,500 feet)**—Drilling and piping groundwater sources for the production of potable and non-potable water. Capability is 6-inch diameter wells at a maximum depth of 1,500 feet.

Harden Key Infrastructure and Facilities

- **Collective Protection**—Assembling systems to protect personnel inside a building, room, shelter, or tent against contamination through the combination of impermeable structural materials, air filtration equipment, air locks, and over-pressurization.

- **Develop Force Protection (FP) Plan**—Assisting in developing FP plan consisting of specific measures to protect facilities and critical assets. Engineer aspects of the FP plan should include elements that contribute to protection of personnel and key aspects of FP such as site layout, barrier placement, berm construction, security lighting, backup power, water source protection, expedient hardening, terrain modification, etc.

- **Provide Installation FP Measures**—Providing protection for personnel using site layout methods, barrier placement, berm construction, security lighting, backup power, water source protection, expedient hardening, terrain modification, etc.

Master Facility Design

- **Installation Master Planning**—Identifying, planning, and programming facilities to support assigned missions. Installation master planning is focused on the base layout, taking into account the environment, base infrastructure, and necessary subsystems, ensuring all requirements meet theater construction standards and comply with unified facilities criteria.

- **Project Planning and Programming**—Identifying facilities needed to satisfy current and future requirements, determining most economical methods based on construction standards, developing estimates, obtaining funding, developing project timeline and schedule.

- **Project Design**—Designing facilities and utilities necessary to support the estimated population, mission, and anticipated life span.

Geospatial Engineering: Use Geospatial Data

- **Geospatial Information Systems (GIS)**—Collecting and using GIS data for installation planning.

INSTALLATIONS SUPPORT

Real Property Life-Cycle Management

- **Installation Master Planning**—Identifying, planning, and programming facilities to support assigned missions. Installation master planning is focused on the base layout, taking into account the environment, base infrastructure, and necessary subsystems, ensuring requirements meet theater construction standards and comply

with unified facilities criteria.

- **Staff Augmentation**—Providing command force staff augmentation for operational planning, engineer management, technical design, construction management, command and control (C2) expeditionary site planning, and reporting in support of wartime or stability operations.

- **Provide Installation Assets**

- **Identify Facility Requirements**—Coordinating with contracting and legal functions to purchase, lease, program for construction, or gain installation assets, including all land, natural resources, buildings, structures, portable facilities, airfields and roads, installed equipment, etc.

Facilities Support

- **Base Operating Support**—Directly assisting, maintaining, supplying, and distributing support of forces at the operating location to achieve the mission and maintain the operation of its infrastructure.

- **Design Management**—Providing technical support and contract management for planning and designing base infrastructure.

- **Energy Security**—Establishing and executing a facility infrastructure energy program.

- **Installations and Facilities**—Providing, operating, maintaining, restoring, and protecting the built and natural infrastructure necessary to support the Air Force mission.

- **Operational Range Clearance (Testing and Training) Support**—Clearing operational ranges and test and evaluation ranges of unexploded ordnance. While normally a surface clearance, operational test and evaluation ranges sometimes require sub-surface recovery of deeply buried experimental ordnance.

- **Real Property Management**—Maintaining an accurate inventory of all Air Force-controlled real property and real property installed equipment with descriptions of current physical condition, capacity, sizes, and uses.

- **Real Property Power Generation/Distribution Systems**—Installing, operating, maintaining, and repairing electrical power production systems and associated equipment.

- **Real Property HVAC/R Systems**—Installing, operating, maintaining, and repairing heating, ventilation, air conditioning, and refrigeration systems, combustion equipment, and industrial air compressors.

- **Real Property Waste Collection/Disposal Systems**—Developing performance work statements to procure waste collection and disposal equipment and services; developing waste management plans; providing administrative oversight for waste collection and disposal activities.

- **Real Property Waste Water Collection/Disposal Systems**—Installing, inspecting, maintaining, troubleshooting, modifying, and managing waste water treatment systems.

- **Real Property Water Production/Distribution Systems**—Installing, inspecting, maintaining, troubleshooting, modifying, and managing plumbing and water distribution systems.

Sustainment of Installation Assets

- **Environmental Program Management and Compliance**—Developing environmental plans to protect the health of the population, preserve the environment, reduce waste, and comply with international treaties, overseas environmental baseline guidance documents, final governing standards, etc.

- **Preventive Maintenance and Inspection of Installation Facilities, Utilities, and Infrastructure**—Providing effective assessment, maintenance, and repair of current assets and planning for future missions. Regularly surveying the installation layout, facilities, and equipment, and performing preventive maintenance as needed.

Recapitalization of Installation Assets

- **Installation Management**—The process of better quantifying, articulating, and managing risk while supporting the mission with assets of the right size, condition, and cost to maximize value and utility of built and natural infrastructure. Installation Management applies standard levels of service across the Air Force, and integrates existing processes across all civil engineer divisions/flights. Installation Management provides resource visibility, supports advocacy and resource allocation, and enables analysis to balance costs, risks, and benefits.

- **Installation Master Planning**—Installation master planning is focused on the base layout, taking into account the environment, base infrastructure, and necessary subsystems, ensuring all requirements meet theater construction standards and comply with unified facilities criteria.

- **Project Planning and Programming**—See previous description.

- **Project Design**—See previous description.

- **Project Management and Execution**—See previous description.

- **Environmental Cleanup**—Conducting cleanup of spills and environmental contamination that poses known imminent and substantial endangerment to the health and safety of US/coalition forces and host nation noncombatants.

INSTALLATION SERVICES: Emergency Services

- **Aircraft Rescue and Firefighting**—Firefighting actions taken to rescue persons and to control or extinguish fire involving or adjacent to aircraft on the ground.

- **All Hazards Response**—Describing an incident, natural or manmade, that warrants action to protect life, property, environment, and public health or safety, and to minimize disruptions of government, social, or economic activities.

- **Aerospace Vehicle Mishap Response/Recovery**—Supporting sortie generation and space operations by responding to airfield emergencies to render safe ordnance and aerospace launch platforms during in-flight and ground emergencies. Planning, organizing, directing, and assisting in safing, removing, and disposing of explosive ordnance, explosive hazards, and classified components on or in operational aerospace platforms during crash situations.

- **Antiterrorism**—Locating, identifying, and neutralizing explosive hazards and triggering devices; defeating criminal and terrorist explosive devices. Training others on improvised explosive device recognition, hazards, and precautions. Providing Terrorist Response and Terrorist Consequence Management planning and operations.

- **Detect/Sample/Identify CBRN/Toxic Industrial Material (TIM) Hazards**—Locating CBRN/TIM hazards by use of CBRN detectors or monitoring or survey teams. Collecting representative amounts of gas, liquid, solid or characteristics of one of these, such as gamma or ph, to analyze. Determining which CBRN/TIM material or pathogen is present.

- **Emergency Operations Center**—The C2 support element that directs, monitors, and supports the installation's actions before, during, and after an incident. The physical location at which the coordination of information and resources to support incident management activities normally takes place.

- **EOD Initial Threat Assessment, Confirmation, Risk Mitigation, Site Stabilization**— Obtaining as much information as possible to develop a plan of attack to include gathering information on perpetrator/target; threat analysis; employing detection assets, providing safe approach, and conducting diagnostics.

- **Emergency Medical Service (Basic Life Support)**—Services provided to patients facing immediate medical emergencies that occur outside of military treatment facilities.

- **Federal Agency and Civil Authority Support**—Providing assistance to federal and civil authorities by preparing for, deterring, or responding to terrorist or other criminal acts, accidents, found explosive items, and other requests for support. (Note: Support includes US Secret Service, US State Department, and Joint EOD Very Important Persons Protection Support Activity taskings.)

- **Fire Prevention**—Measures such as training, public education, plans reviews, surveys/inspections, engineering reviews, and life safety code enforcement directed toward avoiding the inception of fire and minimizing consequences if a fire occurs.

- **Hazardous Material Incident Response**—Responding to an incident where a hazardous material is present. Hazardous material is a substance (solid, liquid, or gas) that, when released, is capable of creating harm to people, the environment, and property.

- **Incident Command**—Providing incident command system organizational element responsible for overall management of the incident and consisting of the incident commander (either single or unified command structure) and any supporting staff.

- **Integrated Incident Management**—Assisting with the broad spectrum of activities and organizations providing effective and efficient operations, coordination, and support applied at all levels of government, using both governmental and nongovernmental resources to plan for, respond to, and recover from an incident.

- **Mortuary Services–Explosive Hazard Analysis/Removal**—Detecting, identifying, and removing explosive hazards left on or embedded in human remains during port mortuary operations, theater remains processing, POW/MIA recoveries, mass fatality support operations, and other operations involving human remains.

- **Nuclear Weapons/Weapons of Mass Destruction (WMD) (CBRN) Accident/Incident Response**—Locating CBRN contamination, assessing damage, and aiding in the recovery and cleanup following a WMD attack. For nuclear weapons, efforts may include locating, securing, assessing, and recovering a nuclear weapon involved in an accident, and preparing the recovered weapon for transfer to the Department of Energy.

- **Operational Range Clearance**—Clearing active bombing and gunnery ranges in coordination with range management officials and environmental agencies.

- **Unexploded Explosive Ordnance Recovery Operations**—Clearing unexploded UXO during runway and airbase recovery operations, and neutralizing hazards from explosive-related incidents, which because of unusual circumstances, present a threat to operations, installations, personnel, or materiel.

- **Structural Firefighting**—Performing rescue, fire suppression, and property conservation activities in buildings, enclosed structures, aircraft interiors, vehicles,

vessels, aircraft, or like properties that are involved in a fire or emergency situation.

- **Weapons Technical Intelligence**—Conducting post-blast analysis and explosive device exploitation to gather information to build a common picture of enemy capabilities, inform commanders of new enemy tactics, techniques, and procedures, and support material developers in building necessary countermeasures.

BUILDING PARTNERSHIPS: Enhance Partner Capabilities and Capacities

- **Engineer Skills Training for Building Partnerships**—Air Force civil engineers are a valuable asset to building partnerships providing skills, knowledge, and experience to assist local governments in recovering from disasters or to become self-sufficient.
