F. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT

(Present as many projects as requested by the agency, or 10 projects, if not specified. Complete One Section F for each project.)

20. EXAMPLE PROJECT KEY NUMBER

21. TITLE AND LOCATION *(City and State)*	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Stilling Basin Extension and New Downstream Scour Protection Charleroi Locks and Dam Westmoreland & Washington Co., PA	2004	2004

23. PROJECT OWNER'S INFORMATION

a. PROJECT OWNER	b. POINT OF CONTACT NAME	d. POINT OF CONTACT TELEPHONE NUMBER
USACE - Pittsburgh District	Gerald Barczyk	412- 395-7340

24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(Include scope, size and cost)*

Civil design, geotechnical and instrumentation services were completed for final design of a stilling basin extension and new downstream scour protection at Charleroi Locks and Dam. The new scour protection was designed to replace existing scour protection which has been degraded or scattered downstream and is no longer effective, and to upgrade the downstream scour protection to function adequately under higher energy flow when the minimum downstream pool is lowered 3.2 feet. In general, the new downstream scour protection includes about 53,000 cubic yards of underwater excavation and in-river disposal, 396,000 pounds of PZ27 sheet piling/king piles, 9,100 cubic yards of graded filter material, 3,600 cubic yards of tremied concrete, and 370 cubic yards of precast concrete bulkhead blocks.

In addition, civil design was completed for final design of new submerged training dikes to be constructed in the upper pool. A total of nine (9) submerged training dikes will be constructed. In general, the submerged training dikes include about 40,000 cubic yards of underwater excavation and in-river disposal, and 87,000 tons of R-8 graded stone.

- **Civil Design Services**. AWK was responsible for preparation of contract-ready drawings **(MicroStation),** development of technical specification requirements **(SPECSINTACT),** review of government-prepared specifications, and preparation of quantity estimates for new downstream scour protection. AWK completed structural analyses with a 3-dimensional stiffness model using STAAD to evaluate the impact of proposed dredging on the stability of an existing pile-supported abutment. The STAAD results were used to design new soil anchors to provide support to the abutment during construction. Detailed construction phasing diagrams were developed to coordinate staged construction with dam gate operations so that the facility could remain operational throughout construction.
- **Geotechnical Services.** AWK evaluated available subsurface data, recommended additional subsurface exploration, completed test borings and installed instrumentation, administered the laboratory testing program, and developed design parameters to support final design. The design parameters generally included strength parameters and bilinear spring constants. AWK completed geotechnical analyses to design a new graded filter.
- **Drilling services**. AWK generally included: surveying to locate both land and river based test borings; drilling 4 test borings and 3 offset borings on land, plus 7 test borings from floating plant; installing 4 borehole piezometers and 3 inclinometers; and conducting in-situ borehole permeability tests.
- **Instrumentation Services.** AWK designed an instrumentation system to monitor the performance of the existing pile-supported abutment during dredging. The instrumentation system generally includes borehole piezometers, alignment pins, inclinometers, and load cells. The borehole piezometers will be used to monitor fluctuations in ground water level behind the abutment. The alignment pins will be used to monitor lateral displacement of the abutment stem. The inclinometers will be used to monitor ground movement below the abutment footing. The load cells will be used to monitor potential relaxation of prestress load for soil anchors installed.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT

	(1) FIRM NAME	(2) FIRM LOCATION *(City and State)*	(3) ROLE
a	AWK Consulting Engineers, Inc.	Pittsburgh, PA	Prime Contractor
b			