Engineer Branch

1. Introduction

a. Purpose/mission of the Engineer Regiment. The Engineer Regiment is a sub-profession of the larger profession of arms. It is a body of people—not just equipment or organizations—with a passion to serve as an engineer Soldier who embodies the Warrior Ethos and a technical set of skills. These technical skills set the Engineer Regiment apart via its unique services and knowledge that the Army needs to accomplish its missions. The purpose of the Engineer Regiment and its role within the U.S. Army is to build a Regiment that is tactically and technically competent with engineer warriors and leaders of character serving the commanders with the comment to overcome any challenge to the success of the team's mission.

b. Proponent information. The proponent for the Engineer Regiment is the U.S. Army Engineer School (USAES); Fort Leonard Wood, MO. Contact information for all agencies and directorates of the Engineer School can be found on the public Web page at: http://www.wood.army.mil/usaes/. From this website, those individuals with a valid AKO account can find more refined information on the Engineer School Knowledge Network. Support for proponent functions is provided to the commandant of the U.S. Army Engineer School by the CG, U.S. Army Corps of Engineers (USACE), 441 G Street, Washington, DC 20314–1000 and the Commander, Installation Management Command, 2405 Gun Shed Road, Fort Sam Houston, TX 78234–1223.

c. Functions.

(1) Terms.

(a) The Engineer Regiment. The Engineer Regiment represents the Army's engineer capabilities in all the operating, generating force and the U.S. Army Corps of Engineer. The Engineer Regiment consists of all active and reserve component Army, engineer organizations (as well as the DOD civilians and affiliated contractors and agencies within the civilian community) with a diverse range of capabilities that are all focused toward supporting the Army and its mission.

(b) The Active Component. The AC of the Engineer Regiment consists of engineer units within COCOMs, ACOMs, USACE and non-engineer organizations including, National Geospatial-Intelligence Agency, and Directorates of Public Works in Installation Management Command.

(c) The Reserve Component. The RC of the Engineer Regiment consists of the Army Reserve and the Army National Guard and constitutes more than three fourths of Army engineer forces. The RC of the Engineer Regiment includes a wide range of specialized units including combat, construction and geospatial capabilities.

(d) The Engineer Branch. The Engineer Branch includes both the HR managers in HRC and the Engineer Branch proponent (USAES) under TRADOC. Together both components generate and manage the centerpiece of those forces conducting engineer operations—engineer Soldiers. The branch trains, educates, and manages engineer Soldiers in a variety of military occupational specialties and skills. The mission of the USAES is to synchronize and integrate the DOTMLPF-P domains to ensure the Engineer Regiment is prepared to provide engineer support now and into the future. USAES advocates to the Maneuver Support Center of Excellence (MSCoE) engineer priorities in doctrine, organizations, materiel, and facilities.

(e) The U.S. Army Corps of Engineers. The USACE is the Army's DRU assigned responsibility to execute Army and DOD military construction, real estate acquisition, development of the nation's infrastructure and management of water resources through the Civil Works Program. USACE serves the Armed Forces and the nation by providing vital engineering services and capabilities, as a public service, across the full spectrum of operations—from peace to war— in support of national interests. Other USACE services include wetlands and waterway management, environmental restoration, and disaster relief support operations. With its subordinate divisions, districts, laboratories and centers, USACE provides a broad range of engineering support to the military departments, federal agencies, state governments, local authorities, and foreign partners.

(2) Support.

(a) Lines of engineer support. The unique capabilities of the Engineer Regiment are combined together along four lines of engineer support to assure mobility, enhance protection, enable force

projection & logistics, and build partner capacity and infrastructure in order to provide freedom of action to ground forces at every echelon executing unified land operations. Engineers provide support to Army and joint maneuver commanders and staffs at all levels, installations, and the nation at the tactical, operational, and strategic levels. By its very nature, the Engineer Regiment is broad with many diverse developmental opportunities. Along the lines of engineer support, the Regiment supports emergency management in support of federal agencies, management and control of military construction programs for the Army and other federal agencies, water and flood control, natural resource development, environmental restoration, civil works, maintenance and repair of utilities equipment, maintenance support to medical hospitals, installation of fixed or mobile power plants, interior and exterior repair of facilities to include carpentry, masonry, plumbing and electrical equipment, interface between the engineering and intelligence communities for planning and execution of Geospatial Intelligence and management of Geospatial Intelligence operations.

(b) Joint, interagency, intergovernmental, and multinational. The Engineer Regiment is joint in its integration capabilities and supports the planning, preparation, execution, and assessment of joint operations by complementing and augmenting U.S. Navy SEABEE units, U.S. Air Force REDHORSE and PRIME BEEF units, and host nation engineer capabilities. The Regiment is experienced at interagency support and leveraging nonmilitary and non- governmental engineer assets to support mission accomplishment. It is capable of supporting or leading multinational engineer efforts.

2. Officer characteristics required

a. Characteristics required of all officers. All officers are expected to possess the base characteristics that will enable them to develop into agile and adaptive leaders for the 21st century. Our leaders must be grounded in Army Values and the Warrior Ethos, competent in their core proficiencies, and broadly experienced to operate across the range of military operations. All officers must be physically and mentally fit, maintain and display self-control, remain calm under pressure, and adhere to published standards and regulations. They must be able to operate in JIIM environments and leverage capabilities beyond the Army in achieving their objectives. Our officers must be culturally astute and able to use their awareness and understanding to conduct operations innovatively and courageously to exploit opportunities in the challenges and complexities of the operational environment. The Army Values and attributes set the basis for the character of the leader—what a leader must be. The Soldier's Creed and skills developed by leaders establish his or her competence—what a leader must know. The actions that leaders conduct and execute constitute leadership—what a leader must do. This leadership framework describes a leader of character and competence who acts to achieve excellence across the full range of military operations. Further explanation of these characteristics can be referenced in ADP 3–0, ADP 6–22.

b. Unique knowledge and skills of an Engineer officer. The Engineer Regiment require officers who are tactically and technically competent engineer warriors and leaders of character serving the commander and committed to overcome all challenges to the success of the team's mission. Additionally, because of the technical nature of many engineer assignments, officers are required to continuously update their education and professional certifications. Engineer officers who have an Accreditation Board of Engineering and Technology (ABET) accredited engineering degree should seek to become licensed as a Professional Engineer and obtain a master's degree in engineering or other mission-related field. Officers with degrees in architecture or environmental design are encouraged to obtain a National Architectural Accrediting Board (NAAB) accredited master's degree in architecture (if their undergraduate degree is not NAAB accredited) and should seek to become licensed as Registered Architects. Engineer officers who have degrees in other mission-related disciplines such as geology, planning, construction management, and landscape architecture should also seek to become licensed or certified in their profession. Engineer officers without a mission-related undergraduate degree should seek to obtain a master's degree in an engineering or mission-related discipline. All engineer officers are highly encourage to seek a professional certification relevant to the Engineer mission such as Project Management Professional (PMP), Certified Construction Manager, or Leadership in Energy and Environmental Design Accredited Professional. All engineer officers are encourage to complete the training requirements for Defense Acquisition Workforce Initiative Act certification in facilities engineering. To add the best value possible to the Army and the nation, engineer

officers must be lifelong learners who are experts in the technical and tactical domains across the full range of military engineering. They gain competency through a logical sequence of institutional training and education, experience gained in operational assignments, and continuous self-development initiatives. Engineer officers are classified into a single AOC 12A. Engineer lieutenants and captains develop core technical competencies through attendance at PME. There are several branch-unique skills that require further professional development and qualification through completion of functional courses, self-development, and operational experience. The Engineer Branch uses skill identifiers (SIs) to further classify officers and code unit positions that require the skills, to provide commanders with engineer leaders who have the right skills for the job. Engineer officers obtain various SIs throughout their career to increase their value to the Army, increase their depth of expertise in applied engineering, increase their mastery of leveraging combinations of the three engineer capabilities, and increase the types of units/positions in which they may serve. An engineer officer with broader skills has more flexibility in being assigned to KD and developmental/broadening positions. The Engineer Branch has proponency for the following skills (detailed descriptions contained in DA Pam 611–21):

(1) S4—Sapper Leader
(2) W1—Facilities Planner
(3) W2—Geospatial Engineer Officer
(4) W3—Professional Engineer
(5) W4—Degreed Engineer
(6) W5—Project Management Professional
(7) W6—Project Engineer
(8) W7—Environmental Officer
(9) W8—Facility Engineer

3. Officer development

a. Officer development model. The officer development model is focused more on the quality and range of experience, rather than the specific gates or assignments required to progress.

(1) Initial entry officers gain engineer technical and tactical skills to develop a Warrior Ethos and gain important leadership experience. During these company grade assignments, officers gain critical tactical understanding that engineers are part of the joint and combined arms team and technical experience in general and geospatial engineering and construction management. They begin to develop combined arms competency that will allow them to lead combined arms formations during unified land operations.

(2) Throughout an officer's career, the Army's officer development model highlights the need to gain JIIM experience and exposure. The breadth of tactical and technical assignments within the Engineer Regiment ensures that officers are provided with JIIM developmental and broadening opportunities at installations and in contingency environments to achieve increasing levels of technical competency expected by field and garrison commanders.

(3) For broadening opportunities, officers should view the concept of broadening as a purposeful expansion of a leader's capabilities and understanding provided through opportunities internal and external to the Army. Broadening is the purposeful expansion of a leader's capabilities and understanding provided to Army officers throughout their career. Officers gain experiences and/or education in different organizational cultures and environments resulting in a leader who can operate up to and including the strategic level in multiple environments. The intent of a broadening assignment is to develop an officer's capability to see, work, learn and contribute outside their perspective or individual level of understanding for the betterment of both the individual officer and the institution. The result of broadening is a continuum of leadership capability at direct, operational, and strategic levels, which bridges diverse environments and organizational cultures. The broadening process will be dynamic and variable across cohorts, grades, and branches or FAs. Opportunities will change in response to the Army's emerging missions, evolving structure and professional culture. Deliberate career management that carefully limits KD time to prescribed intervals, allowing exceptions only under limited extenuating circumstances is fundamental to the concept of broadening. Broadening opportunities may vary in scope, responsibility, and developmental outcomes and typically fall in four major categories listed below.

(4) Develops competencies inside or outside of the Engineer Regiment. The AC groups interrelated branches and FAs into officer management categories called functional categories and functional groups.

The functional designation process determines in which specialty officers will continue their development; either in their accession branch or in a different FA. Management of officer development in functional categories recognizes the need to balance specialization of the officer corps with the inherent requirement for officers to gain more breadth in an increasingly complex environment. Officers have periodic opportunities after the 4th year of officer service to transfer to a different branch or FA. The process is known as the VTIP and is managed by HRC to balance inventories with Army requirements and to leverage individual officer preferences and demonstrated abilities. VTIP panels are conducted routinely and are announced via MILPER message describing procedures and specialties to be considered for cross leveling. VTIP allows HRC to identify and target officers with critical skills early in their development, allowing them to obtain additional training and experience to bring those skills to bear as quickly as possible. The intent of the VTIP panel is to fill requirements and provide the FAs enough time to send their officers to school and training prior to utilization. The VTIP process ensures that the needs of the Army are met for future field grade officer requirements in each functional category. Each functional category has its own unique characteristics and development model for officers, which reflects the readiness requirements of the Army. Officers in all functional categories are assigned across the Army in TOE and TDA organizations.

(5) Provides an experience with civilian industry or within a community of students, scholars, and instructors at institutes of higher learning where the officer can gain new perspectives and knowledge, skills, and abilities not generally obtained from organic experiences, training, or education. Lifelong learning, supported by both civilian and military education as well as professional societies and associations, is necessary for engineer officers to become technically competent in combat, general, geospatial engineering, and construction management, as well as joint and expeditionary operations. While the Army provides support, engineer officers must be self-motivated to achieve lifelong learning.

(6) The paragraphs below represent a career guide by defining those professional development opportunities available at each rank that prepare the engineer officer for further service at the next higher rank. It presumes a heavy focus on tactical/maneuver support operations for company grade officers, transitioning to a combined/joint operational focus coupled with varied technical requirements for senior company grade and field grade officers. A constant theme throughout the career guide is the increased use of the self-development domain to produce technically and tactically competent leaders for the Army.

b. General career development. Engineer officer career development includes training, education, self-development, and KD assignments. The three domains of leader development—PME/functional training, operational assignments, and self-development—define and engage a continuous cycle of education, training, selection, experience, assessment, feedback, reinforcement, and evaluation to encourage officer development throughout career progression. The emphasis within each domain of leader development shifts throughout an officer's career to meet the Sustainable Readiness Model, mobilization, and warfighting needs of the Army. The AC Army engineer officer career map is at figure 1.

(1) Professional military education. The institutional Army (schools and training centers) is the foundation for lifelong learning.

(2) Operational assignments. Upon completion of institutional training, leaders are ideally assigned to operational assignments. This operational experience provides them the opportunity to use, hone, and build on what they learned through the formal education process. Experience gained through on the job training in a variety of challenging assignments and additional duties prepares officers to lead and train Soldiers in garrison commands and, ultimately, in combat. The officer's breadth and depth of experience are the metrics that accurately reflect the potential for promotion and service in positions of increased responsibility. Assignments that increase officers' overall technical and tactical knowledge and improve their understanding of combined, joint, interagency, and multinational operations will also help to broaden the skill sets that make them more effective combat leaders.

(3) Self-development. Leaders must commit to a lifetime of professional and personal growth to stay at the cutting edge of their profession. Every officer is ultimately responsible for their own self-development plan. Key elements of a leader's self-development program should include cultural, language, and JIIM environments. Officers should set self- development goals and explore opportunities to serve in JIIM environments throughout their careers as a way to expand their overall knowledge base and increase their ability to lead in those environments. Officers should concentrate their efforts on attaining and honing a broad set of skills by holding KD positions that allow them to explore

various aspects of their professional abilities.

(4) Skill identifier. The use of SIs supports career development, officer tracking, and management of assignments to develop multi-skilled Engineer officers to meet the Army's need and the goals of the officer. It is expected that officers will be managed and assigned to coded positions based on the officer's SIs. An officer will select which skills training meets their personal developmental goals and the technical focus they would like to have in their career. Skills training and classification will allow the Army to fill coded positions with officers that possess the right mixture of skills.

(a) Engineer officers should obtain at least one SI and are encouraged to obtain several SIs. This broadens both their technical engineer competence and their use to the Army.

(b) To support Sustainable Readiness Model, engineer officers selected to serve in positions coded with engineer SIs should complete the required training before being assigned to these positions.

(c) Engineer officers must complete their KD operational assignment and schooling to be best qualified at each grade and exceptionally qualified for future promotions.

c. Lieutenant development.

(1) Education. Engineer lieutenants are required to graduate from Engineer BOLC to ensure a strong foundation in officer common core/leadership training and in military specific engineer training. It is this strong foundation that allows for continued leader development in the operational and self-developmental domains. Follow-on specialized engineer and non-engineer tactical training such as Urban Mobility Breacher, Explosive Ordnance Clearance Agent (EOCA) exist and are available for engineer lieutenants. The following certifications are desired skills to further development of engineer lieutenants. Those desired skill identifiers (SI) are: (S4) Sapper, (5R) Ranger, (5P) Airborne, (3X) Bradley Leader Course, Stryker Leaders Course, (W4) Degreed Engineer, (W2) Geospatial Engineer Officer.

(2) Assignment.

(a) KD (12–24 months) assignment as a platoon leader is critical for an engineer lieutenant and should be held for a minimum of 12 months.

(b) The following assignments for lieutenants are examples of developmental/broadening opportunities. A mixture of these assignments provides company grade officers with technical experience and the opportunity to lead, train, and support small units. This provides the foundation critical to continued growth as an engineer officer.

(1) Company XO
(2) Battalion staff officer
(3) Task force engineer
(4) USACE project engineer

(3) Self-development. Numerous opportunities exist for self-development at the lieutenant level. For those lieutenants without a bachelor's degree, planning for degree completion is critical. Opportunities exist for lieutenants to become full-time students and also to attend online and off-duty courses. Officers who have an ABET accredited engineering degree are highly encouraged to take the Fundamentals of Engineering exam to become a Professional Engineer registration (licensure) later in their career. Officers who have an architecture degree should enroll in the Architectural Experience Program (AXP) of the National Council of Architect Registration Boards (NCARB) to become eligible for Registered Architect licensure later in their career. Various professional reading lists and doctrinal publications are available, such as the Engineer Regimental Resource Menu, which officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To stay current in emerging technologies and ideas, engineer lieutenants should become members of engineer professional/technical organizations. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer lieutenants must acquire and master troop-leading procedures, platoon and company operations, basic maintenance and logistical concepts, and administrative requirements inherent to platoons and companies. Each engineer lieutenant must also embody the Army's Warrior Ethos and values in order to train and lead Soldiers to win our Nation's wars.

d. Captain development.

(1) Education. After selection for promotion to captain, engineer officers will attend the Engineer Captain's Career Course (ECCC). It is mandatory for captains to attend ECCC prior to command. Options exist to attend other branch's CCC for those officers deemed qualified by their chain of command and

desiring to do so. Engineer captains are encouraged to pursue technical engineer training through the USACE Proponent Sponsored Engineer Corps Training (PROSPECT) program. Engineer-specific technical training in project management, construction management, facilities management, geospatial engineering, environmental engineering, contracting officer representative, quality assurance, Urban Mobility Breacher and the Joint Engineer Operations Course (JEOC), and other related areas are available. The following certifications and tactical training are desired skills for further development of engineer captains: Those desired skill identifiers (SI) are: (S4) Sapper, (5R) Ranger, (5P) Airborne, (3X) Bradley Leader Course, Stryker Leaders Course, (W3) Professional Engineer, (W4) Degreed Engineer, (W5) Project Management Professional, (W2) Geospatial Engineer Officer.

(2) Assignment.

(a) KD (12 - 18 months) assignment as a company commander is critical for an engineer captain and should be held for a minimum of 12 months.

(b) The following assignments for captains are examples of developmental/broadening opportunities. A mixture of these assignments further develops technical and tactical competencies and the experience base necessary to succeed at the field grade level and beyond. Engineer captains should serve in developmental/broadening assignments following their KD assignment.

(1) CTC observer/coach/trainer
(2) AC/RC observer/coach/trainer
(3) Small group leader
(4) ACS/TWI/RSMS/BOP with utilization requirement
(5) Instructor (USAES/USMA/ROTC)
(6) Doctrine/training developer
(7) USACE project officer
(8) Exchange officer

(3) Self-development. Numerous opportunities exist for self-development at the captain level. Engineer officers who plan to make the Army a career beyond company grade must obtain a graduate degree prior to promotion to the rank of lieutenant colonel. To assist with this goal, officers attending the ECCC are afforded an opportunity to get a master's degree through the professional development program from the Missouri University of Science and Technology (MS&T). Additionally, the advanced civil schooling option is a fully funded program that supports advanced degree requirements for certain branches and FAs. Many universities award constructive credit for military courses, which can facilitate earning an advanced degree at an accelerated pace. Lastly, an officer can obtain an advanced degree at his or her own expense or by using tuition assistance during off-duty hours. A full explanation and eligibility requirements for these programs are contained in AR 621–1. For those officers with undergraduate engineering degrees, are encourage to pursue graduate level degree in the field of engineering or a related engineer mission discipline. For those officers without an undergraduate engineering degree, obtaining a master's degree in Geography or Geographic Information Systems, Engineering or Construction Management; Urban, City or Regional Planning; Architecture or other mission related discipline may support qualification for an SI or support a FA designation and provide the skills necessary for higher-level command and staff positions. Officers who have passed the Fundamentals of Engineering exam should prepare for and take the Professional Engineer exam. Officers who have completed the AXP should prepare for and take the six sections of the Architecture Registration exam (ARE). Officers who meet the experience requirements should prepare for and take either the Project Management Professional or Certified Construction Manager exams. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To stay current in emerging technologies and ideas, engineer captains should be members of engineer professional/ technical organizations. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer captains must successfully complete a 12 to 18 months KD assignment and should strive to complete several developmental assignments prior to promotion to major. Captains will transition their development to a mastery of engineer support of Army unified land operations.

e. Major development.

(1) Education. After selection for promotion to major, engineer officers will attend the Army's Command and General Staff College (CGSC). It is highly encouraged for majors to complete the Command and

General Staff Officer Course (CGSOC) at CGSC prior to a KD assignment. Successful completion of CGSOC qualifies the officer in JPME at the level of JPME I. For the most competitive majors, additional educational opportunities following CGSOC exist, including degree programs at the School of Advance Military Study (SAMS). To prepare field grade officers for future JIIM assignments, it is recommended that majors attend the Joint Engineer Operations Course (JEOC) and/or the Joint, Interagency, Multinational Planners Course (JIMPC). The following certifications are desired skills for further development of engineer majors: Those desired skill identifiers (SI) are: (W3) Professional Engineer, (W5) Project Management Professional, (W6) Project Engineer, (W8) Facility Engineer.

(2) Assignment.

(a) KD (12–24 months) assignment in one or more of the below jobs is critical for an engineer major and should be held for a minimum of 12 months

(1) Battalion/Brigade XO
(2) Battalion/Brigade operations officer (S3)
(3) Ranger Regiment/SF group engineer

(b) Developmental/broadening. The following assignments are important to the broadening of engineer majors allowing them to provide an engineer perspective in JIIM and other non-engineer organizations. Some of these assignments will be available to majors after successful completion of a KD assignment; while others will be available before completion of a KD assignment. Timeline management between the individual officer and Engineer Branch will be critical to ensure the officer is placed in the correct position given Army requirements:

(1) USACE deputy district commander
(2) Forward Engineer Support Teams (FEST-A or FEST-M)
(3) CTC observer/coach/trainer
(4) Division engineer planner/TAC engineer officer
(5) JIIM staff officer
(6) Doctrine/training developer
(7) Instructor (USMA/USAES/ROTC)
(8) Training With Industry (TWI)
(9) Joint/ASCC/HQDA/ACOM staff
(10) Exchange officer

(3) Self-development. Engineer majors must continue refining and building upon their technical competence using self-development. At this point in their careers, all engineer officers are highly encouraged to have a master's degree in engineering or a related technical discipline. Eligible officers are encouraged to complete Professional Engineer or Registered Architect (licensure). Officers are encouraged to pursue and obtain other professional certifications such as PMP, CCM, and LEED-AP. To differentiate officers by technical discipline, engineers at the field grade level should maximize the use of DA Pam 611–21's Army recognized skill identifiers (SIs). Various professional reading lists and doctrinal publications are available that officers may use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. Engineer majors may also increase their participation in professional/technical organizations to stay current in emerging technologies and ideas. Completion of online courses through AKO Distributive Learning, DAU is encouraged, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer majors must successfully complete a KD assignment for 12 to 24 months. Engineer majors should also serve in several developmental/broadening assignments to further develop their technical and tactical competencies and broaden their experience base necessary to succeed at the lieutenant colonel and colonel levels. Majors will transition their development to a mastery of engineer support as a part of joint and multinational operations.

f. Lieutenant colonel development.

(1) Education. After selection for promotion to lieutenant colonel, engineer officers may be selected by a HQDA board to complete resident SSC instruction. Those not selected by the HQDA board should consider completing the nonresident Army War College distance education course. The Joint Engineer Operations Course and/or the Joint, Interagency, Multinational Planners Course provides lieutenant colonels with a knowledge base of joint operations needed at this grade and is highly encouraged. Engineer lieutenant colonels centrally selected for battalion-level command will attend the Army, branch or functional PCCs.

(2) Assignment.

(a) Key developmental. All promotable engineer majors and lieutenant colonels are eligible to compete for lieutenant colonel-level command during the Command Selection Board. Selection is based primarily on the officer's overall performance, demonstrated potential to lead larger organizations, experience, and qualifications. A centralized selection board will select officers in a given category based on HQDA guidance. HRC will slate officers to specific units within the categories. Officers being considered for command must "opt-in" in all categories in order to compete. The HQDA CSL designates commands into four functional categories:

(1) Operations. This includes TOE engineer battalions throughout the Army as well as brigade engineer battalion within BCTs for AC and RC. The majority of engineer lieutenant colonel commands are in this category.

(2) Strategic support. Lieutenant colonel USACE engineer district commands are in this category.

(3) Recruiting and training. TRADOC engineer battalions and training support battalions are in this category as well as branch immaterial USAREC battalion commands.

(4) Installation. Branch immaterial garrison commands are in this category. Engineer officers compete with all officers considered in this category.

(b) Developmental/broadening. The objective of lieutenant colonel assignments is for officers to continue to provide a valuable contribution to the regiment, the Army, and our nation based on their unique experiences and qualifications. Officers desiring to contribute in the tactical arena have numerous opportunities on staffs at all levels. Officers desiring to contribute in the technical arena have numerous opportunities in USACE and IMCOM. The following developmental and broadening assignments enhance the officer's technical and tactical competencies in a wide range of skill sets and offer operational and strategic value to the Army:

(1) Brigade XO
(2) Division staff (Division Engineer, Chief of Protection, Chief of Plans)
(3) Corps Engineer staff officer
(4) USACE deputy district commander
(5) Senior observer/coach/trainer at a CTC
(6) JIIM staff officer
(7) ROTC Professor of Military Science
(8) USAES CoS
(9) Joint/ASCC/HQDA/ACOM staff

(3) Self-development. Engineer lieutenant colonels must continue refining and building upon their technical competence using self-development. At this point in officer's career, all engineer officers must have a master's degree preferably in an engineer mission related discipline. Eligible officers are encouraged to complete Professional Engineer or Registered Architect licensure. Officers are encouraged to pursue and obtain other professional certifications such as PMP, CCM, LEED-AP and so forth. Other areas where engineer lieutenant colonels may consider certification and credentialing are related to geospatial and environmental engineering, contracting, and other strategic planning and management disciplines. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To remain current in emerging technologies and ideas, it is highly encouraged that engineer lieutenant colonels be active contributors to professional/technical organizations. Completion of online courses through AKO Distributive Learning, DAU is encouraged, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer lieutenant colonels are subject matter experts within any organization to which they are assigned. A wide variety of assignments ensures a tactical and technical expert that is comfortable in all levels of warfare (tactical, operational, and strategic).

g. Colonel development. The professional development objective for this phase of an officer's career is joint qualification, sustainment of warfighting, training, and staff skills; along with the provisions of senior, seasoned leadership, management, and executive talents. The majority of strategic-level leaders in the Army are colonels. Colonels are expected to be multi-skilled leaders, strategic and creative thinkers, builders of leaders and teams, competent full spectrum warfighters, skilled in governance, statesmanship, and diplomacy, and understand cultural context and work effectively across all domains.

(1) Education. After selection for promotion to colonel, engineer officers should complete SSC, either resident or nonresident. Opportunities for educational fellowships are also available and can grant MEL SSC accreditation in lieu of attendance at an SSC. All colonels should pursue joint qualification, which consists of two parts: an education component and an experience component. The education requirement is met by completing the 10-week JPME II course or by resident SSC attendance at any of the service war colleges. The education requirement for joint qualification is not waiver-able. The experience requirement is met by serving an assignment in a joint billet for a prescribed period of time (usually 22-months, but less for combat and hardship assignments). Officers can apply for experience-based credit in lieu of assignment, but must demonstrate significant interaction with joint and/or interagency actors/organizations. Colonels interested in experience-based credit should work closely with their HR manager at the Senior Leader Development Office to ensure compliance with the most current waiver rules and request format. Engineer colonels centrally selected for brigade-level command will attend the Army, branch, and functional PCCs.

(2) Assignment.

(a) Key developmental. Selection for colonel-level command is extremely competitive. Promotable engineer Lieutenant colonels and Colonels with less than 27 years of active federal commissioned service are eligible to compete for colonel-level command during the Command Selection Board. Selection is based primarily on the officer's overall performance, demonstrated potential to lead larger organizations, experience, and qualifications. A centralized selection board will select officers in a given category based on HQDA guidance. HRC will slate officers to specific units within the categories. Officers being considered for command are allowed to select the categories in which they desire to compete. The HQDA CSL designates commands into four functional categories:

(1) Operations. This includes TOE engineer brigades throughout the Army as well as BCTs.

(2) Strategic support. Colonel USACE engineer districts are in this category.

(3) Recruiting and training. TRADOC engineer brigade is in this category as well as branch immaterial USAREC brigade commands.

(4) Installation. Branch immaterial garrison commands are in this category. Engineer officers compete with all officers considered in this category.

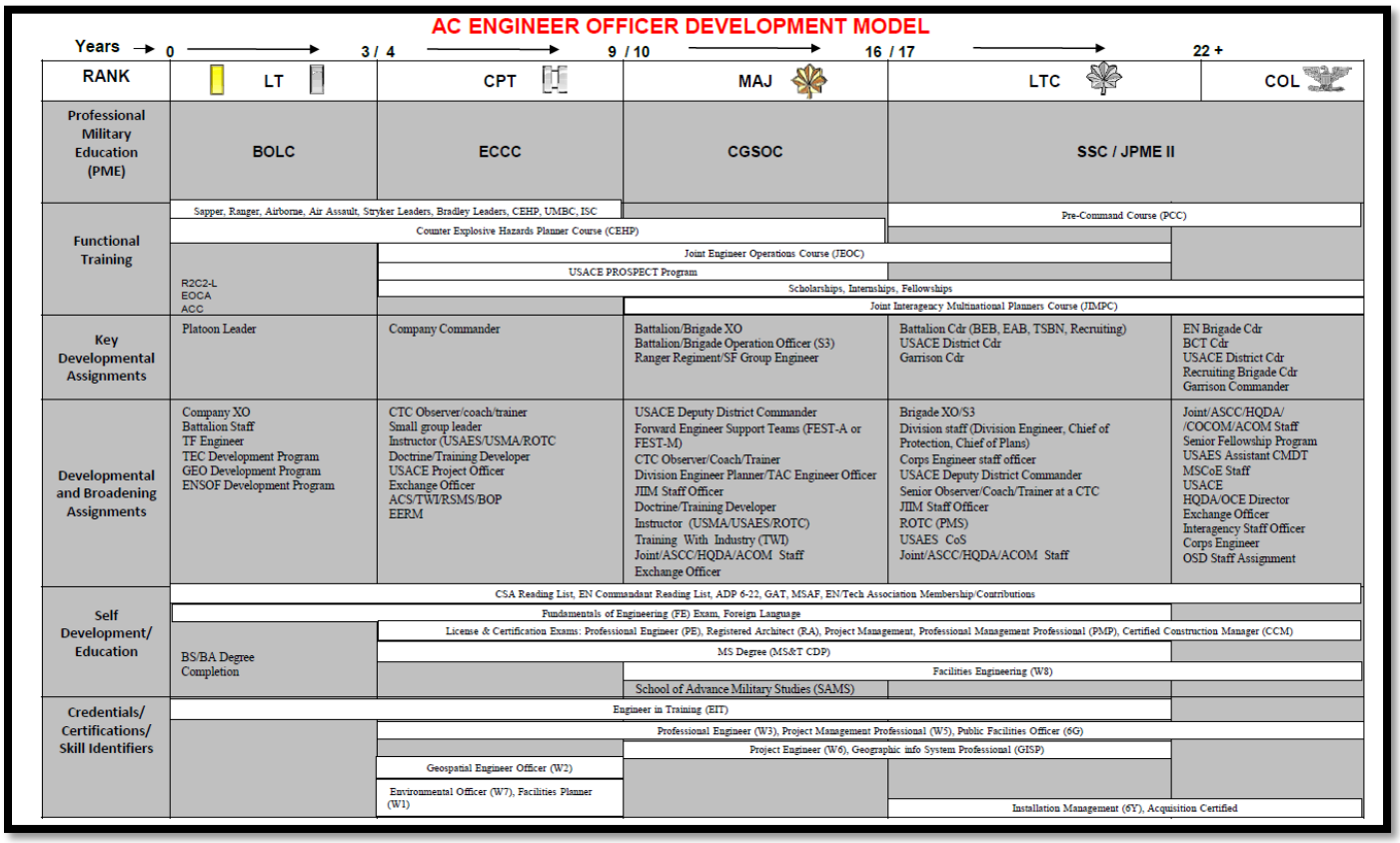
(b) Developmental/broadening. The objective of colonel assignments are for officers to continue to provide strategic value to the Regiment, the Army, and our nation based on their unique experiences and qualifications. Assignments include organizations and duties beyond those discussed in earlier sections. The spectrum of possible assignments is broad and is characterized as highly responsible, important, and requiring mature, skilled, and well-rounded officers. The following assignments ensure that engineer colonels further develop the broad range of competencies they have obtained to best provide strategic value to the Army and the nation.

(1) USAES Assistant Commandant
(2) Combatant Command staff
(3) MSCoE staff
(4) USACE staff
(5) HQDA/Office of the Chief of Engineers director
(6) TCM Geospatial Chief/TCM MAN SPT/CDID Team Chief
(7) Exchange officer
(8) JIIM staff officer
(9) ROTC PMS
(10) Joint/ASCC/HQDA/ACOM/COCOMs staff
(11) Corps engineer
(12) OSD staff assignment

(3) Self-development. Engineer colonels must continue refining and building upon their technical competence using self-development. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To remain current in emerging technologies and ideas, engineer colonels should hold leadership positions and be chief contributors within professional/technical organizations.

(4) Desired experience. Engineer colonels are subject matter experts within any organization to which they are assigned.

Figure 1 - AC Engineer Officer's Development Model



4. Warrant officer development

a. Unique functions, knowledge, and skills of the engineer warrant officer. The Army warrant officer is an adaptive technical expert, leader, trainer, and advisor. Through progressive levels of expertise in assignments, training, and education, the warrant officer administers, manages, maintains, operates, and integrates Army systems and equipment through all levels of unified and decisive engineer operations. They support a wide range of engineer and Army missions throughout their career. Warrant officers in the Army are accessed with specific levels of technical ability. They refine their technical expertise and develop their leadership and management skills through tiered progressive assignment and education. The following are specific characteristics and responsibilities of the separate, successive warrant officer grades.

(1) Warrant officer one/chief warrant officer two. A WO1 is an officer appointed by warrant with the requisite authority pursuant to assignment level and position given by the Secretary of the Army. CW2s and above are commissioned officers with the requisite authority pursuant to assignment level and position as given by the President of the United States. WO1s and CW2s primary focus is becoming proficient and working on those systems linked directly to their AOC/MOS. As they become experts on the systems they operate and maintain, their focus migrates to integrating their systems with other branch systems.

(2) CW3s are advanced level technical and tactical experts who perform the primary duties of technical leader, trainer, operator, manager, maintainer, sustainer, integrator, and advisor. They may fulfill branch-related duties assigned to them when provided education and training commiserate with the position. As they become more senior, their focus becomes integrating branch systems into larger Army systems.

(4) CW4s are senior-level technical and tactical experts who perform the duties of technical leader, manager, maintainer, sustainer, integrator and advisor and serve in a variety of branch level positions.

As they become more senior they focus on integrating branch and Army systems into Joint and national-level systems.

(5) CW5s are master-level technical and tactical experts who perform the primary duties of technical leader, manager, integrator, and advisor. They are the senior technical expert in their branch and serve at the highest levels, to include branch immaterial positions.

b. Engineer specialties. The Engineer Regiment has two warrant officer MOSs, the Construction Engineering Technician (120A) and the Geospatial Engineering Technician (125D). Engineer warrant officers may be further awarded and classified with an SI, ASI, SQI or SMOS.

(1) Construction Engineering Technicians provide engineering expertise across the broad range of engineer operations in a variety of units. They provide subject matter expertise throughout their careers to the commander and staff on matters relative to the following functions/tasks:

(a) Serves as the technical advisor to commanders, senior staff members, and decision makers in all matters relative to planning, coordinating, and integrating engineering augmentation assets in support of general engineering operations that assure mobility, enhance protection, enable expeditionary force projection & logistics, and develop partner capacity and infrastructure.

(b) Assists in performing mission analysis for construction, repair, and maintenance of vertical infrastructure, and horizontal roadway/foundation networks and all aspects of electrical power and distribution in support of mission command (MC).

(c) Supervise and coordinate construction of base camps and internment facilities in support of engineer construction operations.

(d) Advises the commander and staff elements on construction planning and operational energy considerations through analysis and tailored engineering and energy products. Provide advice and technical assistance on all aspects of electrical power and distribution in support of military operations. Supervise and manage separate teams performing theater prime power missions.

(e) Provide engineering support and expertise to deployable medical system hospitals, utilizing organic equipment such as power generation equipment, environmental control systems, water, waste, fuel and electrical distribution systems. Coordinate and supervise the installation and repair of water supply systems, plumbing, sewage, and heating and air conditioning systems.

(f) Plan, conduct, prepare, and provide planning studies and tests for identified engineer work projects. Address facilities citing environmental concerns, and estimated project costs.

(g) Manages functions within the project management process, military decision making process, and construction and power distribution process.

(h) Integrates the use of technology in support of power generation, survey and design operations and maintains technical databases while employing construction specific software to support general engineering efforts during all phases of operations.

(i) Serves on echelon above brigade (EAB) staff to coordinate, manage, and maintain real property master planning and facility maintenance and repair activities.

(2) Develop training strategies, reviews and writes doctrine, presents formal engineering instruction to officers, warrant officers and NCOs.

Geospatial Engineering Technicians (125D) provide the Army with necessary technical and tactical expertise to execute geospatial engineering functions supporting Army units at all echelons. Engineer warrant officers of this type manage and execute the generation of geospatial information, management and storage of enterprise geospatial databases, develop terrain analysis and visualization products, disseminate geospatial information, and manage geospatial engineer operations. A 125D engineer warrant officer provides assistance and advice to the commander and staff on matters relative to the following functions/tasks:

(a) Serve on the battle staff as the geospatial engineering expert at BCT, division, corps, Army and Joint commands.

(b) Acquire, coordinate, interpret, and analyze geospatial information, to include effects of weather in combination with terrain.

(c) Manage geospatial support to Unified Land Operations within the BCT, division, corps, Army and Joint commands.

(d) Supports the intelligence preparation of the battlefield (IPB) process at BCT, division, corps, Army and Joint commands.

(e) Integrate geospatial operations into the execution of the military decision-making process

(MDMP) in support of BCT, division, corps, Army and Joint operations.

(f) Identify gaps in geospatial information coverage and coordinate with collection entities to obtain and verify area of interest source data ensuring it satisfies mission requirements in support of the commander's intent.

(g) Manage data generation of standard, sharable, geospatial, foundation (SSGF) elements to fill gaps in geospatial information coverage where found, mission specific.

(h) Serve as the tactical and technical advisor to the commander, staff and major subordinate commanders. Provide guidance on the use of geospatial engineers in support of decisive action.

(i) Manage geospatial information and services in an enterprise environment. Provide SSGF for the common operating picture (COP) and for Army battle command systems within the common computing environment (CCE) and common operating environment (COE).

(j) Coordinate with all echelons of geospatial engineer teams to transmit field collected geospatial data to the ASCC Geospatial Planning Cell for inclusion into the Theater Geospatial Database (TGD).

(k) Direct and supervise administration of geographic information foundational and associated data.

(l) Direct and supervise technical geospatial engineer training within unit.

(m) Develop training strategies, review, write doctrine, and present formal geospatial engineering instruction to officers, warrant officers, and NCOs.

c. Warrant officer one development.

(1) Education. AC and RC warrant officer candidates are required to attend the resident WOCS or the two-phased regional training institute run by State ARNG. WOCS graduates are conditionally appointed to WO1. This appointment is contingent upon certification by the United States Army Engineer School's Personnel Development Office, after successful completion of either the Construction Engineering Technician (120A) Warrant Officer Basic Course (WOBC) or the Geospatial Engineering Technician (125D) Course.

(a) The 120A resident course consists of survey and design and vertical construction fundamentals, electrical distribution and design, and engineer common leader skills. This training prepares 120As for duties in brigade engineer battalions, echelons above brigade battalions, construction companies (ECC, EVC, & ESC), prime power platoons, utilities detachments, and Special Forces groups. The 120A RC course consists of three resident phases. Phase one consists of survey and design operations. Phase two consists of vertical construction management, Theater Operations construction standards, environmental management, and infrastructure reconnaissance. Phase three consists of electrical systems and design, engineer leader common core, and a capstone project. The 125D resident course focuses on training the 125D WO1 and CW2 critical tasks as determined by the U.S. Army Engineer School. It includes a comprehensive review of geospatial information and services, doctrine, emerging geographic information systems and technology, and Army operations. It emphasizes integrating geospatial information and services products into the intelligence preparation of the battlefield and the MDMP at the BCT, geospatial engineering companies, division geospatial engineer teams, and ASCC geospatial planning cells.

(2) Assignment.

(a) Key developmental.

(1) 120A AC warrant officers will serve as a construction engineering technician in an engineer company.

(2) 125D AC warrant officers will serve as a geospatial engineering technician in an engineer brigade.

(b) Developmental/broadening.

(1) 120A warrant officers enhance their development by becoming proficient and working on those systems linked directly to their MOS and perfecting their understanding of company and battalion level operations.

(2) 125D warrant officers serve as geospatial engineering technicians within a GPC as an initial assignment for purposes to broaden their perspective and acts as an apprentice experience.

(3) Self-development. Numerous distributive learning and correspondence courses are available in a wide variety of topics to support all aspects of engineer and geospatial operations. This includes the Action Officer Development Course, which is a prerequisite for promotion to CW2.

(a) 120A warrant officers should pursue an associate's degree in construction management or an

engineering related field.

(b) 125D warrant officers should pursue an associate's degree in Geography, Geographic Information Systems, Geospatial Intelligence, or a geospatial engineering related field.

(4) Desired experience. Engineer warrant officers must acquire and master the necessary technical requirements of their assignments, and understand the supporting systems utilized by engineer operations at increasing levels of responsibility. Engineer warrant officers should have an understanding of staff operations and the military decision making process.

(a) Initial 120A assignments should include strong leadership and technical experience in vertical construction techniques and project management.

(b) Initial 125D assignments should include experience as a technician of a division geospatial engineer team or assignment to a GPC as outlined above. The focus for 125D WO1s should be on acquiring and refining technical knowledge and experience in providing geospatial engineering support to the commander, battle staff, engineer staff officer, and the DCS, G–2's within a Geospatial Intelligence Cell. A thorough knowledge of the MDMP is essential for warrant officers at this level and the warrant officer should be a member of the battle staff.

d. Chief warrant officer two development.

(1) Education. Engineer CW2s will enroll in prerequisite studies for Warrant Officer Advanced Course (WOAC) before the third year of warrant officer service. After serving for at least one year time in grade as a CW2, AC and USAR warrant officers are eligible to attend the resident technical portion of the WOAC; ARNG requires 4 years-time-in-grade. Engineer CW2s are encouraged to complete WOAC requirements prior to selection for a CW3 assignment or the CW3 selection board. National Guard warrant officers must complete WOAC prior to promotion to CW3. USAR warrant officers must complete WOAC prior to selection to CW3.

(a) The 120A WOAC consists of training on base camp operations and management, the deployable medical systems found in combat support hospitals and engineer common leader skills. This training prepares 120As for duties at combat support hospitals, engineer brigades and RC maneuver enhancement brigades. The 120A RC course consists of four phases. Phases one (common leader skills) and three (theater of operations vertical construction) are distance learning; Phases two (base camp operations) and four (deployable medical system training) are resident.

(2) Assignments.

(a) Key developmental.

(1) 120A CW2s will serve as construction engineering technicians in brigade engineer battalions, echelons above brigade battalions, construction companies (ECC, EVC, & ESC), prime power platoons, utilities detachments, and Special Forces groups.

(b) 125D AC CW2s will continue to serve on brigade teams, on a division team or GPC in a developmental/broadening position.

(1) 120A CW2s AC will serve as Warrant Officer Career College TAC Officers or assistant White House facilities manager. ARNG will serve as a TAC Officers for WOCS at State RTI's.

(2) 125D CW2s will serve as geospatial engineering technicians on division geospatial engineer teams, or ASCC geospatial planning cells.

(3) Self-development. The completion of an associate's degree in a related technical field is highly encouraged. engineer CW2s should pursue training and professional certifications, including project management, construction management or geospatial engineering.

(4) Desired experience. Engineer CW2s must acquire and master the necessary technical requirements of their assignments, and understand the supporting systems utilized by engineer operations at increasing levels of responsibility. Increased emphasis of the battle staff and the MDMP process is essential for engineer chief warrant officers at this level.

e. Chief warrant officer three development.

(1) Education. AC engineer warrant officers will enroll in Warrant Officer Intermediate Level Education (WOILE) not later than one year after being promoted to CW3. Engineer CW3s are encouraged to complete WOILE requirements prior to selection for a CW4 assignment or the CW4 selection board.

(a) Engineer warrant officers will attend a follow on WOILE course at the Engineer School in order to be WOILE complete. This follow on course provides warrant officers with the necessary technical skills to operate at the CW4 level on division staff. This course is required for USAR Soldiers to be promoted to

CW4 and required of AC and ARNG Soldiers prior to enrollment in WOSSE.

(b) The 125D resident course consists of advanced technical training in management skills required to plan and direct the five disciplines of geospatial engineering; data generation/management, data dissemination, terrain analysis, geospatial services, and visual support. This training prepares 125Ds for duties at geospatial planning cells and echelons above corps assignments.

(c) Engineer warrant officers are encourage to attend the Joint Engineer Operations Course as part of their WOILE PME requirement beginning YG12.

(2) Assignments.

(a) Key developmental.

(1) 120A CW3s will serve in engineer brigades, combat support hospitals, and maneuver enhancement brigades.

(2) 125D CW3s will serve on a corps geospatial engineer team, as the geospatial technical expert in a GPC, or as the geospatial technical expert at echelons above corps units, to include NATO and Joint assignments.

(b) Developmental/broadening.

(1) 120A CW3s will serve as a White House facilities manager or service school instructor.

(2) 125D CW3s will serve as a service school instructor at USAES.

(3) Engineer chief warrant officers at this grade can expect deepening assignments to include duties as service school instructors, training/doctrine developers, and to forward deployed environments, assisting in humanitarian relief, disaster recovery or combat operations.

(3) Self-development. Engineer CW3s should pursue a bachelor's of science degree in a related technical field prior to eligibility for promotion for CW4. Professional certifications in project management are also highly desired for further success.

(4) Desired experience. Engineer CW3s must acquire and master the necessary technical requirements of their assignments, and understand the supporting systems utilized by engineer operations at increasing levels of responsibility. A deepening assignment is important as the Engineer chief warrant officer matriculates to the senior technical advisor positions at senior warrant officer levels.

f. Chief warrant officer four development.

(1) Education. AC engineer CW4s will attend the WOILE conducted at the Warrant Officer Career College no later than 1 year after their promotion to CW4. Engineer CW4s are encouraged to complete Warrant Officer Senior Staff Education (WOSSE) requirements prior to selection for a CW5 assignment or the CW5 selection board. This common core resident course prepares warrant officers to serve in staff positions at the highest levels. Officers must attend the WOILE prior to promotion to CW5. After one year time in grade, CW4s are eligible to attend the Warrant Officer Senior Staff Course (WOSSC).

(a) WOILE is an ARNG requirement for promotion to CW4. At this time, WOAC is an Army Reserve prerequisite for promotion to CW4.

(b) Engineer warrant officers will attend a follow on WOILE course at the Engineer School in order to be WOILE complete. This follow on course is two weeks long and provides warrant officers with the necessary technical skills to operate at the CW4 level on division staff this course is required for USAR Soldiers to be promoted to CW4 and required of AC and ARNG Soldiers prior to enrollment in Warrant Officer Senior Staff Course (WOSSC).

(2) Assignments.

(a) Key nominative developmental assignments.

(1) 120A CW4s can expect assignments as staff officers at the division and corps level, USAES Engineer Personnel Development Office, service school instructors/training developers, warrant officer assignments officer, or as a construction engineering technician in a prime power battalion.

(2) 125D CW4s will be assigned as course chief, instructor/writer at USAES or as the geospatial technical expert for NATO or Joint commands. CW4s primarily serve as the Senior Geospatial Engineer Technician at GPCs at this grade.

(b) Developmental and broadening assignments. Engineer chief warrant officers at this grade may be considered for forward deployed environments, assisting in humanitarian assistance, disaster relief or combat operations

(3) Self-development. Engineer CW4s should have completed a bachelor's of science degree in a related technical field prior to selection to CW5.

(4) Desired experience. Engineer CW4s should continue self-development efforts to enhance expertise in all aspects of geospatial engineering. Self-development should include correspondence courses, civilian education and institutional training. Engineer CW4s should devote time to obtaining a graduate-level degree.

g. Chief warrant officer five development.

(1) Education. CW5s will attend the Warrant Officer Senior Staff Course (WOSSC). AC warrant officers will complete this course no later than one year after promotion to CW5. National Guard warrant officers must complete this course prior to promotion to CW5. Army Reserve warrant officers will complete this course prior to promotion to CW5. The WOSSC is the capstone for warrant officer PME. It is a branch immaterial resident course conducted at the Warrant Officer Career College. The WOSSC provides master-level chief warrant officers with a broader Army level perspective required for assignment to CW5 level positions as technical, functional and branch systems integrators and trainers at the highest organizational levels. Instruction focuses on "How the Army Runs" and provides up-to-date information on Army level policy, programs, and special items of interest. CW4s are eligible to attend the WOSSC. CW5s will also be encouraged to attend the PCC at Fort Leonard Wood to receive a regimental update.

(2) Assignments.

(a) Key nominative, branch immaterial assignments at this grade may include the DCS, G–1 warrant officer personnel policy integrator, senior warrant officer advisor, CG, TRADOC DCS, G–3/5/7, and warrant officer career center staff.

(b) Developmental and broadening assignments.

(1) 120A CW5s will serve as the Regimental Chief Warrant Officer, or Commander of the Prime Power School.

(2) 125D CW5s will serve as the geospatial engineer technical advisor for the Army Geospatial Center, Army GEOINT Battalion, or as the senior geospatial engineering technician for doctrine, organization, training, materiel, leadership, and education, personnel, and facilities integration at TCM-GEO. Select CW5s can also expect to receive assignments consistent with the needs of the Army, such as service school instructors or as HQDA staff members.

(3) Self-development. Engineer CW5s should continue self-development efforts to enhance expertise in all aspects of engineering missions and support.

(4) *Desired experience.* Engineer CW5s should attend the Army's Force Management School to become familiar with the constitutional, statuary, and regulatory basis for the Army and the capabilities that must be sustained through the management of doctrine, organization, training, material, leadership, and education, personnel, facilities. Engineer CW5s must become familiar with Army and Engineer organizational roles, functions, and missions, especially at the ACOM and Army staff levels and with the force management process.

Figure 2 – 120A Construction Engineering Technician Assignments "Critical Path"

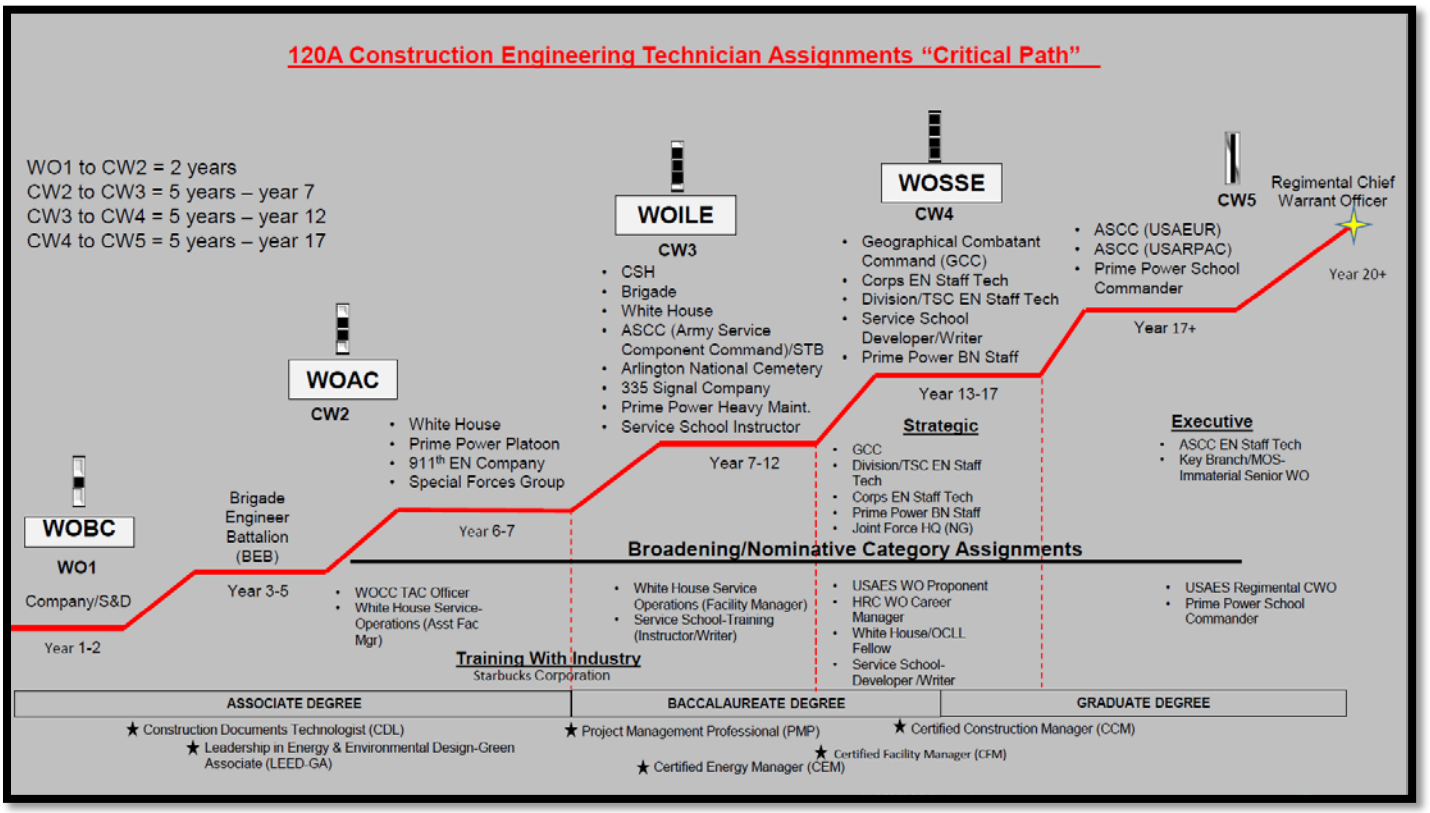
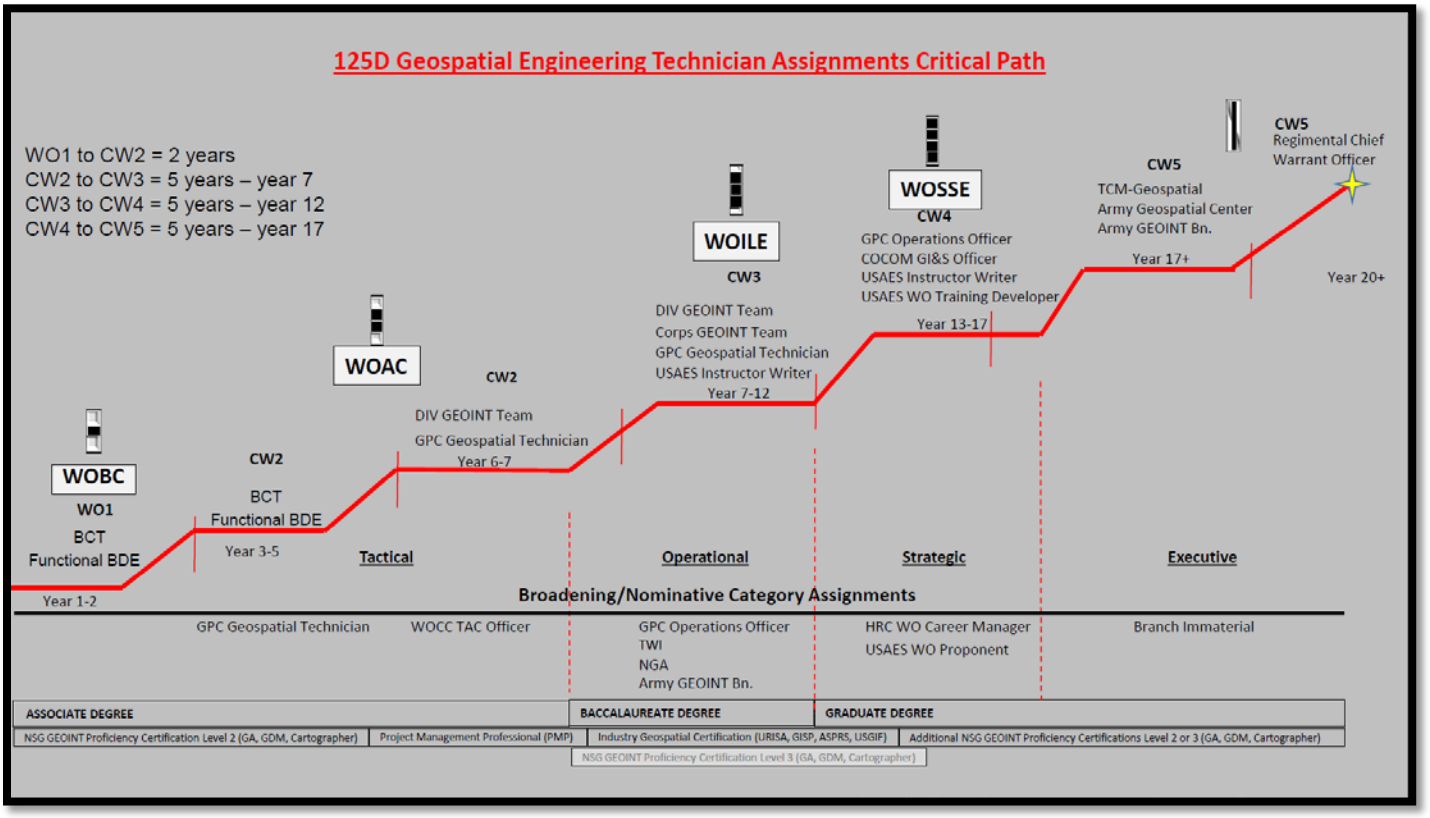


Figure 3 – 125D Geospatial Engineering Technician Assignments "Critical Path"



5. Engineer Reserve Component officers

a. Officer development model. The officer development model for RC officers is generally the same as the AC officers except for these unique aspects of RC officer development and career management. The Engineer RC officer plays an important role in the Engineer Regiment and in the USACE. Practicing degreed engineers, Professional Engineers, Project Management Professionals, and construction management professionals bring a level of technical competence to the Engineer Regiment. The Engineer Regiment is highly dependent upon the quality of the Engineer officers in USAR and ARNG units. Additionally, the quantity and quality of training that RC Engineer officers dictates to a large extent their effectiveness. RC engineer officer development in general, should parallel that of their AC counterparts. Generally, RC engineer officers are limited by geographical and positional opportunities, they should strive for assignments in engineer units and that yield the same developmental and competitive opportunities as their AC counterparts. There may not be a sufficient number of positions within a geographic area to allocate engineer assignments. Therefore, planned rotation into progressively challenging engineer positions by RC commands is essential to producing the best development for engineer officers. To meet professional developmental objectives in the Army Reserve, engineer officers must be willing work with their personnel management officer team to rotate between TPU, the IRR, the IMA program, DIMA, Joint Reserve units, the IRR Augmentee (IRR–A) program, AGR programs, apply for short active duty tours, and make career strategic transfers between the USAR and ARNG. Additionally, RC officers are encouraged to seek positions outside the geographic area of their residence when the personally borne travel costs are acceptable to the individual Officer. The USAR has Talent Management Advisors (TMA) that inform both the officer and chain of command in finding opportunities that aide in developing engineer officers and shaping the force. National Guard engineer officers should contact their state officer manager or their senior engineer officer to ensure they can meet their professional development objectives. These transfers are necessitated by geographical considerations, as well as the need to provide as many officers as possible the opportunity to serve with troops in leadership and staff positions, or to complete PME requirements. The success of an RC engineer officer is not measured by length of service in any one component or control group, but by the officer's depth and breadth of experience, assignments, duty performance, training, and adherence to branch requirements. Officers may elect to apply for a FA beginning at the rank of captain. Engineer officers in the IRR may find assignments in TPU IMA, DIMA positions in AC organizations, installations or HQDA agencies, tours of active duty in support of administrative requirements, contingency operations, or temporary tour on active duty. Assignments in the IRR can also be used for completing PME requirements.

b. General career development. As much as possible, RC officers should not be assigned to fill engineer SI coded positions until they have completed the training and have been awarded the SI. The USAES supports FORSCOM and the ARNG states in the development of Engineer officers and the training of engineer units in the USAR and ARNG. Through the Chief, NGB, the USAES also provides technical assistance to the respective state tag for the career management of ARNG Engineer officers. In general, qualifications and professional development are similar to AC officers. The RC Engineer officer career map is at figure 13–2. The Army Reserve actively manages engineer officers through the U.S. Army Reserve Engineer Officer Talent Management program. USAR engineers use the flexible career path chart in figure 13-X in conjunction with guidance from their assigned Talent Management Advisor (TMA) and the career map in figure 13-2 to determine progressive assignments based upon the individual officers knowledge, skills, and attributes and the needs of the Army.

(1) Award of engineer SIs for ARNG officers. ARNG officers, regardless of status, seeking award of the SIs must apply to the HR organization of their affiliated state, in coordination with the USAES. Each individual state, territory, and the District of Columbia holds final authority for the SI designation of affiliated commissioned officers, dependent on the needs of the state and the organization where the officer is currently assigned. Exceptions to policy will be handled by each state on a case-by-case basis, in coordination with the ARNG. Documents substantiating successful completion of education and experience should be included with the designation request (usually DA Form 4187). Award of the Engineer SIs to ARNG officers will be based on a combination of educational instruction and experience in qualified positions (see AR 611–1).

(2) Award of the Engineer SIs for USAR officers. SIs are awarded by area commanders and CG, U.S. Army Reserve Personnel Center (see AR 611–1).

c. Lieutenant development.

(1) Education. RC engineer lieutenants must successfully complete EBOLC by the end of the second year (USAR) or 18 months (ARNG) of commissioned service. This strong foundation allows for continued leader development in the operational and self-developmental domains. Follow-on specialized engineer and non-engineer tactical training such as Sapper, Ranger, Airborne, Route Reconnaissance Clearance Course-Leader, Urban Mobility Breacher, Explosive Ordnance Clearance Agent (EOCA), Stryker or Mechanized Leader, and others may be available to support company grade assignments dependent upon the requirements of the unit and officers career potential.

(2) Assignment. RC engineer lieutenants will serve in leadership and engineer staff positions at the company and battalion level for a minimum of 18–24 months.

(a) KD (12–24 months) assignment as a platoon leader is critical for an engineer lieutenant and should be held for a minimum of 18 months.

(b) The following assignments for lieutenants are examples of developmental/broadening opportunities after being a platoon leader. A mixture of these assignments provides company grade officers with technical experience and the opportunity to lead, train, and support small units. This provides the foundation critical to continued growth as an engineer officer.

(1) Company XO.
(2) Detachment Commander
(3) Battalion staff officer
(4) Task force engineer
(5) FEST (FCCME)
(6) USACE project engineer

(3) Self-development. Numerous opportunities exist for self-development at the lieutenant level. For those lieutenants without a bachelor's degree, this is your number 1 priority, without it your career will end at 1LT. Opportunities exist for lieutenants to become full-time students and also to attend online and off-duty courses. Officers who have a Bachelor of Science degree from an Accreditation Board of Engineering and Technology (ABET) accredited institution are highly encouraged to take the Fundamentals of Engineering (FE) exam so they can become an Engineer in Training (EIT) to prepare for Professional Engineer (PE) registration (licensure) later in their career. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To stay current in emerging technologies and ideas, engineer lieutenants should become members of engineer professional/technical organizations. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer Lieutenants must acquire and master troop-leading procedures, platoon and company operations, basic maintenance and logistical concepts, and administrative requirements inherent to platoons and companies. Each engineer lieutenant must also embody the Army's Warrior Ethos and values so they can train and lead Soldiers to win our nation's wars.

d. Captain development.

(1) Education. RC Engineer captains must successfully complete the ECCC through either the RC or resident courses. It is highly encouraged for captains to attend ECCC prior to command. Options exist to attend other branch's CCC for those officers deemed qualified by their chain of command and desiring to do so. Engineer captains are encouraged to pursue technical engineer training through the USACE Proponent Sponsored Engineer Corps Training (PROSPECT) program. Engineer-specific technical training in project management, construction management, facilities management, geospatial engineering, environmental engineering, contracting officer representative, quality assurance, and other related areas is available. Tactical training such as Sapper, Ranger, Airborne, Route Reconnaissance Clearance Course-Leader, Urban Mobility Breacher, and the Joint Engineer Operations Course is also available for officers assigned to units that have specific requirements for these the respective qualification training.

(2) Assignment.

(a) KD (12–24 months) assignment as a company commander is critical for an engineer captain and should be held for a minimum of 18 months.

(b) The following assignments for captains are examples of developmental/broadening opportunities. A mixture of these assignments further develops technical and tactical competencies and

the experience base necessary to succeed at the field grade level and beyond. Engineer captains should serve in developmental/broadening assignments following their KD assignment.

(1) Battalion/brigade staff officer
(2) Observer/controller/trainer
(3) Small group leader
(4) Instructor (USAES/ROTC)
(5) Doctrine/training developer
(6) USACE project officer
(7) Exchange officer
(8) Environmental officer.
(9) Real estate officer.
(10) Facilities Engineer

(3) Self-development. Numerous opportunities exist for self-development at the captain level. Engineer officers who plan to make the Army a career beyond company grade should obtain a graduate degree prior to promotion to the rank of lieutenant colonel. To assist with this goal, officers attending the ECCC are afforded an opportunity to get a master's degree from the University of Missouri Science and Technology's cooperative degree program. Many universities award constructive credit for military courses, which can facilitate earning an advanced degree at an accelerated pace. Lastly, an officer can obtain an advanced degree at his or her own expense or by using tuition assistance. A full explanation and eligibility requirements for these programs are contained in AR 621–1. For those officers with undergraduate engineering degrees, their master's degree should be in a business or management related field. For those officers without an undergraduate engineering degree, obtaining a master's degree in Geospatial Engineering/Geographic Information Systems, Business Administration, Operations Research, Management, Construction Management, Architecture, or a related technical discipline may support qualification for a SI or support a FA designation and provide the skills necessary for higher-level command and staff positions. Officers who have passed the Fundamentals of Engineering exam should actively begin preparation for the professional engineer exam. Officers should prepare to obtain the Project Management Professional (PMP) credential. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To stay current in emerging technologies and ideas, engineer captains should be members of engineer professional/ technical organizations. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer captains should successfully complete an 18 to 24 months KD assignment and should strive to complete several developmental assignments prior to promotion to major. Captains will transition their development to a mastery of engineer support of Army unified land operations.

e. Major development.

(1) Education. After selection for promotion to major, engineer officers will manage their timeline in order to attend the Army's ILE. It is highly encouraged for majors to attend ILE prior to a KD assignment. Successful completion of ILE qualifies the officer in JPME level1. For the most competitive majors, additional educational opportunities following ILE exist, including advanced degree programs and SAMS. To prepare field grade officers for future JIIM assignments, it is recommended that majors attend the Joint Engineer Operations Course and/or the Joint, Interagency, Multinational Planners Course. RC Engineer majors may successfully complete ILE through distance learning, Total Army School System Courses, a combination of the two, or residence courses.

(2) Assignment.

(a) KD (12–24 months) assignment in one or more of the below jobs is critical for an engineer major and should be held for a minimum of 12 month

(1) Battalion/brigade XO
(2) Battalion/brigade operations officer (S3)
(3) BCT engineer (I/ABCT/SBCT)
(4) State JFHQ Engineer Officer (ARNG)
(5) CFMO (ARNG)

(b) Developmental/broadening. The following assignments are important to the broadening of

engineer majors by allowing them to provide an engineer perspective in JIIM and other non-engineer organizations as well as to learn about other FAs of the Army. Some of these assignments will be available for majors after successful completion of a KD assignment while others will be available before completion of a KD assignment. Timeline management of the individual officer will be critical to ensure the officer is placed into the correct position given Army requirements:

(1) Brigade / TEC Staff.
(2) Forward Engineer Support Teams (FEST-A or FEST-M)
(3) Observer/controller/trainer
(4) Engineer planner/TAC engineer officer
(5) JIIM staff officer
(6) Doctrine/training developer
(7) Instructor (USAES/ROTC)
(8) Environmental officer (NGB)
(9) RSC Commandant (USAR)
(10 Real Estate officer
(11) Facilities officer
(12) Joint/ASCC/HQDA/ACOM staff.
(13) HRC Engineer Branch Assignments Officer (USAR AGR).
(14) TEC staff officer (USAR)
(15) RSC DPW staff officer (USAR)
(16) Architect (USAR)

(3) Self-development. Engineer majors must continue refining and building upon their technical competence using self-development. At this point in their careers, all engineer officers are highly encouraged to have a master's degree as outlined for captains. Officers with undergraduate engineering degrees who passed the Fundamentals of Engineering exam are encouraged to complete Professional Engineer registration (licensure). Officers without an undergraduate engineering degree are encouraged to pursue and obtain professional certifications such as PMP, Project Engineer, Geographic Information Systems Professional, and so forth. To differentiate officers by technical discipline, engineers at the field grade level should maximize the use of DA Pam 611–21's Army recognized SIs and project development SIs. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. Engineer majors should also increase their participation in professional/technical organizations to stay current in emerging technologies and ideas. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer majors should successfully complete a KD assignment for 12 to 18 months. Engineer majors should also serve in several developmental/broadening assignments to further develop their technical and tactical competencies and broaden their experience base necessary to succeed at the lieutenant colonel and colonel levels. Majors will transition their development to a mastery of engineer support as a part of joint and multinational operations. Some majors will develop a mastery of maneuver support operations and improve their competency to serve in maneuver enhancement brigades and protection staff officer positions. Some majors will develop a mastery of facilities management to serve in installation management positions.

f. Lieutenant colonel development.

(1) Education. RC Engineer lieutenant colonels must complete ILE Advanced Operations Course (AOC) for promotion to colonel. After selection for promotion to lieutenant colonel, engineer officers may be selected by a HQDA, NGB or State boards to complete resident SSC or nonresident instruction. The Joint Engineer Operations Course and/or the Joint, Interagency, Multinational Planners Course provides lieutenant colonels with a knowledge base of joint operations needed at this grade and is highly encouraged. Engineer lieutenant colonels selected for battalion-level command will attend the Army, branch, and functional PCCs.

(2) Assignment.

(a) Key developmental. All promotable engineer majors and lieutenant colonels are eligible to compete for lieutenant colonel-level command during the Command Selection Board process. Selection is based primarily on the officer's overall performance, demonstrated potential to lead larger organizations, experience, and qualifications. A centralized selection board will select officers based on

HQDA guidance. Slating for command will be dependent upon the officer's component and duty status. Officers should review the annually published MILPER message carefully to determine eligibility.

(b) Developmental/broadening. The objective of lieutenant colonel assignments is for officers to continue to provide a valuable contribution to the Engineer Regiment, the Army, and our nation based on their unique Knowledge, skills, attributes, experiences and qualifications. Officers desiring to contribute in the operational/tactical arena have numerous opportunities on staffs at all levels. Officers desiring to contribute in the technical arena have numerous opportunities. The following developmental and broadening assignments enhance the officer's technical and tactical competencies in a wide range of skill sets and offer operational and strategic value to the Army:

(1) Brigade XO
(2) Division staff (division engineer, Chief of Protection, Chief of Plans)
(3) ROTC PMS (AGR only)
(4) AC/RC TS Battalion Commander
(5) Senior observer controller trainer
(6) JIIM staff officer
(7) Deputy Installation Commander (USAR AGR)
(8) Joint/ASCC/HQDA/ACOM staff
(9) State JFHQ
(10) ARNG Branch/DIV Chief

(3) Self-development. Engineer lieutenant colonels must continue refining and building upon their technical competence using self-development. At this point in their careers, all engineer officers are highly encouraged to have a master's degree in an appropriate discipline as specified for captains. Other areas where engineer lieutenant colonels may consider certification and credentialing are related to geospatial and environmental engineering, contracting, and other strategic planning and management disciplines. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To remain current in emerging technologies and ideas, engineer lieutenant colonels should be active contributors to professional/technical organizations. Completion of online courses through AKO Distributive Learning, DAU, and learning a foreign language is highly encouraged.

(4) Desired experience. Engineer lieutenant colonels are subject matter experts within any organization to which they are assigned. A wide variety of assignments ensures a tactical and technical expert that is comfortable in all levels of warfare (tactical, operational, and strategic).

g. Colonel development. The professional development objective for this phase of an officer's career is joint qualification, sustainment of warfighting, training, and staff skills; along with the provisions of senior, seasoned leadership, management, and executive talents at the enterprise level. The majority of strategic level leaders in the Army are colonels. Colonels are expected to be multi-skilled leaders, strategic, critical and creative thinkers, builders of leaders and teams, competent full spectrum warfighters, skilled in governance, statesmanship, and diplomacy, and understand cultural context and work effectively across all domains.

(1) Education. After selection for promotion to colonel, engineer officers should complete SSC, either resident or nonresident. Opportunities for educational fellowships are also available and can grant MEL SSC accreditation in lieu of attendance at an SSC. All colonels should pursue/complete joint qualification, which consists of two parts: an education component and an experience component. The education requirement is met by completing the 10-week JPME II course or by resident SSC attendance at any of the service war colleges. The requirement for joint qualification is not waiver-able. The experience requirement is met by serving an assignment in a joint billet for a prescribed period of time (usually 36 months, but less for combat and hardship assignments). Officers can apply for experience-based credit in lieu of assignment, but must demonstrate significant interaction with joint and/or interagency actors/organizations. Colonels interested in experience-based credit should work closely with their HR manager at the Senior Leader Development Office to ensure compliance with the most current waiver rules and request format. Engineer colonels selected for brigade-level command will attend the Army, Branch, and functional PCCs.

(2) Assignment.

(a) Key developmental. Selection for colonel-level command is extremely competitive. Promotable engineer lieutenant colonels and colonels with less than 27 years of active federal commissioned

service are eligible to compete for colonel-level command during the Command Selection Board. Selection is based primarily on the officer's overall performance, demonstrated potential to lead larger organizations, experience, and qualifications. A centralized selection board will select officers based on HQDA guidance for USAR, the ARNG State select officers for command positions. Slating for command will be dependent upon the officer's component and duty status. Officers should review the annually published MILPER carefully to determine their eligibility.

(b) Developmental/broadening. The objective of colonel assignments is for officers to continue to provide strategic value to the Regiment, the Army, and our nation based on their unique experiences and qualifications. Assignments include organizations and duties beyond those discussed in earlier sections. The spectrum of possible assignments is broad and is characterized as highly responsible, important, and requiring mature, skilled, and well-rounded officers.

(3) Self-development. Engineer colonels must continue refining and building upon their technical competence using self-development. Various professional reading lists and doctrinal publications are available that officers should use to generate discussion in professional development sessions, as well as self-assessment tools to increase self-awareness. To remain current in emerging technologies and ideas, engineer colonels should hold leadership positions and be chief contributors within professional/technical organizations.

(4) Desired experience. Engineer colonels are subject matter experts within any organization to which they are assigned.

Figure 4: USAR Flexible Career Path

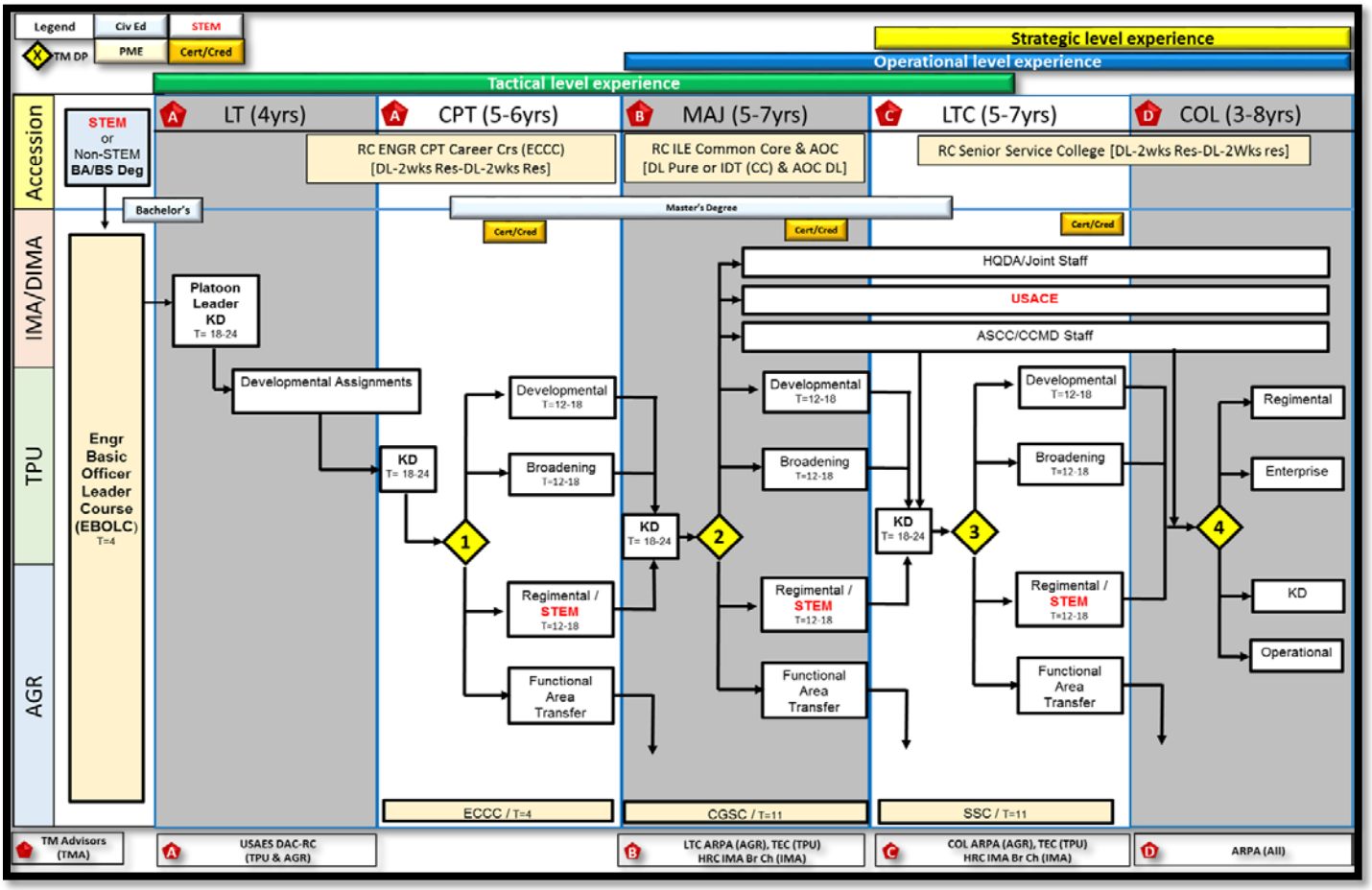


Figure 5: USAR Talent Management Methodology