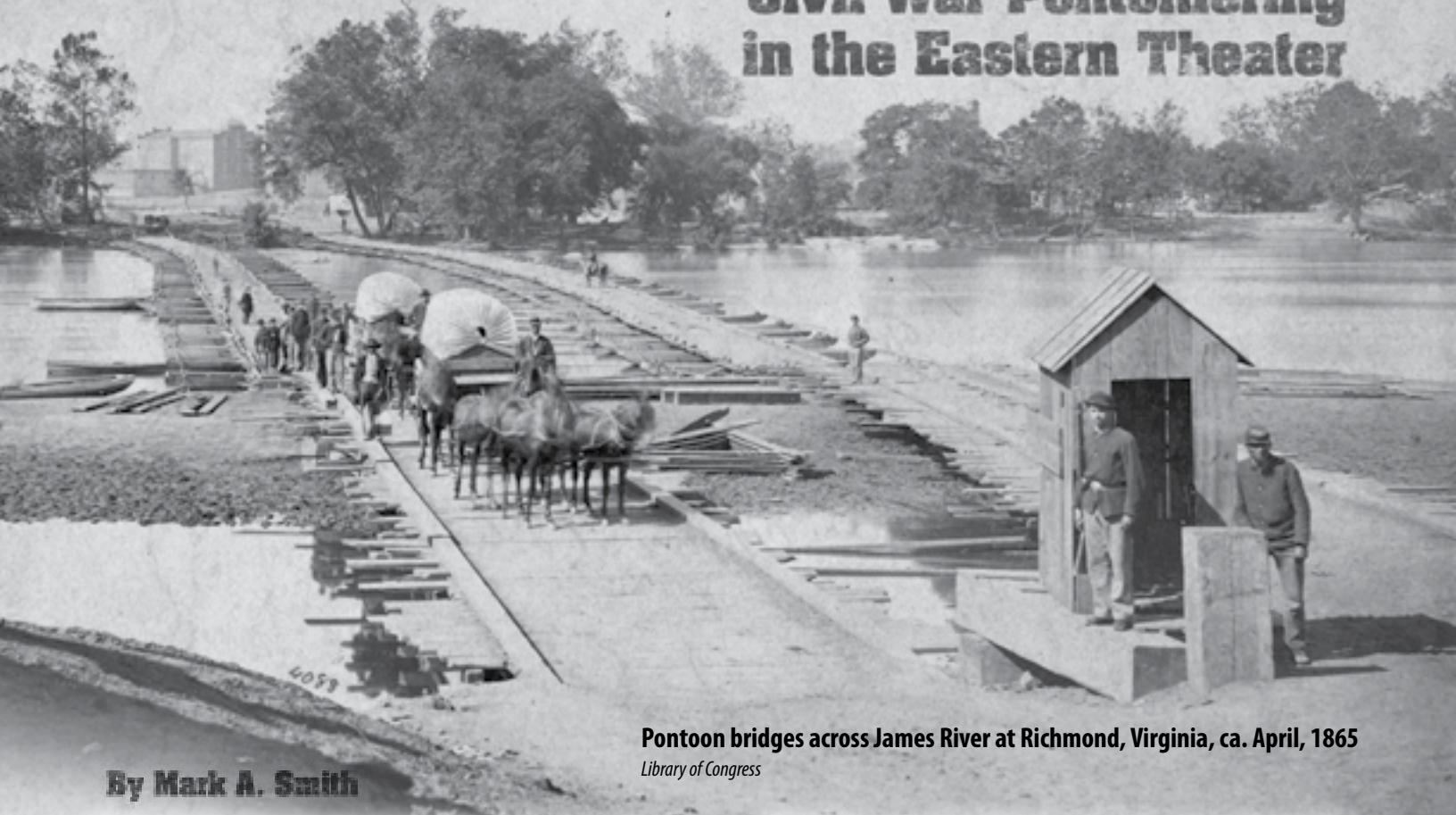


RIVERS, RAILS, AND WOODEN BATEAUX

Civil War Pontoniering in the Eastern Theater



Pontoon bridges across James River at Richmond, Virginia, ca. April, 1865

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By Mark A. Smith

During the American Civil War, the small number of regular officers and enlisted soldiers in the U.S. Army Corps of Engineers fulfilled several important roles. They gathered tactical and operational intelligence through field reconnaissance and mapped the local countryside to enable movements through a hostile environment. They provided expertise and guidance in the construction of field fortifications and siege works and built semipermanent defenses for important places behind the lines. Engineers also often directed the fatigue details that made the abysmal Southern roads passable for large armies and their supply trains. In all these areas, volunteer officers and soldiers also provided significant support, with and without the assistance of regular engineers. However, the regular engineer officers provided critical leadership in the management of military bridging. The development, organization, and army-level oversight of portable bridging equipment fell almost entirely within their purview, though volunteer units often managed the bridge trains themselves in the field. These operations literally kept the United States' armies on the march toward victory.

The engineers employed a variety of equipment and approaches, but these operations also followed larger patterns. Historian Philip Shiman has illuminated some of these in the West, where Maj. Gen. William S. Rosecrans designed a new canvas pontoon boat that was easier to maneuver across the poorer roads in that theater. This so-called Cumberland pontoon, as later refined by engineer Capt. William E. Merrill, had a wooden frame that could be folded in half and transported on a standard Army wagon.¹ Pontoniering in Virginia, however, has been understudied, a curious oversight given the many rivers and their impact on operations. An examination of wartime military bridging in the East shows how Corps of Engineers officers crafted a system of portable bridging that was best suited to the region's geography and infrastructure and that enabled Lt. Gen. Ulysses S. Grant's 1864 Overland Campaign and subsequent American successes.

Spanning History

Military bridging, also called pontoniering for its reliance on specialized floating craft called pontoons or pontoon boats, was not new to Americans during the Civil War.

campaign. From 29 April, when the Empire State pontoniers laid the campaign's first span, through 23 June, they built thirty-eight separate crossings, ranging from 40 to 400 feet in length.³²

Duane tested his new pontoniering equipment and organization near the campaign's start. As Grant positioned his forces to commence operations, on 29 April, Lt. Mahlon B. Folwell supervised a detachment of the 50th New York's fourth battalion as it laid a bridge at Kelly's Ford using the new canvas pontoons to cross Brig. Gen. David M. Gregg's cavalry division over the river. After their success laying this early span with the new boats, the engineers tested Duane's new procedures as the campaign began in earnest when the Army of the Potomac crossed the Rapidan. Lieutenant Folwell's canvas train reached Ely's Ford with Gregg's cavalry at daylight on 4 May. This was one of three crossing sites for Grant's forces as they made their first attempt to outflank the *Army of Northern Virginia* that spring in a maneuver that culminated in the Battle of the Wilderness the next day. On the fourth, Folwell's pontoniers threw their canvas bridge while the troopers forded the river. As soon as the engineers finished, the II Corps appeared and began its crossing. Shortly thereafter, Major Brainerd's battalion, marching with the II Corps, arrived on site and laid its wooden bridge. By 0915, the wooden pontoon crossing opened, and the II Corps shifted to it, allowing Folwell's pontoniers to pull up their canvas boats and return to the front of the column. The II Corps never paused.

Similar operations were repeated throughout the campaign as Grant continued crossing the region's rivers in his attempts to maneuver the Army of the Potomac around Lee's right or bring it to battle on open terrain. Duane's procedures continued to work well as the army maneuvered, and he also employed a similar approach whenever the lighter-weight pontoons were needed for more mobile operations elsewhere, as was the case at Jericho Mills along the North Anna River in late May. On the twenty-third, Capt. Martin Van Brocklin's detachment of the reserve battalion built a canvas bridge there that allowed Maj. Gen. Gouverneur K. Warren's V Corps to establish a lodgment on the south side of the river during the first day of the Battle of North Anna. Three days later, after the inconclusive engagement ended and the turning move-



This July 1864 sketch by Alfred R. Waud shows the 1st New York Engineers' pontoon bridge at Point of Rocks on the Appomattox. They later disassembled the bridge and sent the boats downriver to aid in the effort to get the Army of the Potomac across the James River.

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ment resumed, Major Beers's volunteer battalion replaced this canvas bridge with a wooden one so Van Brocklin's more mobile train could support Maj. Gen. Philip H. Sheridan's cavalry corps as it moved against the Virginia Central Railroad to cut Richmond's western supply lines.³³

As the Overland Campaign devolved into a stalemate after the Battle of Cold Harbor, Grant adopted a course that both redefined the war in the Eastern Theater and relied on his pontoniers for its success. He abandoned

his efforts to isolate and defeat Lee's army north of Richmond, operating from a direction that allowed his army to also shield Washington. Instead, Grant opted to throw his army over the James River and seize Petersburg. Located about 20 miles south of Richmond, this city contained several rail lines critical to Confederate logistics; if Grant severed these lines, it would isolate the rebel capital and make it vulnerable to capture, which could deprive Lee of his army's base. To move against Petersburg,



With boats in the water (center right) not attached to the main structure and soldiers clearly working atop the span, this photograph may show engineers constructing the pontoon crossing over the James River for Grant's move against Petersburg in June 1864.

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The completed bridge over the James in the late summer of 1864. This photograph also shows the heavy vessels used to stabilize it against the river's strong current and tidal changes.

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though, the American engineers had to lay the longest pontoon bridge of the entire war, despite difficulties marshalling their equipment. Grant intended for Meade's army to cross the James at Weyanoke Point. There the river narrowed to about 2,000 feet, which was still a considerable distance for a temporary floating bridge. Moreover, as the channel narrowed, the current accelerated, creating additional complications for the engineers who already had to deal with the river's regular 4-foot tidal change in depth. Creating more difficulties, the Army of the Potomac's entire pontoon train was required to get its troops over the Chickahominy and to Weyanoke Point on the James's north bank. Therefore, Grant needed the assistance of Maj. Gen. Benjamin F. Butler's Army of the James, but the required cooperation between the two armies was hampered by an unfortunate decision. On 6 June, Grant's aide-de-camp, the engineer Cyrus B. Comstock, had told Butler that

the commanding general intended to cross the James soon. Just four days later, one of Butler's staff officers sent all of his army's pontoon equipment 35 miles downriver to Fort Monroe for storage.³⁴

Fortunately, the ease of moving pontoons over the rivers themselves prevented this from becoming a fatal blunder. On 12 and 13 June, Grant ordered Butler to send all his available boats to Weyanoke Point for the James River bridge. The pontoniers of Butler's 1st Regiment, New York State Volunteer Engineer Corps, immediately dispatched some of their equipment, dismantling a bridge at Point of Rocks on the Appomattox River and towing them 25 miles down the Appomattox and James to Weyanoke Point. At Fort Monroe, Brig. Gen. Henry W. Benham of the Volunteer Engineer Brigade received Grant's orders and put two volunteer captains, Timothy Lubey of the 15th New York and James Robbins of the 50th, in charge of getting

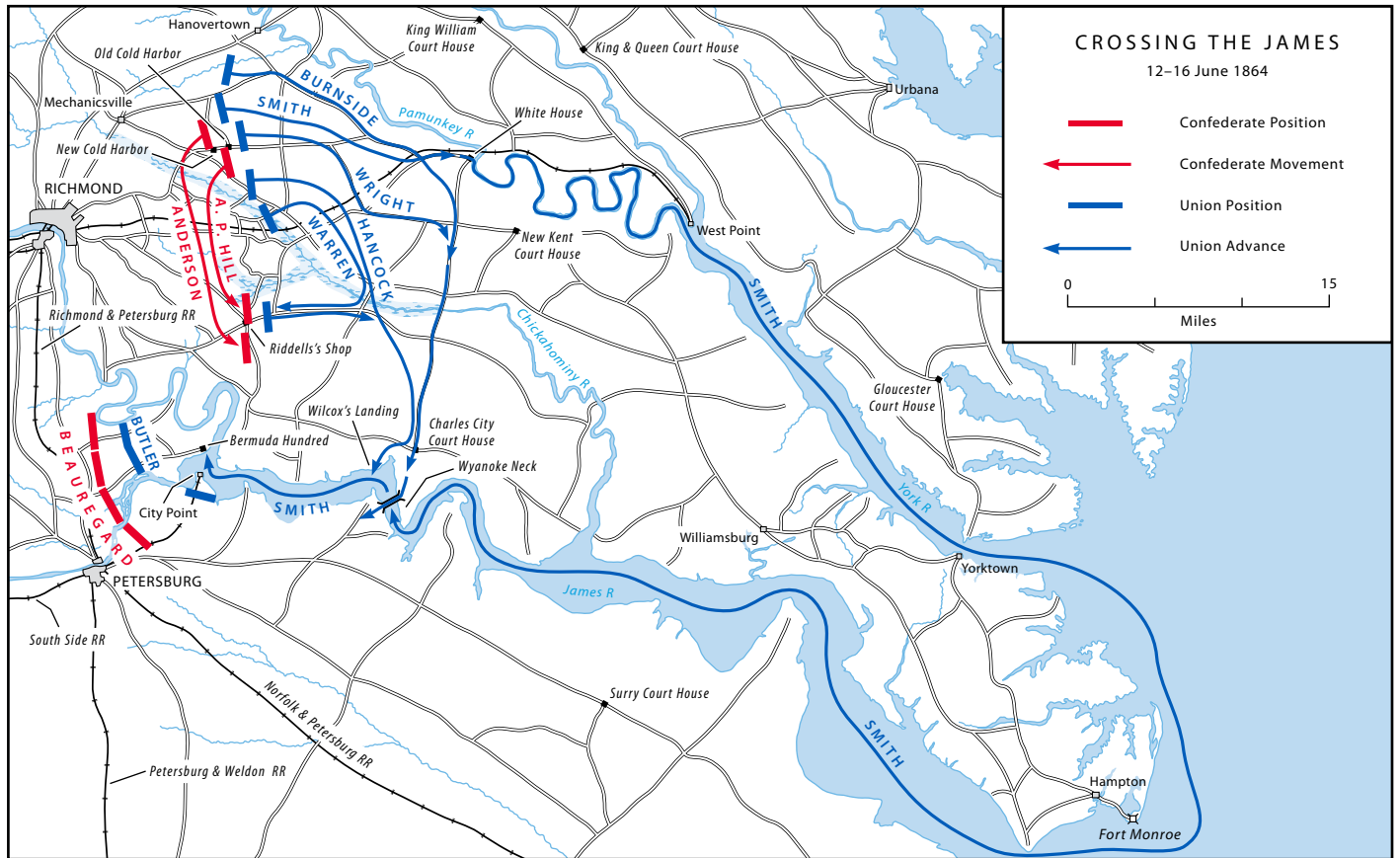
the pontoons stored at the fort back upriver. In an eerie similarity to the Fredericksburg crossings two years earlier, Benham failed to communicate the urgency of the operation to Lubey and Robbins. So when a detachment of the 1st New York Engineers finished the northern approach road for the James River bridge as the Army of the Potomac approached the crossing site on the morning of 14 June, the pontoons had not yet arrived. Butler's chief engineer, Godfrey Weitzel was on site supervising the work, and he sent a boat downriver to find the pontoons. The two volunteer captains, being unaware of the importance of their assignment, had decided to wait for the tide to come in to ease their trip up the James. Informed of the urgency, they immediately set out and arrived at Weyanoke Point by noon. When Major Duane subsequently arrived with two companies of the Army of the Potomac's regular engineer battalion, he took charge of the operation.³⁵

Work on the bridge accelerated after Duane and his pontoniers appeared. Even after receiving the pontoons, the 1st New York had not accomplished much, but around 1600, Capt. George H. Mendell's regulars built a trestle out to deeper water, then crossed to the southern shore, and began laying pontoons on the far side. Three companies of the 15th and 50th New York arrived about the same time and started placing boats from the new northern abutment. Benham himself arrived from Fort Monroe and assumed command of the operation around 1700, and by 2300 only 100 feet in the middle of the river remained unbridged. Around midnight the engineers filled this final gap with a removable draw to allow river traffic to pass. To stabilize the bridge in the face of the tides and rapid current, the pontoniers anchored it with heavy boats both up- and downriver. Ultimately, the engineers used 101 pontoons to build a



This illustration by artist Edwin Forbes shows components of the army as they crossed the James on the engineers' pontoon bridge on their way to Petersburg.

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1,980-foot bridge over the James that also included about 200 feet of trestlework. It was, and still is, the longest pontoon bridge ever thrown by the American Army. The sturdy wooden bateaux allowed the engineers to build a crossing used by one infantry corps, a division of another corps, and the Army of the Potomac's entire supply train, including 5,000 wagons and 3,000 head of cattle. On 18 June, with the army safely south of the James, the engineers dismantled the bridge. Without the crucial logistical support it enabled, however, the Army of the Potomac would have been incapable of threatening Petersburg and, after nearly a year of siege-like operations, cutting this vital rebel supply line. Strikingly, the delays imposed on the James River bridging operation by poor judgment and miscommunications were quickly rectified by the engineers, and had minimal operational impact because at the James the engineers enjoyed the benefit of water transport to the crossing point.³⁶

Conclusion

The engineers continued their pontooning efforts in the East until the final surrender of Lee's army, but by the time they dismantled the James River bridge, the final

pontooning patterns were set. The war's first contested crossing at Fredericksburg had taught them to secure the opposite shore before attempting to deploy a bridge, a lesson almost uniformly applied in every theater for the rest of the war. They had also learned how to best organize their trains for operations in the East, with heavier but

sturdier wooden pontoons for bridges of greater length and duration, while using the lighter and more maneuverable canvas boats in the advance to maintain forward movement and prevent delays. The many rivers and railroads in the Eastern Theater allowed the engineers to continue their primary reliance on the heavier wooden



A pontoon bridge under construction at Belle Plain Landing, Virginia
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craft by providing reliable alternatives to overland transport much of the time. Of course, they continued to use wagons when lacking other options, but Fredericksburg and the subsequent Mud March had made clear that even the relatively better roads in the East were not sufficient for the heavy wooden boats under extreme weather conditions. A similar process of experience and pontoon experimentation in the Western Theater led to an almost universal preference for lighter-weight and more mobile options because of the sparser infrastructure, but in the East the prevalence of rivers and rails allowed the wooden bateaux to bear the heaviest burdens of military bridging.³⁷

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29. McDonough and Bond, “Use and Development of the Ponton,” 716; Thompson, *Engineer Battalion in the Civil War*, 41–42; Malles, *Bridge Building in Wartime*, 165–68.
30. Thompson, *Engineer Battalion in the Civil War*, 42–50; Malles, *Bridge Building in Wartime*, 177, 179–81; Duane, Abbot, and Merrill, *Organization of the Bridge Equipage of the US Army*, 14; Wert, *Sword of Lincoln*, 311–13, 316–22; Freeman Cleaves, *Meade of Gettysburg* (Norman: University of Oklahoma Press, 1980; repr., 1991), 196–200.
31. Ltr, I. C. Woodruff to W. P. Trowbridge, 12 Sep 1863, Miscellaneous Letters Sent by the Chief of Engineers 1812–1869, 25 vols., National Archives Microfilm Publication M1113, 8 rolls, RG 77 (hereinafter M1113), roll 8, 22:410, NAB; Cir, J. D. Kurtz, 8 Dec 1863, T1255, roll 18, 36:197; Ltrs, J. D. Kurtz to W. P. Trowbridge, 8 Dec 1863 and 8 Jan 1864, M1113, roll 8, 22:476, 495; Ltr, I. C. Woodruff to W. P. Trowbridge, 5 Mar 1864, M1113, roll 8, 22:563; Ltr, J. G. Totten to J. C. Duane, 4 Feb 1864, T1255, roll 18, 36:329–30; Cowles, *Atlas to Accompany the Official Records*, Plate CVI; McDonough and Bond, “Use and Development of the Ponton,” 731; Cir, R. Delafield, 20 Dec 1864, T1255, roll 19, 37:474; OR, ser. 1, vol. 46, pt. 1, 649–50. It is likely that the Engineer Department reviewed and approved all these plans through the Pontoon Board, which existed from January 1863 through September 1864. It initially included Lt. Chauncey B. Reese, Capt. Barton S. Alexander, and Maj. George W. Cullum, but Reese returned to the field in March 1863, and thereafter only Alexander and Cullum comprised the board. See also “Return of the Officers of the Corps of Engineers,” January and March 1863 Corps of Engineers monthly returns, M851, roll 2; George W. Cullum, *Biographical Register of the Officers and Graduates of the U.S. Military Academy at West Point, N.Y., from Its Establishment, in 1802, to 1890, with the Early History of the United States Military Academy*, 3rd ed., 3 vols. (Boston: Houghton Mifflin, 1891), 1:536.
32. Earl J. Hess, *Trench Warfare under Grant & Lee: Field Fortifications in the Overland Campaign* (Chapel Hill: University of North Carolina Press, 2007), 10; McDonough and Bond, “Use and Development of the Ponton,” 730–31; Malles, *Bridge Building in Wartime*, 191–95; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:943–44.
33. OR, ser. 1, vol. 36, pt. 1, 304–5, 310–11; McDonough and Bond, “Use and Development of the Ponton,” 731; Jnl Entry, 29 Apr 1864, in Thomas James Owen, “Dear Friends at Home”: *The Letters and Diary of Thomas James Owen, Fiftieth New York Volunteer Engineer Regiment, during the Civil War*, ed. Dale E. Floyd (Washington, DC: Historical Division, Office of Administrative Services, Office of the Chief of Engineers, 1985), 111; Gordon C. Rhea, *The Battle of the Wilderness: May 5–6, 1864* (Baton Rouge: Louisiana State University Press, 1994), 60–61; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:944; Gordon C. Rhea, *To the North Anna River: May 13–25, 1864* (Baton Rouge: Louisiana State University Press, 2000), 290–91, 361–62; Gordon C. Rhea, *Cold Harbor: Grant and Lee, May 26–June 3, 1864* (Baton Rouge: Louisiana State University Press, 2002), 27; Wert, *Sword of Lincoln*, 358–60; Edwin C. Bearss and Bryce A. Suderow, eds., *The Petersburg Campaign*, vol. 1, *The Eastern Front Battles, June–August 1864* (El Dorado Hills, CA: Savas Beatie, 2012), 3.
34. A. Wilson Greene, *A Campaign of Giants: The Battle for Petersburg*, vol. 1, *From the Crossing of the James to the Crater* (Chapel Hill: University of North Carolina Press, 2018), 29, 42–44, 60–61; OR, ser. 1, vol. 40, pt. 1, 297, 301; Earl J. Hess, *In the Trenches at Petersburg: Field Fortifications and Confederate Defeat* (Chapel Hill: University of North Carolina Press, 2009), 11, 16–17; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:931.
35. Greene, *A Campaign of Giants*, 1: 62–63; OR, ser. 1, vol. 40, pt. 1, 301; Anita Palladino, ed., *Diary of a Yankee Engineer: the Civil War Story of John H. Westervelt, Engineer, 1st New York Volunteer Engineer Corps* (New York: Fordham University Press, 1996), 139, 141; Hess, *In the Trenches at Petersburg*, 17; Thienel, *Mr. Lincoln’s Bridge Builders*, 165–66, 173; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:932; Delafield, “Report of the Chief Engineer,” 21 Oct 1864, 33–34; Thompson, *Engineer Battalion in the Civil War*, 68–70.
36. OR, ser. 1, vol. 40, pt. 1, 301; Thompson, *Engineer Battalion in the Civil War*, 68–70; Palladino, *Diary of a Yankee Engineer*, 142; Thienel, *Mr. Lincoln’s Bridge Builders*, 174; Greene, *A Campaign of Giants*, 1:63–65, 74; Hess, *In the Trenches at Petersburg*, 17; Delafield, “Report of the Chief Engineer,” 21 Oct 1864, 34; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:932; Noe, *Howling Storm*, 415; Bearss and Suderow, *The Petersburg Campaign*, 1:35–36.
37. Duane, Abbot, and Merrill, *Organization of the Bridge Equipage of the US Army*, 15–16; Delafield, “Report of the Chief Engineer,” 30 Oct 1865, 2:949–50.