

A U.S. Soldier with the 20th Engineer Brigade climbs into an excavator during the Best 12N Competition at Fort Bragg, N.C., May 21, 2025. The event, part of Castle Week, challenged soldiers to demonstrate precision, control, and technical proficiency in horizontal construction operations.
(U.S. Army photo by Pfc. Jaquari Lindsey)

12G AIT Transformation to 12N ASI

By Captain Zachary Towne

This paper recommends converting the 12G Quarry Operations Specialist military occupational specialty (MOS) into an additional skill identifier (ASI) for the 12N Horizontal Construction Engineer MOS. This change would strengthen the Army Engineer Regiment by increasing training efficiency, reducing redundancy, and ensuring sustained access to quarrying capabilities across all components of the Army.

The 12G MOS currently resides exclusively within the Army National Guard, with training conducted through the 12G Advanced Individual Training (AIT) course at Fort Leonard Wood, Missouri. The course is five weeks and three days long and is scheduled twice per fiscal year. However, enrollment has been critically low for several years. In fiscal year 2025, only two Soldiers completed training. The previous year produced only one class of approximately 10 students, and no classes had been conducted for several years before that. The result is a course that frequently cancels iterations, leaving valuable training resources underutilized and the Army's quarrying capability stagnating.

As the company commander responsible for the military personnel supporting the 12G AIT — including the drill sergeants, quarry support platoon, and equipment used in training — I have observed the gap between the intent of the 12G program and its operational output. The quarry support platoon assigned to the course is composed entirely of 12N Horizontal Construction Engineers who operate and maintain the quarry equipment daily. Their performance demonstrates that the core functions of the 12G MOS fall squarely within the existing skillset of 12Ns. The few additional requirements, such as the Environmental Smoke School certification for crusher operations, are minimal and achievable through short-duration courses.

Converting 12G into an ASI for 12N would align with Transformation and Training Command's (T2COM's) broader efforts to reduce MOS redundancy and optimize training pipelines across the Engineer Regiment. This change would preserve the Army's quarrying capability while making it more accessible to all components — Active Duty, Reserve, and National Guard. To understand why this shift is both practical and necessary, it is

first important to examine the significant overlap in mission and equipment between 12G Quarry Operations Specialists and 12N Horizontal Construction Engineers.

Overlap in Mission and Equipment

Horizontal construction and quarry operations share a substantial overlap in function, machinery, and mission outcome. Converting 12G into an ASI for 12N is not about redefining responsibilities — it is about formally aligning what is already being done in practice without altering the way the course runs, the resources it uses, or the personnel assigned to it.

Shared Core Functions and Machinery

The 12N MOS focuses on heavy earthmoving, route construction, site preparation, grading, and mass haul operations. According to FM 3-34, *Engineer Operations*, engineer forces perform both horizontal and vertical construction and include material production (quarrying) among their specialized capabilities. Quarrying is therefore not a separate trade, but a specialized extension of horizontal construction.

In practical application, both missions employ nearly identical fleets of equipment:

- D7 dozers
- 621 scrapers
- 120M graders
- 2.5-yard and 5-yard loaders (with bucket and fork attachments)
- 10-ton and 20-ton dump trucks
- 916 tow assets paired with 870 trailers
- Hydraulic Excavator (HYEX), Palletized Loading System (PLS), water distributor, and skid steer systems

The quarry support platoon assigned to the 12G AIT operates a platform that mirrors a horizontal platoon in an engineer construction company (ECC) or engineer support company (ESC). The only unique systems are the rock drill HYEX attachments, crusher, screen, and conveyor systems — the same systems the 12G course trains on. This parallel demonstrates that no new resourcing, structure, or manning changes would be needed if the course were redesignated as an ASI under 12N.

Minimal Additional Specialty Requirements

The distinction between 12N and 12G skill sets lies almost entirely within the material processing functions: drilling, blasting, crushing, screening, and conveyor operations. These tasks do not require rewriting the course or adding new resources. The existing program of instruction (POI) would remain intact and continue to run under the same duration, personnel, and resourcing

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model. The only adjustment would be administrative — 12N Soldiers would attend the same course to earn an ASI rather than a standalone MOS. Two members of the current quarry support platoon already maintain the 6-month Environmental Smoke School certification (an 8-hour course) required for quarry operations, illustrating how minimal additional overhead is required.

In effect, this transition recognizes existing functional equivalence and simplifies credentialing without any degradation to training quality or mission support capability.

Operational Evidence of Functional Convergence

The quarry support platoon has successfully produced and delivered aggregate for a variety of construction projects throughout the Fort Leonard Wood training area. Although current production is limited by aging crusher and screen systems, past performance shows that 12N personnel are fully capable of supporting real-world quarrying operations.

Additionally, Air Force engineering doctrine already defines "quarry operations, rock crushing" as an inherent specialized engineer capability within its engineering operations framework.[1] This inter-service recognition reinforces that quarrying naturally belongs within the broader engineer domain—not as an isolated or standalone career field.

Finally, maintaining blasting experience within this pipeline directly enhances integration between 12N and 12B (Combat Engineer) units. Many 12Ns are assigned to 12B companies, and a working understanding of explosives improves joint mission execution, communication, and overall engineer versatility. Soldiers who are cross-trained in blasting can better synchronize mobility, countermobility, and survivability operations—a critical advantage when supporting combat engineers in operational environments.

Transition to Training and Readiness Efficiency

Given this overlap in mission, equipment, and doctrine, converting 12G into an ASI under 12N would not alter how training is conducted or resourced—it would only streamline management and align organizational structures with current operational reality. The next section will address how this transition enhances training efficiency and force readiness across the Engineer Regiment.

Training and Readiness Efficiency

Maintaining the 12G MOS in its current structure has resulted in chronically low throughput, wasted instructor hours, and underutilization of critical equipment. The 12G AIT course is a 5-week, 3-day program that requires three assigned instructors and typically two drill sergeants per class. Low student numbers mean the Army either fails to achieve the intended training benefits or expends resources for little to no operational output. Instructor effort, planning, and fiscal resources are completely wasted in cases where classes are canceled due to insufficient enrollment. Additionally, idle quarry equipment — much of it aging — requires maintenance and is more susceptible to degradation when left unused.

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An argument has been made that the 12G MOS could be eliminated entirely due to its limited utilization. However, higher echelons have clearly stated that there remains a distinct need for 12G capabilities. While there may not be an immediate operational requirement, the functions of quarry operations will continue to be relevant in future mission sets. The Army must therefore find a way to sustain and enhance its ability to employ these assets when called upon.

Converting 12G into an ASI available to all 12Ns across the Active, Reserve, and National Guard components addresses this challenge directly. By opening the course to a wider pool of Soldiers, throughput would increase substantially, spreading critical 12G knowledge throughout the Engineer Regiment and improving overall readiness. Students could attend as a follow-on course after 12N AIT or as a junior noncommissioned officer (NCO) school opportunity, reducing travel and temporary duty (TDY) costs while maximizing training efficiency. In this model, drill sergeants could operate more broadly as general cadre rather than in a strict initial entry training role, further improving instructional flexibility and efficiency.

Ultimately, retaining the 12G curriculum while expanding access as an ASI preserves a single, consolidated training pipeline while eliminating the inefficiencies inherent in a standalone MOS with limited enrollment. This approach ensures that capable personnel are available across all components, fully trained, and ready to execute the mission when the Army requires quarry operations expertise.

Force Structure and Manning Benefits

The 12G MOS is currently limited to only seven National Guard quarry units, with the 106th Engineer Quarry Detachment in Baraboo, Wisconsin, recently inactivating after over 140 years of service.[2] This reduction underscores the diminishing presence of dedicated quarry units within the Army, creating a significant readiness gap in specialized material production capabilities. As these units age, deactivate, or decline in manning, the Army's ability to employ quarry operations in support of construction and mobility missions is increasingly limited.

Transitioning 12G to an ASI would strengthen the Army's force structure and mitigate this readiness gap by allowing all 12N Soldiers across Active, Reserve, and National Guard components to gain quarrying proficiency. This expanded pool of trained personnel would provide:

Enhanced readiness and flexibility. ASI-qualified 12Ns could be rapidly employed to any quarry detachment, ensuring timely mission execution and the ability to surge capabilities where required.

Critical readiness gap mitigation. In large-scale combat operations (LSCO) against a near-peer adversary, demands for 12G capabilities would exceed the current capacity of four National Guard units. Broadening the ASI ensures that trained personnel are distributed throughout the regiment, maintaining the Army's ability to execute quarry operations when needed.

Career-broadening opportunities. Completion of the 12G ASI provides 12Ns a valuable professional development milestone, enhancing promotion potential and leadership prospects while incentivizing acquisition of specialized construction skills.

Leverage of existing expertise. Many 12Ns are already proficient in heavy equipment operations. Adding quarry operations to their skill set maximizes Soldier utility and enhances operational effectiveness across construction and engineer units.

The existing quarry support platoon, fully staffed by 12Ns, exemplifies the feasibility and benefits of this approach. Personnel are capable of performing quarry operations with proficiency, validating the potential of the ASI model to expand capacity, sustain readiness, and support the Army's construction mission across all components.

Counterargument and Rebuttal

Some may express concern that converting 12G to an ASI could reduce specialization, introduce safety risks, or dilute training. While these arguments warrant consideration, the ASI model preserves the full scope of 12G expertise, maintains rigorous safety standards, and ensures course quality while eliminating MOS redundancy.

Critics may assert that removing the standalone 12G MOS could diminish expertise or focus on quarry operations. This concern is mitigated by the fact that converting to an ASI does not eliminate existing 12G quarry detachments or other specialized units. These units would continue to foster and maintain advanced skills at a higher level, while the ASI would provide Soldiers throughout the regiment functional quarry knowledge and the ability to rapidly employ in current 12G billets. All POIs and curriculum remain identical, and Soldiers completing the ASI achieve the same level of knowledge and proficiency as MOS graduates, fully preserving specialization.

Another potential concern is safety. Broadening the candidate pool to include 12Ns from multiple components might be perceived as introducing additional risk. In practice, this concern is negligible. The 12G AIT is safely conducted with trainees who have only 10 weeks of basic military experience. ASI candidates, by contrast, would

have a minimum of 18 weeks of military experience following 12N AIT or more if attending TDY from another unit. Cadre and instructors remain unchanged, and historical course performance demonstrates that safety standards are consistently met. As such, safety concerns are unlikely to increase and may, in fact, decrease due to the higher baseline of experience and maturity of the student population.

Finally, there may be concern that expanding eligibility could dilute the quality or depth of training. The intent of the ASI is not to increase class numbers or size, but rather to fill currently scheduled courses and previously unused slots. Instructional standards, evaluation criteria, and the curriculum remain unchanged. Cross-training 12Ns in quarry operations enhances overall force capability and spreads 12G expertise across the regiment without reducing the rigor or effectiveness of the program.

In summary, the ASI model preserves the specialized skill set, maintains safety and quality standards, and eliminates MOS redundancy while expanding access. This approach ensures a ready pool of personnel capable of performing 12G tasks, strengthening the Army's overall quarrying capability across all components.

Conclusion and Recommendation

The 12G MOS has historically been underutilized, with low throughput, canceled courses, and aging equipment limiting its contribution to the Engineer Regiment. This structure has proven resource-inefficient and functionally redundant when compared to the capabilities of 12N Soldiers, who already perform many of the core functions associated with quarry operations. Despite these challenges, the need for 12G capabilities remains vital. Future operational requirements could demand a rapid and proficient workforce trained in quarry operations.

Converting 12G to a Quarry Operations ASI for 12Ns offers a practical and effective solution. The existing 12G AIT curriculum, instructors, and course structure would remain unchanged, ensuring that Soldiers gain the same level of proficiency as current MOS graduates. Opening this ASI to 12Ns across Active, Reserve, and National Guard components expands access, mitigates readiness gaps, and creates a ready pool of personnel capable of performing quarry operations when required. Additionally, this approach provides career-broadening opportunities, enhances promotion potential, and incentivizes professional development, while preserving the advanced skills cultivated within existing 12G detachments.

Based on these considerations, I recommend converting the 12G MOS into a 12N-specific ASI. This change preserves specialized capability, strengthens readiness, optimizes the training pipeline, and maximizes the operational utility of the Regiment's horizontal construction forces.

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End Notes

1 US Air Force. 2021. ***Engineer Operations***. AFDP 3-34. Maxwell AFB, AL: Curtis E. LeMay Center for Doctrine Development and Education. https://www.doctrine.af.mil/portals/61/documents/afdp_3-34/3-34-afdp-engineer-ops.pdf.

2 Department of the Army. 2014. ***Engineer Operations***. FM 3-34. Washington, DC: Government Publishing Office.Trovato, Joseph. 2025. "Two Wisconsin Army National Guard Engineer Detachments Inactivated as Part of Army Transformation." DVIDS, September 9, 2025. https://www.dvidshub.net/news/547663/two-wisconsin-army-national-guard-engineer-detachments-inactivated-part-army-transformation.