

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2023

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to
Commission File Number 001-34806

QUAD/GRAPHICS, INC.

(Exact name of registrant as specified in its charter)

Wisconsin

39-1152983

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification No.)

N61 W23044 Harry's Way, Sussex, Wisconsin 53089-3995

(Address of principal executive offices) (Zip Code)

(414) 566-6000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Class	Trading Symbol	Name of Each Exchange on Which Registered
Class A Common Stock, par value \$0.025 per share	QUAD	The New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the class A common stock (based on the closing price of \$3.76 per share on the New York Stock Exchange) on June 30, 2023, the last business day of the registrant's most recently completed second fiscal quarter, held by non-affiliates was \$119,469,691. The registrant's class B common stock is not listed on a national securities exchange or traded in an organized over-the-counter market, but each share of the registrant's class B common stock is convertible into one share of the registrant's class A common stock.

Indicate the number of shares outstanding of each of the issuer's classes of common stock as of the latest practicable date.

Class	Outstanding as of January 31, 2024
Class A Common Stock	38,725,275
Class B Common Stock	13,556,858
Class C Common Stock	—

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the registrant's 2024 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K.

QUAD/GRAPHICS, INC.
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For the Year Ended December 31, 2023

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Cautionary Statement Regarding Forward-Looking Statements

To the extent any statements in this Annual Report on Form 10-K contain information that is not historical, these statements are forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements relate to, among other things, the objectives, goals, strategies, beliefs, intentions, plans, estimates, prospects, projections and outlook of Quad/Graphics, Inc. (the “Company” or “Quad”), and can generally be identified by the use of words such as “may,” “will,” “expect,” “intend,” “estimate,” “anticipate,” “plan,” “foresee,” “believe” or “continue” or the negatives of these terms, variations on them and other similar expressions. In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances are forward-looking statements.

These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties and other factors, some of which are beyond the control of the Company. These risks, uncertainties and other factors could cause actual results to differ materially from those expressed or implied by those forward-looking statements. Among risks, uncertainties and other factors that may impact Quad are those described in Part I, Item 1A, “Risk Factors,” of this Annual Report on Form 10-K, as such may be amended or supplemented in Part II, Item 1A, “Risk Factors,” of the Company’s subsequently filed Quarterly Reports on Form 10-Q, and the following:

- The impact of decreasing demand for printing services and significant overcapacity in a highly competitive environment creates downward pricing pressures and potential under-utilization of assets;
- The impact of increased business complexity as a result of the Company’s transformation to a marketing experience company;
- The impact of changes in postal rates, service levels or regulations, including delivery delays;
- The impact of fluctuations in costs (including labor and labor-related costs, energy costs, freight rates and raw materials, including paper and the materials to manufacture ink) and the impact of fluctuations in the availability of raw materials, including paper, parts for equipment and the materials to manufacture ink;
- The impact macroeconomic conditions, including inflation, high interest rates and recessionary concerns, as well as cost and labor pressures, distribution challenges and the price and availability of paper, have had, and may continue to have, on the Company’s business, financial condition, cash flows and results of operations (including future uncertain impacts);
- The inability of the Company to reduce costs and improve operating efficiency rapidly enough to meet market conditions;
- The impact of a data-breach of sensitive information, ransomware attack or other cyber incident on the Company;
- The fragility and decline in overall distribution channels;
- The failure to attract and retain qualified talent across the enterprise;
- The impact of digital media and similar technological changes, including digital substitution by consumers;
- The failure of clients to perform under contracts or to renew contracts with clients on favorable terms or at all;
- The impact of risks associated with the operations outside of the United States (“U.S.”), including trade restrictions, currency fluctuations, the global economy, costs incurred or reputational damage suffered due to improper conduct of its employees, contractors or agents, and geopolitical events like war and terrorism;

- The failure to successfully identify, manage, complete and integrate acquisitions, investment opportunities or other significant transactions, as well as the successful identification and execution of strategic divestitures;
- The impact negative publicity could have on our business and brand reputation;
- Significant capital expenditures and investments may be needed to sustain and grow the Company's platforms, processes, systems, client and product technology, marketing and talent, and to remain technologically and economically competitive;
- The impact of the various restrictive covenants in the Company's debt facilities on the Company's ability to operate its business, as well as the uncertain negative impacts macroeconomic conditions may have on the Company's ability to continue to be in compliance with these restrictive covenants;
- The impact of an other than temporary decline in operating results and enterprise value that could lead to non-cash impairment charges due to the impairment of property, plant and equipment and other intangible assets;
- The impact of regulatory matters and legislative developments or changes in laws, including changes in cyber-security, privacy and environmental laws; and
- The impact on the holders of Quad's class A common stock of a limited active market for such shares and the inability to independently elect directors or control decisions due to the voting power of the class B common stock.

Quad cautions that the foregoing list of risks, uncertainties and other factors is not exhaustive and you should carefully consider the other factors detailed from time to time in Quad's filings with the United States Securities and Exchange Commission ("SEC") and other uncertainties and potential events when reviewing the Company's forward-looking statements.

Because forward-looking statements are subject to assumptions and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. You are cautioned not to place undue reliance on such statements, which speak only as of the date of this Annual Report on Form 10-K. Except to the extent required by the federal securities laws, Quad undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

PART I

Item 1. Business

Overview

Quad is a global marketing experience (MX) company that helps brands make direct consumer connections, from household to in-store to online. The Company is focused on providing a better marketing experience for its clients, so they can focus on delivering the best customer experience to theirs. Quad does this with a suite of marketing solutions that is flexible, scalable and connected. Supported by state-of-the-art technology and data-driven intelligence, these solutions are designed to streamline the complexities of marketing and remove friction from wherever it occurs in the marketing journey. Quad tailors its solutions to its clients' objectives, driving cost efficiencies, improving speed to market, strengthening marketing effectiveness, and delivering value on their investments.

Quad's footprint spans 14 countries, including 43 manufacturing and distribution facilities and more than 70 client dedicated teams. The Company supports a diverse base of approximately 2,700 clients, including industry-leading blue-chip companies that serve both businesses and consumers across multiple industry verticals, with a particular focus on commerce, including retail, consumer packaged goods and direct-to-consumer; financial services; and health. Quad prides itself on its long-standing relationships, with its largest clients averaging more than 22 years in duration. In 2023, its 10 largest clients accounted for approximately 19% of consolidated sales, with none representing more than 5% individually.

Quad was founded in Pewaukee, Wisconsin, as a Wisconsin corporation, in 1971 by the late Harry V. Quadracci. For many years, the Company operated as Quad/Graphics and focused on commercial printing. It grew rapidly and built a premier print manufacturing and distribution platform. Beginning in 2018, the Company accelerated its transformation to an MX company through strategic investments in marketing services, talent and technology, and, in 2019, evolved its brand from Quad/Graphics to Quad. Today, Quad is one of the nation's largest marketing services providers, ranked as the 14th largest agency company in the U.S. by *Ad Age* (2023), and is the second-largest commercial printer in North America, according to *Printing Impressions* (2023).

Quad's unique engagement model complements a brand's way of working. Whether as a full-service marketing partner, an outsourced extension of a marketing department or as executional support in conjunction with a brand's agency, the Company's connected capabilities, breadth of expertise and expansive reach enables Quad's clients to:

- Target the right audience segments at the right time in the right channels based on insights from Quad's large, proprietary data stack;
- Deliver and execute against a more streamlined end-to-end marketing process for greater speed and agility, better data utilization and improved customer engagement;
- Leverage Quad's experience in offline, physical touchpoints to drive omnichannel effectiveness;
- Streamline complexity at scale across the marketing supply chain with proven production and logistics capabilities;
- Enable scalable, complex, cross-channel activation while offering real-time automation and optimization.

In 2023, the Company focused on delivering strong financial results while navigating multiple issues in the macroeconomic environment, including an uncertain economy, postage cost increases on print mailings, inflationary cost pressures and rising interest rates. Despite these challenges, Quad worked to mitigate impacts on its business while proactively managing client expectations. The Company also continued its focus on three major growth drivers: delivering integrated service excellence, accelerating market penetration and leveraging its culture as an MX company. Quad believes it will be able to maintain a leading competitive position through its consistent long-term business

strategy, which is driven by dedicated, passionate and highly skilled employees, and by providing stability and innovative solutions for clients into the future.

More information regarding Quad is available on the Company's website at quad.com. Quad is not including the information contained on or available through its website as part of, or incorporating such information by reference into, this Annual Report on Form 10-K. The Company's Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and any amendments to those reports are made available to the public at no charge through a link appearing on the Investor Relations section of the Company's website. Quad provides access to such materials through its website as soon as reasonably practicable after electronically filing such material with, or furnishing it to, the SEC.

Principal Capabilities

The Company's suite of flexible, scalable and connected solutions addresses the pain points brands and marketers experience most frequently when creating and deploying content and campaigns.

Intelligence

Quad's intelligence capabilities comprise audience identification and segmentation, testing, media optimization and media mix modeling services that empower smarter decisions to maximize marketing effectiveness and generate quantifiable impact.

- *Audience identification and segmentation services* leverage the Company's proprietary data stack, comprised of consumer data from more than 117 million households, to identify potential consumers, matching their demographic details, behaviors and interests with other factors such as a client's desired marketing spend, location footprint and business objectives. Equipped with these data-driven insights, clients can strategically target their marketing efforts to drive engagement and spur consumer action.
- *Testing services*, such as Quad's proprietary Accelerated Marketing Insights platform, assist clients in identifying the most impactful marketing decisions by using a unique combination of high-level mathematics and social factors to predict the best combination of offer, messaging and imagery across channels – both offline and online.
- *Media optimization services* include Quad's proprietary, award-winning media optimization platform, Connex, which offers cross-channel insights, proactive intelligence and automated optimization capabilities that enable clients to make data-backed decisions in real time to drive campaign performance. The platform takes the guesswork out of media placement, unifying and normalizing client marketing data to uncover performance trends by audience, creative, product, location and more.
- *Media mix modeling services* help clients understand the revenue that can be attributed to marketing spend during a given timeframe. By applying rigorous analytics to client data, Quad provides a detailed model that reflects the effectiveness of each channel in a campaign, detailing a client's marketing return on investment and allowing them to make informed media placement decisions moving forward.

Creative

Quad's creative services help clients increase engagement with their brands to accelerate business growth, supporting all channels through every step of the creative process, including strategy, brand design, campaign ideation, premedia, adaptive design and content creation. Informed by a combination of proprietary, client and other third-party data, Quad's in-depth research on customer trends helps clients best define, design and position their brands. Applying this strategic brand work, the Company helps clients concept, direct and produce scalable creative content that attracts attention and elicits action. Creative services are powered by the Company's marketing, advertising and creative talent, which includes creative directors, art directors, strategists, videographers, photographers, copywriters, computer generated imagery (CGI) artists, graphic designers and animation experts, among others. The Company's network of 16 photography and video production studios execute content creation through in-studio and on-location services. Several

of these studios operate directly within or near client facilities, leading to improved creative collaboration and streamlined workflows. Creative services are also backed by global production resources that provide around-the-clock service for quick-turn design and production support. For clients with their own creative content operations, the Company offers strategic process design services to identify and address process gaps, helping increase production efficiency, ensure consistent brand assets, and avoid time-consuming and costly rework.

Production

Quad offers a wide range of production capabilities for deploying content to offline and online channels. These capabilities include digital as well as print – a major point of differentiation among the Company’s competitive set. The Company’s print operations feature the latest in automation and technology complemented by skilled manufacturing professionals. The Company can produce large-scale print products, such as magazines, retail inserts and directories, as well as targeted print products, such as catalogs, direct mail, in-store signage and displays, and high-end packaging.

Quad also has vertically integrated print and non-print capabilities that help improve the quality, cost and availability of key inputs in the printing and distribution processes. For example, the Company has its own prepress/premedia services, paper procurement, ink manufacturing (through its subsidiary Chemical Research/Technology), and logistics and transportation services (through its in-house Quad Transportation Services division and Duplainville Transport trucking division), which it leverages to lower costs and enhance customer service for its clients while providing Quad with substantial control over critical links in the overall print supply chain.

Quad complements its production capabilities through its managed services offering. Leveraging its deep industry knowledge, expansive network and substantial purchasing power, Quad helps clients manage their operations the way it runs its own – with diligence, efficiency and cost-savings. The Company streamlines the marketing process for clients through its network of in-house experts and capabilities for marketing and production outsourcing, sourcing and procurement of goods and services, and print and paper management. As a result, Quad’s clients can focus on other critical aspects of their business.

Media

Quad believes that every consumer touch point is a brand experience and that every experience has the potential to drive measurable business outcomes. Quad’s media services activate this philosophy by providing strategic omnichannel media planning and placement for a variety of industry-leading clients, managing hundreds of millions of dollars of media billings annually. All media solutions prioritize transparency and neutrality, so clients can feel confident that their media spend is supported by the best data, platform and partners for their unique needs to generate measurable impact. Quad’s Connections Planning identifies the audiences, messaging and channel placement best suited to drive business results. The service is rooted in a deep exploration of audience behavior, crafting an experience plan that helps clients choose the channels that will most effectively reach consumers with targeted messages in the moments they are most receptive and likely to engage. Each media plan includes a measurement framework that specifies how brands can best identify each channel’s success. Once a campaign is underway, Quad’s proprietary media optimization platform, Connex, provides real-time insights to further optimize media placement and increase marketing efficiency.

Technology

The Company’s client-facing technology solutions help brands connect marketing strategy, global content creation, analytics and personalized communications across offline and online channels. These tailored solutions rely on a people-process-technology approach that first analyzes a client’s current-state workflow and performance, with a particular focus on increasing accuracy, reducing waste and improving efficiencies. Once potential improvements have been identified, a dedicated team implements the tool(s) that will best streamline campaign cycle efforts and remove friction. These solutions work together with Quad’s creative and media offerings so that clients’ marketing efforts are scalable and relevant, driving optimal return on marketing spend across an ever-growing number of media channels.

Industry and Competition

Because of its one-of-a-kind integrated marketing platform, Quad competes in both the advertising and marketing services industry, and in the commercial printing industry. The Company's breadth of connected solutions and its ability to both strategically consult and execute results at scale, positions Quad in a unique space beyond that of just a manufacturer or traditional agency. This positioning expands the Company's competitive set to include large agency holding companies, independent agencies, marketing consultants, as well as print management firms and commercial printers.

Advertising and Marketing Services

The advertising and marketing services industry is highly fragmented, and competition is based on adapting quickly to new advertising platforms and technology, developing comprehensive proposals to secure client contracts, creating unique and effective multichannel marketing campaigns, demonstrating spend effectiveness by monitoring and reporting on clients' marketing campaign results, providing favorable pricing, accessing talent and offering superior customer service.

Consumer media consumption habits are constantly evolving. The ongoing emergence of new marketing channels — including social media platforms and connected TV advertising — has caused audiences to become increasingly segmented. As a result, advertising and marketing services providers must expand their capabilities to create effective multichannel campaigns for their clients, and providers face increased client demand to offer integrated, end-to-end marketing services (i.e., from strategy and creative through execution). These trends greatly influence Quad's ongoing efforts to help brands reduce the complexities of working with multiple agency partners and vendors, increase marketing process efficiency and maximize marketing effectiveness.

Commercial Printing

The commercial printing industry also remains highly fragmented, with competition based on pricing; availability of materials, including paper (which may be more limited in the future as a number of mills reduce graphic paper production capacity in favor of other product lines, such as packaging); quality; distribution capabilities; customer service; access to labor, especially highly skilled labor; availability to schedule work on appropriate equipment; on-time production and delivery; and ability to maintain and adopt state-of-the-art technology to meet a client's business objectives.

The commercial printing industry has moved toward a demand for shorter print runs, faster product turnaround and increased production efficiencies of products with lower page counts and increased complexity. This — combined with increases in postage and paper costs as well as marketers' increasing use of online marketing and communication channels — has led to excess manufacturing capacity. This excess capacity has allowed certain larger competitors like Quad, with economies of scale, strong balance sheets and access to capital markets, the ability to invest in automation and more efficient equipment; take advantage of consolidating acquisition opportunities to remove excess, inefficient and/or underutilized capacity; and reduce overall costs.

Seasonality

Quad is subject to seasonality in its quarterly results as net sales and operating income are higher in the second half of the calendar year as compared to the first half of the calendar year. The fourth quarter is typically the highest seasonal quarter for cash flows from operating activities and Free Cash Flow due to the reduction of working capital requirements that reach peak levels during the third quarter. Seasonality is driven by increased catalogs and retail inserts primarily due to back-to-school and holiday-related advertising and promotions. The Company expects seasonality impacts to continue in future years.

Competitive Advantages

Quad's suite of marketing solutions is powered by three primary competitive advantages that the Company believes distinguish it from its competitors: integrated marketing platform excellence, ongoing innovation, and culture and sustainable impact.

Integrated Marketing Platform Excellence

Quad's integrated marketing platform encompasses all the resources brands and marketers need to plan, create, deploy, measure and optimize their marketing efforts across all media channels — from household to in-store to online. Accordingly, the Company can guide clients through every effort intended to drive an action, from consumer awareness and trust, to brand preference and purchase.

Print and Distribution Capabilities

While Quad's manufacturing operations are the most capital-intensive part of its integrated marketing platform, they constitute a key point of differentiation from consulting firms, traditional creative agencies and agency holding companies. Traditional agencies or agency holding companies develop creative and then outsource production while traditional consulting firms provide strategy and then outsource implementation. Quad, however, is able to strategize, create and execute all campaign elements across all channels using its own internal resources.

Within its manufacturing operations, the Company benefits from managing several very large facilities (greater than one million square feet) that produce multiple product lines under one roof, which maximizes utilization of equipment and labor resources while also driving savings in certain product lines (such as publications and catalogs) due to economies of scale. The Company continually strengthens its manufacturing operations through leading-edge technologies such as digital presses that enhance targeted print products and wide-web presses that maximize labor productivity; advanced equipment and automation, including automated guided vehicles and robotic palletizers that support high-quality, low-cost production; and its own global production resources that provide around-the-clock service for tasks like page assembly, retouching, color correction and design to reduce print job turnaround times.

In addition to the scale of its manufacturing operations and ongoing investments in technology, Quad's ability to address postage rate increases sets the Company apart from its competition. Postage rates are a significant component of many clients' cost structures, and Quad believes that postal costs directly influence clients' print and mail quantities. Quad offers clients an array of postage optimization programs that lead to significant client cost savings. Several of these programs integrate directly with the United States Postal Service ("USPS"). For instance, the Company operates the print industry's largest co-mail program (based on information published or otherwise made available from competitors), which expedites distribution by sorting and bundling multiple printed products at once in exchange for work-sharing discounts.

Client Dedicated Teams

A key aspect of the Company's integrated marketing platform is the client dedicated on-site and near-site teams it employs. These teams serve as an extension of a client's internal marketing department, fulfilling critical execution roles ranging from content creation and creative production to marketing deployment in all channels. All of this is executed to maximize production efficiencies, creating content that is adaptive across channels and easily templated and automated and, therefore, scalable. Quad's on-site and near-site teams also offer seamless access to additional services and subject matter experts across the Company, removing handoffs and associated friction in the client's marketing process. Quad's dedicated team model simplifies marketing for clients and enables them to focus on what they do best: selling more products, services and/or content. Quad has more than 500 professionals embedded within more than 70 client dedicated on-site and near-site teams including several photography and video production studios. These teams support a range of clients, including those in grocery, sporting goods, mass merchandise and publishing.

Ongoing Innovation

Quad's ongoing innovation drives its purpose to create a better way for its stakeholders. While the Company challenges each of its employees to *think differently* through its core Value of "urgently innovate," its disciplined approach to product development and innovation (PDI) identifies major innovation opportunities that can materially impact the Company's revenue and margins. Led by an interdepartmental committee of leaders, this process focuses on solutions that either close a gap or meet an underserved need in the marketplace, or provide significant time and cost efficiencies to internal workflows. This organized approach to innovation ensures the Company is able to balance the short-term needs of the business with long-term growth opportunities provided by investments in new technology, capabilities and services.

Key areas of innovation that differentiate Quad from its competitors include the following:

Data

Powered by its extensive print manufacturing business, Quad possesses a large data stack that represents approximately 89% of U.S. households. The Company matches clients' data files with its curated database of household addresses, ensuring that insights connect to real consumers, not just faceless email addresses. Quad uses these insights to derive household-level "passion scores" that highlight the interests of that household, which inform target audience identification. Over an 18-month span, Quad sent an average of 39 mail pieces on behalf of clients to each of the 117 million households it reaches (according to internal data from June 2022 to December 2023). This frequency of interaction ensures that the Company's data stack remains relevant, providing meaningful insights to help clients make the most of their marketing budgets. As the federal government increases regulations on data privacy, and sources of data such as third-party cookies begin to disappear, Quad anticipates marketers will place a premium value on its privacy-compliant household data. Led by experts in the field, Quad is investing in several applications of its differentiated data stack to help clients enhance audience insights and segmentation to optimize their marketing spend.

In-Store Experience

Quad helps clients think differently about the in-store experience by combining in-depth research with leading-edge testing to produce strategic insights on consumer behaviors, and then designing and executing innovative signage and displays that amplify brand awareness and generate consumer engagement.

Through its proprietary InVision testing platform, Quad offers:

- Virtual concepting of in-store campaigns through digitally rendered store environments;
- Predictive analytics that calculate the probability of where consumers are most likely to focus when looking at signage or a display; and
- Display evaluation to verify the effectiveness of a client's product messaging and creative design via feedback from a panel of shopper marketing experts.

Quad understands that in-store signage and product packaging work together to inform a consumer's purchasing decision. Complementing the Company's InVision testing platform is Package InSight, a solution that applies advanced biometric research capabilities to evaluate brand packaging performance, consumer attention and shelf impact. Package InSight uses the latest in biometric technology, such as mobile eye-tracking, facial coding and brain activation, to assess a packaging's design effectiveness in an actual shopping environment. In 2024, the Company plans to expand its testing capabilities by opening a retail and brand innovation center in its West Allis, Wisconsin, manufacturing facility. The space will visually tell the story of Quad's marketing experience offering for brick-and-mortar retailers and consumer packaged goods (CPG) companies, and will include three mock retail environments – a general testing area, a cosmetics and beauty space, and a CPG and grocery section – all customizable for client visits.

Quad's ability to bring a client's most complex design concepts to life is another key differentiator for the Company. Quad's In-Store team creates and executes on a wide range of products, such as temporary end cap displays, semi-permanent store-within-a-store setups, and outdoor permanent signage, among others, in substrates such as wood, metal, acrylic, plastic or paper board. Once a concept has been rendered, engineered and prototyped, Quad is able to either manage or manufacture the work itself, and handle deployment and distribution.

In 2023, Quad acquired DART Innovation ("DART"), a company specializing in in-store digital media solutions. The Company aims to use DART's expertise and capabilities to establish in-store retail media networks (RMNs) for brands at mid-sized retailers. In-Store RMNs, like online RMNs, are useful to individual brands for reaching and engaging shoppers. This acquisition expands Quad's in-store capabilities with a dynamic digital solution at the shelf.

Technology Solutions

Given artificial intelligence's (AI) generational leap over the past year, Quad has amplified its AI focus across the Company. In 2023, the Company formed a cross-functional AI steering committee composed of Quad executives and technology experts to explore new ways to apply generative AI across its internal workflows and client-facing solutions. The group spearheaded an enhanced policy to address emerging use cases and associated business risks. The steering committee established a robust methodology to test, harden and implement AI use cases. Quad's expanded focus on generative AI is built upon decades of leveraging AI-driven robotic process automation and cognitive insights at the Company.

Quad's technology solutions underpin many of the capabilities that make up Quad's integrated marketing platform. This includes supporting retail media networks, in which Quad recently invested through its acquisition of DART (as described above in "In-Store Experience").

Internally, Quad incorporates advanced technologies in its workflows to maintain its execution excellence. For example, the Company's manufacturing operations leverage a proprietary enterprise resource planning system (known as Smartools®) to provide real-time information flow across all facets of print production and deployment — from print sales and estimating to production planning, scheduling, manufacturing, warehousing, logistics, invoicing, reporting and customer service.

Culture and Sustainable Impact

For more than 52 years, Quad has operated as a company with a soul, believing it can do good in the world while doing well as a business. The Company's long-standing focus on "creating a better way" reflects its "maker" culture where employees not only envision solutions, but actually create and execute them. This approach has been a hallmark of the Company's culture since its founding and has inspired creativity in how it addresses environmental issues, social issues and corporate governance, and contributes to good corporate citizenship. The Company details its progress on driving positive, sustainable impact annually in its Environmental, Social and Governance (ESG) report*, which includes metrics, programming details and advancements on its environmental and social commitments, multiple of which were achieved in 2023. Further, the Company believes that its distinct corporate culture, which evolved from a core set of Values conceived by the Company's late founder, Harry V. Quadracci, drives thoughtful decision making, especially around its disciplined approach to managing operations and innovating solutions for clients, better positioning the Company to succeed and grow in a dynamic marketplace.

*Quad is not including the information contained on or available through its website as part of, or incorporating such information by reference into, this Annual Report on Form 10-K.

Environmental

Quad seeks to operate in an environmentally responsible manner that better serves the environment and reflects the values of its clients and their customers. The Company's environmental efforts promote sustainable resource consumption, focusing on the following areas:

- *Recycling*: Quad applies a mentality of refuse, reduce, reuse and recycle throughout its internal processes to limit the amount of waste it creates. In 2022 (the most recent year for which data has been tabulated), the Company's U.S. manufacturing facilities recycled more than 98% of their industrial wastepaper and other solid waste.
- *Energy and Emissions*: The Company participates in nationwide and statewide programs to enhance its efforts to reduce energy usage and carbon emissions. These include being a founding partner of the U.S. Department of Energy's Better Plants Program, being ISO 50001 Ready through the U.S. Department of Energy at some of its largest manufacturing plants, and participating in the State of Wisconsin's Focus on Energy Program.
- *Hazardous Waste*: Quad mitigates the dangers associated with hazardous waste through comprehensive chemical and hazardous waste management processes, including safe handling practices, and finding ways to reduce the use of chemicals and solvents.
- *Responsible Forestry*: The Company maintains chain-of-custody certifications for sourcing materials from responsibly managed forests (i.e., Forest Stewardship Council®, Sustainable Forest Initiative, and Program for the Endorsement of Forest Certification) and partners with clients to increase certified paper usage. In 2022 (the most recent year for which data has been tabulated), nearly 80% of all the Company's printed products and packaging were sustainably sourced from certified third-party organizations.

The Company benchmarks its environmental performance regularly to evaluate the effectiveness of current environmental management programs and to identify program areas that need improvement or need to be developed.

As the owner, lessee or operator of various real properties and facilities, Quad is subject to various federal, state and local environmental laws and regulations, including those relating to air emissions; waste generation, handling, management and disposal; sanitary and storm water discharge; and remediation of contaminated sites. Historically, compliance with these laws and regulations has not had a material adverse effect on the Company's results of operations, financial position or cash flows. Compliance with existing or new environmental laws and regulations may require the Company to make future expenditures.

Human Capital Management

The Company continually invests in and supports its employees and the areas in which it operates. Highly qualified, skilled and knowledgeable talent and strong community partnerships are key to Quad's success as a marketing experience company.

Attracting, Developing and Retaining Highly Qualified Talent

Given Quad's belief that its talent stands as a major differentiator among its competition, the Company invests heavily in efforts to attract, develop and retain employees, and in tools, technologies, processes, training and education to increase engagement, and drive productivity enhancements and efficiencies across the entire organization.

As of December 31, 2023, the Company had approximately 13,150 full-time equivalent (“FTE”) employees in the following geographies:

Geographic Region	Number of FTE Employees
North America (Includes Mexico, Central America and the Caribbean)	10,800
Europe, Middle East and Africa	1,575
South America	750
Asia	25

Quad focuses on the following key areas to attract, develop and retain highly qualified talent:

- *Competitive Pay and Innovative Benefits:* Employees are hired into jobs with competitive wages and innovative benefits. The Company regularly evaluates its pay practices and structures to ensure it is competitive in the markets where it operates, and equitable based on employees’ experience, job responsibilities, performance and business results. Beyond traditional, expected benefits, such as paid vacation time and holidays, a 401(k) retirement savings program with annual discretionary Company match, short- and long-term disability insurance, and employer-paid life insurance, the Company offers expansive health and wellness benefits, including:
 - QLife Wellness, a program that provides educational resources, interactive webinars and regular communications around physical, emotional, financial and social well-being topics. For instance, the program partners with Quad’s Total Rewards team and external vendors to provide employees with retirement planning, financial wellness webinars and one-on-one meetings so they can strategically plan for their financial futures.
 - QuadMed, the Company’s wholly owned health and wellness subsidiary, provides a differentiated set of benefits for Quad employees and dependents through:
 - On-site and near-site primary and specialty healthcare, pharmacy, dental, vision and physical therapy services, and fitness centers at several large-scale employee locations.
 - No-cost virtual primary care across nearly all 50 states that allows patients to connect regularly with the same doctor, building the level of trust and connection they’ve come to expect from in-person care.
 - Nationwide behavioral health program with in-person and virtual counseling through licensed therapists.

Beyond Quad itself, QuadMed provides worksite healthcare solutions nationally for approximately 30 employers of all sizes and across multiple industries, including private and public sector employers. External services include on-site, near-site and virtual health delivery of comprehensive primary and preventive care, condition management, wellness programs and coaching, physical therapy, behavioral health, pharmacy services, occupational health and more.

- *Career Training and Growth:* Employees are encouraged to take advantage of the Company’s focus on employee growth and development, which not only teaches critical on-the-job and leadership skills, but also helps them respond to rapid change, cultivate effective networks, and create high-quality relationships necessary for personal, professional and Company growth. Multiple programs offer employees accelerated responsibility and pay, including *Accelerated Career Training*, which provides a fast-track for career advancement in manufacturing positions; *Leading Within Quad*, which focuses on best-in-class managerial behaviors; *Corporate Trainee Program*, which develops skills and leadership abilities through a series of agency and corporate administration rotations; and hands-on, mentor-led manufacturing apprenticeship programs. The Company also provides all employees with training focused on expanding cultural awareness, recognizing commonalities and differences across cultures, and adapting as appropriate – critical skills which help support employee retention, collaboration and productivity.
- *Employee Recognition:* Regularly acknowledging the hard work employees demonstrate every day is an important component of Quad’s culture and retention strategy. Recognition occurs through annual traditions, such as celebrating milestone years of service, especially one’s 10th year of service, during which an employee joins Quad’s Founders’ Circle – a tradition begun by the Company’s founder to honor the dedicated work long-time employees do to push the Company forward every day. Various additional recognition programs aim to spur employee pride, such as the quarterly Safety Cup Award for manufacturing plants that achieve low Days Away, Restricted, or Transferred (DART) rates, low cost-per-hour rates and high safety test scoring. Manufacturing locations also participate in a quarterly engagement and retention award program that highlights plants’ initiatives to create an engaging workplace through employee and family events; and community outreach activities.
- *Employee Feedback:* The Company recognizes that when employees feel heard and supported, they are more likely to stay and put forth their best work. To foster an engaged workforce, the Company offers multiple avenues to provide feedback so the Company can better understand what is working well and what can be improved. Examples include:
 - Surveys: Quad conducts an annual, U.S.-wide engagement survey in addition to “pulse surveys” to acquire feedback. Human Resources and Company leadership then meet to review and develop new and updated programs from this information.
 - Open forums: Quarterly all-company town halls, in addition to department meetings, provide opportunities for employees to voice their thoughts and questions.
 - Business Resource Groups (BRGs): The Company’s BRGs also help create a company culture that is empathetic and attentive to the needs of employees. The Company’s BRGs create spaces where employees of shared backgrounds and interests can come together to support each other and share their unique perspectives and feedback with Quad leadership. The Company currently has seven BRGs supporting women, military veterans and their families, differently abled employees and caregivers, the LGBTQIA+ community, Black employees, Hispanic / Latinx employees, and working parents.
- *Inclusive Policy Review:* Through its policies, the Company aims to create a safe and open environment where all Quad employees can bring their truest and best selves to work every day, consistent with the Company’s long-standing values. Quad regularly reviews its policies and aims to ensure all Company procedures, processes and distribution of resources create equal opportunities among its employees and fair and just outcomes.

Building Strong Communities

The Company believes partnering with local communities creates a catalyst for movement and change, which benefits those outside of Quad's walls while helping the Company maintain a positive reputation as the kind of business people choose to work for, do business with, invest in and call a true neighbor. Supporting community activities, initiatives and organizations also demonstrates the Company's Values in action, which fosters pride and employee engagement.

The four key objectives that drive the Company's community impact from strategic investment of finances, volunteerism and in-kind services in community organizations are:

- Lessen the use of natural resources and impact on the environment;
- Provide academic and educational opportunities, and experiential learning for more people;
- Ensure that the diversity of Quad reflects the communities where its employees live and work, as well as the clients who trust Quad with their business; and
- Support programs that improve employees' mental and physical health.

Corporate Governance

Effective corporate governance has been a part of Quad since its founding and is informed by the Company's Values, especially "do the right thing," which strengthens partnerships, reduces risk and creates sustainable value for the Company long term. Governance starts at the highest level of the Company with oversight by the Board of Directors, which is responsible for minimizing risk while maximizing the effectiveness of Quad's business strategy. Key tenets of Quad's governance strategy include:

- *Family Leadership:* As of January 31, 2024, the Quadracci family, through the Quad/Graphics, Inc. Amended and Restated Voting Trust Agreement ("Quad Voting Trust"), has voting control of approximately 73% of the Company's outstanding shares. The Company believes this governing structure provides continued stability and flexibility to achieve its long-term strategic vision.
- *Risk Management:* Led by an executive risk steering committee, Quad's Enterprise Risk Management program strategically identifies potential risks to the business and conducts appropriate response planning. Risk management is a highly collaborative process at Quad as cross-functional teams help recognize the ripple effects a situation could have across the Company's interconnected operations.
- *Employee Compliance:* Employees are required to take an active role in ethics and compliance. Each year, all employees take a suite of compliance trainings on topics that include the Code of Conduct, anti-harassment, conflict of interest, Customs-Trade Partnership Against Terrorism (C-TPAT), data privacy, Health Insurance Portability and Accountability Act of 1996 (HIPAA), information security, physical security, acceptable use policy for technology assets, and anti-bribery and anti-corruption. Employees can discreetly report violations to the Code of Conduct through multiple easy-to-use channels, including a 24/7 anonymous Ethics and Compliance Hotline.
- *Supplier Code of Conduct:* The Company maintains a Supplier Code of Conduct to ensure suppliers, vendors, contractors, consultants, agents and other providers of goods and services follow the Company's policies related to business integrity, ethical labor and human rights practices, associate health and safety, and environmental management. This code also includes anti-corruption and anti-bribery policies.

- *Data Security:* Quad continually updates and strengthens its information and data security program to address the fast-changing threat landscape and ensure proper oversight. The program includes ongoing employee education to ensure the security of physical and digital workspaces, protect the privacy of valuable data, identify potential phishing and malware threats, and avoid risky behaviors.

Growth Strategy

As an MX company, Quad intends to expand its capabilities and develop its platform through executing on the three pillars of its growth strategy:

Deliver Integrated Service Excellence

Quad focuses on solving problems, and removing pain points and sources of friction wherever a client experiences them in the marketing process. Quad seeks to become an invaluable strategic marketing partner by helping its clients successfully navigate today's constantly evolving media landscape through innovative, data-driven omnichannel solutions that are scalable and efficiently produced and deployed — from household to in-store to online. A key component of Quad's client-facing strategy is to strengthen relationships at higher levels within a client's organization so the Company can better understand, anticipate and satisfy the organization's business objectives.

To serve clients' disparate needs, Quad continues to make disciplined and compelling investments across its integrated marketing platform. These investments take many forms, including new equipment, technology and service capabilities. The Company also makes investments in its talent, such as hiring business professionals with transformation, innovation, and client-side marketing and consulting expertise to enhance its position as an MX company, as well as investments to attract new employees and increase existing employee engagement, retention and productivity.

As the Company has transformed its offering to better meet the needs of brands and marketers, it has also made strategic decisions to divest of businesses that could not be easily leveraged as part of its greater integrated marketing platform. These decisions free up cash flow for disciplined investments that the Company believes will lead to sustainable growth.

Accelerate Market Penetration

Quad's ability to acquire new and expand existing account relationships is critical to the Company's growth strategy. The Company has made significant strides in recent years, introducing a growing number of brands and marketers to its suite of solutions. The Company is particularly focused on expanding in key vertical industries where it believes the biggest opportunities for new business exist. These include commerce, including consumer packaged goods, direct-to-consumer and retail; financial services; and health. Key investments in 2023 to accelerate market penetration included:

- Fortifying business development efforts through strategic personnel hires in Sales, Sales Operations, Marketing and Agency Solutions to give the Company wider visibility as an MX company within its current client base, as well as with companies in its targeted growth verticals;
- Expanding awareness of Quad's differentiated capabilities through a large-scale marketing and advertising effort centered on the campaign "Built on Quad"; and
- Providing brand visibility and thought leadership at global industry events, such as the Cannes Lions Festival of Creativity, the premier gathering of the global advertising and creative communications industry.

Leverage Culture as an MX Company

The Company's culture continues to be a driver for growth as Quad accelerates its competitive position as an MX company. Core aspects of its unique culture are:

- *Walk in the shoes of clients:* Quad delivers service excellence by encouraging all employees, regardless of job title, to prioritize listening to clients' needs and challenges, and do what they can to make it easy to work with Quad at every touchpoint.
- *Empower employees:* Quad continues to position itself as the workplace for the marketing industry's best talent, and empowers its employees to think like owners and take responsibility for how they can help propel the business forward. By embracing employees' unique perspectives and experiences, fostering a sense of belonging through inclusion, and providing growth opportunities through skill development and career advancement, Quad believes employees are more fully engaged in their day-to-day activities, producing better results for clients while helping grow the business.
- *Continuously improve:* Through its foundation in manufacturing, Quad's has built a "maker" culture that embraces attention to detail, expert execution and a commitment to continuous improvement. All employees are encouraged to identify opportunities, however small, that can improve processes and create efficiencies. It's this long-standing commitment to continuous improvement that enables Quad to confidently identify and remove friction from clients' workflows.
- *Collaborate to innovate:* The close, personal relationships employees form with one another is a foundational aspect of Quad's culture. The Company recognizes that the more effectively teams work together across the entire organization, the better it can serve its clients. Accordingly, Quad encourages employees to connect and collaborate with others both inside and outside of their immediate department and/or business area. Integrated workflows and inter-departmental collaboration speed the Company's ability to innovate and evolve as an MX company.
- *Communicate a unified vision forward:* The Company sends timely, transparent communications to all employees through a variety of channels to maintain employee engagement and connectivity, and maintain trust. These communication efforts not only detail matters of personal importance (e.g., total rewards), but also keep employees informed on business operations and the Company's strategic direction. By articulating the role that each business area plays in the Company's suite of interconnected solutions, Quad crafts a unified vision that everyone can rally behind. Communication channels include InsideQuad, the employee intranet; executive blogs and video logs (vlogs); executive town halls; department meetings; "lunch and learn" events; email; in-plant electronic and print signage; and in-home mailings.

Financial Objectives

Quad follows a disciplined approach to maintaining and enhancing financial strength to create shareholder value. This strategy is centered on the Company's ability to drive profitable growth and maximize net earnings, Free Cash Flow, and operating margins; maintain consistent financial policies to ensure a strong balance sheet, liquidity level and access to capital; and retain the financial flexibility needed to strategically allocate and deploy capital as circumstances change. The priorities for capital allocation and deployment are balanced according to prevailing circumstances and what the Company thinks is best for shareholder value creation at any point in time. These priorities currently include using Free Cash Flow and cash proceeds from any asset sales to continue reducing debt while investing in scaling the business as a marketing experience company to fuel net sales growth; driving profitability through sales growth; and pursuing opportunities to return capital to shareholders through stock buybacks or dividends.

To provide ongoing improvement in productivity and, ultimately, maximize operating margins, the Company applies holistic continuous improvement and lean enterprise methodologies to further streamline its processes and maximize operating margins. These same methodologies are applied to its selling, general and administrative functions. The Company continually works to lower its cost structure by consolidating manufacturing operations into its most efficient facilities, as well as realizing purchasing, mailing and logistics synergies by centralizing and consolidating print manufacturing volumes, and eliminating redundancies in its administrative and corporate operations. Quad believes that its focused efforts to be the high-quality, low-cost producer generates increased Free Cash Flow and allows the Company to maintain a strong balance sheet through debt reduction. The Company's disciplined financial approach also allows it to maintain sufficient liquidity and to reduce refinancing risk. Quad is proud of its strong and trusted banking relationships, which provide the Company with increased financial flexibility to make strategic investments to accelerate its growth and drive profitability as a marketing experience company.

Patents, Trademarks and Trade Names

Quad operates research and development facilities that support the development of new equipment, process improvements, raw materials and content management, and distribution technologies to better meet client needs and improve operating efficiencies. The Company continues to innovate within the printing and print-related industry and, as a result, has developed what it believes to be one of the most powerful patent portfolios in the print industry.

Quad currently holds or has rights to commercialize a wide variety of worldwide patents and applications relating to its business. The Company intends to continue to file patent applications that it believes will help ensure the continued strength of the Company and its portfolio. Additionally, the Company markets products, services and capabilities under a number of trademarks and trade names. Quad aggressively defends its intellectual property rights and intends to continue to do so in the future.

Raw Materials

The primary raw materials that Quad uses in its print business are paper, ink and energy. At this time, the Company's supply of raw materials are available from numerous vendors; however, based on market conditions, the current supply is under pressure due to supply chain shortages and higher than expected inflation. The Company generally buys these raw materials based upon market prices that are established with the vendor as part of the procurement process.

Approximately half of the paper used in the printing process is supplied directly by the Company's clients. For those clients that do not directly supply their own paper, the Company makes use of its purchasing efficiencies to supply paper by negotiating with leading paper vendors, uses a wide variety of paper grades, weights and sizes, and does not rely on any one vendor. In addition, the Company generally includes price adjustment clauses in sales contracts for paper and other critical raw materials in the printing process. Although these clauses generally mitigate paper price risk, higher paper prices and tight paper supplies, as well as changes in the United States import or trade regulations, may have an impact on client demand for printed products. The Company's working capital requirements, including the impact of seasonality, are partially mitigated through the direct purchasing of paper by its clients.

The Company produces the majority of ink used in its print manufacturing, allowing it to control the quality, cost and supply of key inputs. Raw materials for the ink manufacturing process are purchased externally from a variety of vendors.

The Company may not be able to fully pass on to clients the impact of higher electric and natural gas energy prices on its manufacturing costs, and increases in energy prices result in higher manufacturing costs for certain of its operations. The Company mitigates its risk through natural gas hedges when appropriate. In its logistic operations, however, the Company is able to pass a substantial portion of any increase in fuel prices directly to its clients.

Information About Our Executive Officers

The following table sets forth the names, ages (as of January 31, 2024) and positions of Quad’s executive officers.

Name	Age	Position
J. Joel Quadracci	55	Chairman, President and Chief Executive Officer
Eric N. Ashworth	58	Executive Vice President of Product and Market Strategy
Anne M. Bauer	59	Vice President and Chief Accounting Officer
Julie A. Currie	60	Executive Vice President and Chief Revenue Officer
Joshua J. Golden	52	Chief Marketing Officer
Dana B. Gruen	49	General Counsel, Corporate Secretary and Chief Risk & Compliance Officer
David J. Honan	55	Executive Vice President and Chief Operating Officer
Steven D. Jaeger	59	Vice President and Chief Information Officer
Donald M. McKenna	51	Executive Vice President and Chief Administrative Officer
Robert H. Quadracci	56	Chief Human Resources Officer
Anthony C. Staniak	51	Chief Financial Officer
Kelly A. Vanderboom	49	Executive Vice President and Treasurer; Head of Agency Operations and Logistics

Mr. J. Joel Quadracci has been a director of Quad since 2003, its President since January 2005, its President and Chief Executive Officer since July 2006 and its Chairman, President and Chief Executive Officer since January 2010. Mr. Quadracci joined Quad in 1991 and, prior to becoming President and Chief Executive Officer, served in various capacities, including Sales Manager, Regional Sales Strategy Director, Vice President of Print Sales, Senior Vice President of Sales and Administration, and President and Chief Operating Officer. He serves on the board of directors for Plexus Corp., Pixability, Inc., Road America, Inc., Children’s Hospital of Wisconsin, the National Association of Manufacturers, and the Metropolitan Milwaukee Association of Commerce. He also serves on the board of trustees for the Milwaukee Art Museum and on the advisory council of the Smithsonian National Postal Museum. Mr. Quadracci received a B.A. in Philosophy from Skidmore College in 1991. Mr. Quadracci is the brother of Kathryn Quadracci Flores, M.D., a director of Quad and President of QuadMed, the brother-in-law of Christopher B. Harned, a director of Quad, and the first cousin of Robert Quadracci, Chief Human Resources Officer.

Mr. Ashworth has served as Executive Vice President of Product and Market Strategy since joining Quad in 2015 and as President of Quad Agency Solutions since April 2016. Prior to joining Quad, Mr. Ashworth was President of SGK, Inc. (formerly Schawk, Inc.) from July 2012 to July 2015; Chief Growth and Strategy Officer of SGK from September 2009 to July 2012; and Global Chief Growth Officer of Anthem Worldwide (a division of SGK) from November 2003 to 2010. Prior thereto, Mr. Ashworth was Co-founder and President of BlueMint Associates from June 2002 through November 2003, after serving in various marketing roles at Fitch San Francisco, Addis Interaction, Levi Strauss & Co., Clorox, Colgate-Palmolive and National Semiconductor. Mr. Ashworth is a board member of Uniting Voices Chicago (formerly Chicago Children’s Choir) and The BrandLab, a nonprofit organization that works to increase diversity in the marketing industry.

Ms. Bauer has served as Vice President since January 2022 and Chief Accounting Officer since March 2017. She previously served as Director - Corporate Controller of Quad from May 2016 until March 2017 and then as Executive Director and Chief Accounting Officer until January 2022. She joined Quad in September 2011, serving as Director of Corporate Accounting until May 2016. Prior to joining Quad, Ms. Bauer held various accounting positions at Journal Communications, Inc., during her 18 years there, including Vice President and Controller from June 2000 until September 2011.

Ms. Currie has served as Executive Vice President and Chief Revenue Officer since November 2020. She previously served as Executive Consultant of FCM, LLC from 2019 to 2020. Prior thereto, Ms. Currie served in multiple senior leadership roles at Nielsen, a global leader in audience measurement, data and analytics, including as Senior Vice President, Global Retail Product Leadership from 2016 to 2019; as Senior Vice President, Global Loyalty Commercial Director from 2012 to 2016; as Senior Vice President, Global Business Services North America from 2008 to 2012; as Vice President, National Accounts Group Client Director from 2003 to 2007; and as Vice President, Group Client Director from 2001 to 2003. Ms. Currie serves on the board of directors of the Boys & Girls Club of Lake County, Illinois.

Mr. Golden has served as Chief Marketing Officer since July 2021. Prior to joining Quad, Mr. Golden was the President & Publisher of *Ad Age* from 2016 to 2021. Prior thereto, Mr. Golden served as Vice President, Global Digital Marketing for Xerox from March 2015 to June 2016; as Chief Marketing Officer of Story Worldwide from September 2011 to March 2015; as Chief Digital Officer of Grey Group from September 2010 to September 2011; as Managing Director, Digital of Havas from December 2007 to September 2010; as Group Director of Digital Marketing for NBC Universal from January 2006 to December 2007; and as Head of Digital at Young & Rubicam from November 2000 to January 2006.

Ms. Gruen has served as General Counsel, Corporate Secretary and Chief Risk & Compliance Officer since February 2023. Joining Quad's legal department in 2007 as Employment Counsel, she advanced to Assistant General Counsel in 2014; Deputy General Counsel and Chief Compliance Officer in 2015; Vice President, Deputy General Counsel and Chief Compliance Officer in 2016; Vice President, Deputy General Counsel and Chief Compliance and Risk Officer in 2020; Senior Vice President, Deputy General Counsel and Chief Risk & Compliance Officer in 2022. Prior to joining Quad, Ms. Gruen was an associate at Foley & Lardner, Sonnenschein Nath & Rosenthal (now part of Dentons), and Seyfarth Shaw.

Mr. Honan has served as Executive Vice President and Chief Operating Officer since January 2022. His previous roles at Quad were Executive Vice President and Chief Financial Officer from January 2015 to December 2021; Vice President and Chief Financial Officer from March 2014 to January 2015; Vice President and Chief Accounting Officer from July 2010 to March 2014; Vice President and Corporate Controller from December 2009 to July 2010; and Corporate Controller from when he joined Quad in May 2009 to December 2009. Currently, he serves on the advisory board of FM Global. Prior to joining Quad, Mr. Honan served as Vice President, General Manager and Chief Financial Officer of Journal Community Publishing Group, a subsidiary of diversified media company Journal Communications Inc., for five years, and held executive-level roles in investor relations and corporate development at Newell Rubbermaid, a global marketer of consumer and commercial products. Prior thereto, Mr. Honan worked at the accounting firm Arthur Andersen LLP for 11 years.

Mr. Jaeger has served as Vice President and Chief Information Officer since November 2015. He previously served as Executive Vice President, President of Direct Marketing and Chief Information Officer from November 2014 to November 2015; as Executive Vice President, President of Direct Marketing and Media Solutions and Chief Information Officer from March 2014 to November 2014; as Corporate Vice President of Information and Technology since 2013; as Vice President of Information Systems and Infrastructure from 2007 to 2012; and as President of Quad/Direct from August 2007 until 2013. Prior thereto, Mr. Jaeger served as Quad's Vice President of Information Systems from 1998 to 2006 and worked in various other capacities since he joined the company in 1994. Prior to joining Quad, Mr. Jaeger worked for Andersen Consulting for eight years.

Mr. McKenna has served as Executive Vice President and Chief Administrative Officer since January 2022. He previously served as Senior Vice President of Sales Administration from August 2018 to January 2022; Vice President of Sales Administration from June 2013 to August 2018; and Product Planning Manager from March 2010 to June 2013. Prior to joining Quad, Mr. McKenna worked at J.S. Eliezer Associates, a print consulting firm in Stamford, Conn., beginning in 1998 and was named President of the firm in 2004, the leadership role he maintained until joining Quad in 2010.

Mr. Robert Quadracci has served as Quad's Chief Human Resources Officer since February 2023. Previously, he was Vice President of Human Resources - Sales, Marketing & Quad Agency Solutions from January 2022 to February 2023; Executive Director – Human Resources from 2014 to 2022; and Human Resources Director from 1999 to 2014. Prior to joining Quad, Mr. Quadracci worked at Edison International as a Project Manager, Workforce Management and Corporate Redeployment from 1992 to 1999. Mr. Quadracci is the first cousin of J. Joel Quadracci, Chairman, President and Chief Executive Officer of Quad, and Kathryn Quadracci Flores, M.D., a director of Quad and President of QuadMed.

Mr. Staniak has served as Chief Financial Officer since January 2022. Previously, he served as Vice President of Finance from March 2017 until January 2022. Joining the company in 2009 as Director of External Reporting, Mr. Staniak was subsequently named Director of Internal Audit in 2011; Executive Director – Financial Controller in 2013; Chief Accounting Officer in 2014; and Vice President and Chief Accounting Officer in 2015. Prior to joining Quad, Mr. Staniak was Chief Financial Officer of data consulting firm Sagence, Inc. He began his career at the accounting firm Arthur Andersen LLP in 1995. Mr. Staniak is a member of the Wisconsin Institute of Certified Public Accountants and is a member of the board of directors for the Zoological Society of Milwaukee and for the Volunteer Center of Washington County.

Mr. Vanderboom has served as Executive Vice President and Treasurer since 2018 and Head of Quad Agency Solutions Operations since March 2023. Mr. Vanderboom also serves on the board of Quad/Med and the advisory board of Rise Interactive, a Quad company, and provides executive oversight for Quad Paper Services. Since joining Quad in 1993, he has served in various leadership capacities, including Controller of Parcel Direct, a freight expediting subsidiary sold to FedEx in 2004; Treasurer, beginning in 2007; Vice President, beginning in 2008; Vice President of the Program Management Office (PMO) from 2012 to 2014 and 2019 to 2023; and President of Logistics from 2014 to 2023.

Executive officers of Quad are elected by and serve at the discretion of Quad's Board of Directors. Other than described above, there are no family relationships between any directors or executive officers of Quad.

Item 1A. Risk Factors

You should carefully consider each of the risks described below, together with all of the other information contained in this Annual Report on Form 10-K, before making an investment decision with respect to Quad's securities. If any of the following risks develop into actual events, the Company's business, financial condition or results of operations could be materially and adversely affected, and you may lose all or part of your investment.

Risks Relating to Quad's Business, Operations and Industry

Decreases in demand for printing services caused by factors outside of the Company's control, including the substitution of printed products with digital content, recessions and other macroeconomic conditions, as well as significant downward pricing pressure, may continue to adversely affect the Company.

The Company and the overall printing industry continues to experience a reduction in demand for printed materials and overcapacity due to various factors including the sustained and increasing shift of digital substitution by marketers and advertisers (to both replace and augment campaigns that were historically focused on print), as well as macroeconomic conditions and recessions (which severely impact print volumes and further accelerate the impact of media disruption). The impacts of overcapacity, as well as intense competition, have led to the Company experiencing significant downward pricing pressures for printing services in recent years and such pricing may continue to decline from current levels. Any future increases in the supply of printing services or decreases in demand could cause prices to continue to decline, and prolonged periods of low prices, weak demand and/or excess supply could have a material adverse effect on the Company's business growth, results of operations and liquidity.

The media landscape is experiencing rapid change due to the impact of digital media and content on printed products. Improvements in the accessibility and quality of digital media through the online distribution and hosting of media content, mobile technologies, e-reader technologies, digital retailing and the digital distribution of documents and data has resulted and may continue to result in increased consumer substitution. Continued consumer acceptance of such digital media, as an alternative to print materials, is uncertain and difficult to predict and may decrease the demand for the Company's printed products, result in reduced pricing for its printing services and additional excess capacity in the printing industry, and adversely affect the results of the Company's operations.

The Company's transformation to a marketing experience company increases the complexity of the Company's business, and if the Company is unable to successfully adapt its marketing offerings and business processes as required by new markets and technologies, such as artificial intelligence, the Company will be at a competitive disadvantage and its ability to grow will be adversely affected.

As the Company continues to expand its integrated marketing platform, the overall complexity of the Company's business continues to increase and the Company continues to become subject to different market dynamics. The new markets into which the Company is expanding, or may expand, may have different characteristics from the markets in which the Company historically competed. These different characteristics may include, among other things, demand volume requirements, demand seasonality, product generation development rates, client concentrations and performance and compatibility requirements. The Company's failure to make the necessary adaptations to its business model to address these different characteristics, complexities and new market dynamics could adversely affect the Company's operating results. In addition, with rapid changes in technology affecting the marketing and advertising industry, including generative artificial intelligence, the Company may not accurately predict trends, identify use cases, or make the technological adaptations or investments necessary to stay competitive in these new markets.

Changes in postal rates, postal regulations and postal services may adversely impact clients' demand for print products and services.

Postal costs are a significant component of the cost structures of many of the Company's clients and potential clients. Postal rate changes and USPS regulations that result in higher overall costs can influence the volume that these clients will be willing to print and ultimately send through the USPS.

Integrated distribution with the USPS is an important component of the Company's business. Any material change in the current service levels provided by the postal service could impact the demand that clients have for print services. The USPS continues to experience financial problems. The passing of the Postal Service Reform Act of 2022, signed in April 2022, gave the USPS considerable financial relief as well as significant relief over the next ten years. While the legislative postal reform helps considerably, without decreased operational cost structures, increased efficiencies or increased volumes and revenues, these losses will potentially continue into the future. As a result of these financial difficulties, the USPS has continued to adjust its postal rates and service levels. Additional price increases may result in clients reducing mail volumes and exploring the use of alternative methods for delivering a larger portion of their products, such as continued diversion to the internet, digital and mobile channels and other alternative media channels, in order to ensure that they stay within their expected postage budgets.

The USPS offers "work-share" discounts that provide incentives to co-mail and place product as far down the mail-stream as possible. Discounts are earned as a result of less handling of the mail, and therefore, lower costs for the USPS. As a result, the Company has made substantial investments in co-mailing technology and equipment to ensure clients benefit from these discounts. If the incentives to co-mail are decreased by USPS regulations, the overall cost to mail printed products will increase and may result in print volumes declining.

Federal statute requires the Postal Regulatory Commission ("PRC") to conduct reviews of the overall rate-making structure for the USPS to ensure funding stability. As a result of those reviews, the PRC authorized a five year rate-making structure that provides the USPS with additional pricing flexibility over the Consumer Price Index cap, which may result in a substantially altered rate structure for mailers. The revised rate authority that is effective as a result of the rules issued by the PRC includes a higher overall rate cap on the USPS' ability to increase rates from year to year. The USPS has used these additional rate authorities to implement twice a year increases and are expected to continue to do so in the future. This has led to price spikes for mailers and may also reduce the incentive for the USPS to continue to take out costs and instead continue to rely on postage to cover the costs of an outdated postal service that does not reflect the industry's ability or willingness to pay. The uncertainty as to how much of the authority the USPS will use on any specific rate increase also creates potential volume declines as rate predictability with respect to cost is no longer known for mailers. The result may be reduced demand for printed products as clients may move more aggressively into other delivery methods, such as the many digital and mobile options now available to consumers. The PRC has committed to reviewing the 5-year structure in 2024, but resulting rate reductions may take years to finalize.

The Company may be adversely affected by increases in its operating costs, including the cost and availability of paper, ink components and other raw materials, parts for equipment, labor-related costs, fuel and other energy costs and freight rates.

The primary raw materials that the Company uses in its print business are paper, ink and energy. The price of such raw materials has fluctuated over time and has caused fluctuations in the Company's net sales and cost of sales. This volatility may continue and the Company may experience increases in the costs of its raw materials in the future as prices in the overall paper, ink and energy markets are expected to remain beyond its control. The price and availability of paper may also be adversely affected by paper mills' permanent or temporary closures, and mills' access to raw materials, conversion to produce other types of paper (which a number of paper mills have done or are doing), and ability to transport paper produced. The price and availability of ink and ink components may be adversely affected by the availability of component raw materials, labor and transportation.

Approximately half of the paper used by the Company is supplied directly by its clients. For those clients that do not directly supply their own paper, the Company generally includes price adjustment clauses in sales contracts for paper and other critical raw materials in the printing process. Although these clauses generally mitigate paper price risk, higher paper prices and tight paper supplies may have an impact on client demand for printed products. If the Company passes along increases in the cost of paper and the price of the Company's products and services increases as a result, client demand could be adversely affected, and thereby, negatively impact the Company's financial performance. If the Company is unable to continue to pass along increases in the cost of paper to its clients, future increases in paper costs would adversely affect its margins and profits.

Due to the significance of paper in the Company's print business, it is dependent on the availability of paper. In periods of high demand, certain paper grades have been in short supply, including grades used in the Company's business. In addition, during periods of tight supply, many paper producers allocate shipments of paper based upon historical purchase levels of clients. Additionally, the declining number of paper suppliers has resulted in a contraction in the overall paper manufacturing industry. This contraction of suppliers may cause overall supply issues, may cause certain paper grades to be in short supply or unavailable, and may cause paper prices to substantially increase.

Although historically the Company generally has not experienced significant difficulty in obtaining adequate quantities of paper, continued decline in suppliers, changes in United States import or trade regulations, or other developments in the overall paper markets could result in a decrease in the supply of paper and could adversely affect the Company's revenues or profits. In addition, the Company may not be able to resell waste paper and other by-products or the prices received for their sale may decline substantially.

The Company is dependent upon the vendors within the Company's supply chain to maintain a steady supply of inventory, parts for equipment and materials. Many of the Company's products are dependent upon a limited number of vendors, and significant disruptions could adversely affect operations (including labor pressures, distribution challenges, recessionary concerns and other macroeconomic conditions). Under current market conditions, it is possible that one or more of the Company's vendors will be unable to fulfill their operating obligations due to financial hardships, liquidity issues or other reasons.

The Company may not be able to fully pass on to clients the impact of higher electric and natural gas energy prices on its manufacturing costs, and increases in energy prices result in higher manufacturing costs for certain of its operations.

Labor represents a significant component of the cost structure of the Company. Increases in wages, salaries and the cost of medical, dental, pension and other post-retirement benefits have in the past and may continue to impact the Company's financial performance. Changes in interest rates, investment returns or the regulatory environment have and may continue to impact the amounts the Company will be required to contribute to the pension plans that it sponsors and may affect the solvency of these pension plans. The Company may be unable to achieve labor productivity targets, to retain employees or labor may not be adequately available in locations in which the Company operates, which could negatively impact the Company's financial performance.

Freight rates and fuel costs also represent a significant component of the Company's cost structure. In general, the Company has been able to pass along increases in the cost of freight and fuel to many of its clients. If the Company is not able to pass along a substantial portion of increases in freight rates or in the price of fuel, future increases in these items would adversely impact the Company's margin and profits. If the Company passes along increases in the cost of freight and fuel and the price of the Company's products and services increases as a result, client demand could be adversely affected, and thereby, negatively impact the Company's financial performance.

Macroeconomic conditions could have a material adverse impact on the Company's business, financial conditions, cash flows and results of operations.

Macroeconomic conditions, including inflation, high interest rates and recessionary concerns, cost and labor pressures, distribution challenges and the price and availability of paper, have had, and may continue to have, a negative impact on the Company's business, financial condition, cash flows and results of operations. For instance, the Company was negatively impacted in 2023 by rising interest rates and the increasing cost and availability of raw materials (such as paper, ink and supplies), distribution and labor. In addition in 2023, the Company experienced certain distribution challenges, including, but not limited to, delivery delays at the USPS and recent volume restrictions at the United Parcel Service, Federal Express and certain local couriers, which negatively impacted the Company.

Demand for the Company's products and services, in general, is highly related to general economic conditions in the markets the Company's clients serve. Declines in economic conditions in the United States or in other countries in which the Company operates, including as a result of macroeconomic conditions, recessionary concerns and/or geopolitical events, may adversely impact the Company's financial results, and these impacts may be material. Economic weakness and constrained advertising spending have resulted, and may in the future result, in decreased revenue, operating margin, earnings and growth rates and difficulty in managing inventory levels and collecting accounts receivable. The Company has experienced, and expects to experience in the future, excess capacity and lower demand due to economic factors affecting consumers' and businesses' spending behavior, including as a result of macroeconomic conditions, recessionary concerns and/or geopolitical events. This, or uncertainty or disruptions in global credit and banking markets, might cause the Company to not be able to continue to have access to preferred sources of liquidity when needed or on terms the Company finds acceptable, and the Company's borrowing costs could increase.

The Company expects inflationary cost pressures and certain supply chain shortages and distribution challenges to potentially continue through 2024 and the Company may not be able to fully mitigate the impact of the rising inflationary cost pressures through price increases. Continuing or worsening inflation, recessionary concerns, supply chain and distribution challenges and/or uncertainty or disruptions in global credit and banking markets may have a material adverse impact on the Company's business, financial condition, cash flows and/or results of operations.

The Company operates in a highly competitive environment.

The advertising and marketing services industries are highly competitive and are expected to remain so. Any failure on the part of the Company to compete effectively in the markets it serves could have a material adverse effect on its results of operations, financial condition or cash flows and could require changes to the way it conducts its business or require it to reassess strategic alternatives involving its operations.

The Company operates primarily in the commercial print portion of the printing industry, which is highly fragmented and competitive in both the United States and internationally. The Company competes for business not only with large and mid-sized printers, but also with smaller regional printers and the growing forms of digital alternatives to print. In certain circumstances, due primarily to factors such as freight rates and client preference for local services, printers with better access to certain regions of a given country may be preferred by clients in such regions.

Some of the industries that the Company services have been subject to consolidation efforts, leading to a smaller number of potential clients. Furthermore, if the smaller clients of the Company are consolidated with larger companies using other printing companies, the Company could lose its clients to competing printing companies.

The Company may not be able to reduce costs and improve its operating efficiency rapidly enough to meet market conditions.

Because the markets in which the Company competes are highly competitive, the Company will need to continue to improve its operating efficiency in order to maintain or improve its profitability. There can be no assurance that the Company's continuing cost reduction efforts will continue to be beneficial to the extent anticipated, or that the estimated productivity, cost savings or cash flow improvements will be realized as anticipated or at all. If the Company's efforts are not successful, it could have an adverse effect on the Company's operations and competitive position. In addition, the need to reduce ongoing operating costs have and, in the future, may continue to result in significant up-front costs to reduce workforce, close or consolidate facilities, or upgrade equipment and technology.

The Company may suffer a data-breach of sensitive information, ransomware attack or other cyber incident. If the Company's efforts to protect the security of information or systems are unsuccessful, any such failure may result in costly government enforcement actions and/or private litigation, and the Company's business and reputation could suffer.

The Company and its clients are subject to various United States and foreign cybersecurity laws, which require the Company to maintain adequate protections for electronically held information. The Company may not be able to anticipate techniques used to gain access to the Company's systems or facilities, the systems of the Company's clients or vendors, or implement adequate prevention measures. Moreover, unauthorized parties may attempt to access the Company's systems or facilities, or the systems of the Company's clients or vendors, through fraud or deception. In the event and to the extent that a data breach, ransomware attack or other cyber incident occurs, such breach could have an adverse effect on the Company's business and results of operations. Complying with these various laws could cause the Company to incur substantial costs or require changes to the Company's business practices in a manner adverse to the Company's business.

The fragility of and decline in overall distribution channels may adversely impact clients' access to cost effective distribution of their advertising materials, and therefore may adversely impact the Company's business.

The distribution channels of print products and services, including the newspaper industry, face significant competition from other sources of news, information and entertainment content delivery. If overall distribution channels, including newspaper distribution channels, continue to decline, the Company's clients may be adversely impacted by the lack of access to cost effective distribution of their advertising materials. In turn, this decline in cost effective distribution channels may force clients to use other avenues of distribution that may be at significantly higher cost, which may decrease demand for the Company's products and services, and thus adversely affect the Company's financial condition, results of operations and cash flows.

Failure to attract and retain qualified talent across the enterprise could materially adversely affect the Company's business, competitive position, financial condition and results of operations.

The Company continues to be substantially dependent on its production personnel to print the Company's products in a cost-effective and efficient manner that allows the Company to obtain new clients and to drive sales from the Company's existing clients. The Company believes that there is significant competition for production personnel with the skills and technical knowledge that the Company requires, especially in light of continuing labor shortages. The Company's ability to continue efficient operations, reduce production costs, and consolidate operations will depend, in large part, on the Company's success in recruiting, training, integrating and retaining sufficient numbers of production personnel to support the Company's production, cost savings and consolidation targets. New hires require extensive training and it may take significant time before they achieve full productivity. In addition, increases in the wages paid by competing employers, including as a result of current macroeconomic conditions, has resulted, and may continue to result, in increases in the wage rates that the Company must pay. As a result, the Company has and may continue to incur additional costs to attract, train and retain employees, including expenditures related to salaries and benefits, and the Company may lose new, as well as existing, employees to competitors or other companies before the Company realizes the benefit of its investment in recruiting and training them. If the Company is unable to hire and train sufficient numbers of personnel, the Company's business would be adversely affected. The nationwide shortage of available production personnel may also put a strain on the Company's ability to accept new work from client requests, including during the Company's seasonally higher second half of the calendar year.

The Company's future success also depends on its continuing ability to identify, hire, develop, and retain its executive management team, including its Chief Executive Officer, and other personnel for all areas of the organization.

Approximately 1,000 of the Company's United States and international employees are covered by an industry wide agreement, a collective bargaining agreement or through a works council or similar arrangement. While the Company believes its employee relations are good and that the Company maintains an employee-centric culture, any material disruption in operations resulting from labor disputes, a strike or other forms of labor protest affecting the Company's United States or international plants, distribution centers or other facilities in the future could materially disrupt the Company's operations and result in an adverse impact on its financial condition, results of operations and cash flows, which could force the Company to reassess its strategic alternatives involving certain of its operations.

The Company's business depends substantially on client contract renewals and/or client retention. Any contract non-renewals, renewals on different terms and conditions or decline in the Company's client retention or expansion could materially adversely affect the Company's results of operations, financial condition and cash flows.

The Company has historically derived a significant portion of its revenue from long-term contracts with significant clients. If the Company loses significant clients (including as a result of reduced demand for a client's products or services), is unable to renew such contracts on similar terms and conditions, or at all, or is not awarded new long-term contracts with important clients in the future, its results of operations, financial condition and cash flows may be adversely affected.

The Company is exposed to risks of loss in the event of nonperformance by its clients. Some of the Company's clients are highly leveraged or otherwise subject to their own operating and regulatory risks. Even if the Company's credit review and analysis mechanisms work properly, the Company may experience financial losses and loss of future business if its clients become bankrupt, insolvent or otherwise are unable to pay the Company for its work performed. Any increase in the nonpayment or nonperformance by clients could adversely affect the Company's results of operations and financial condition.

Certain industries in which the Company's clients operate are experiencing consolidation. When client consolidation occurs, it is possible that the volume of work performed by the Company for a client after the consolidation will be less than it was before the consolidation or that the client's work will be completely moved to competitors. In addition, new and enhanced technologies, including search, web and infrastructure computing services, digital content, and electronic devices, may affect clients. The internet facilitates competitive entry and comparison shopping, and the reliance on digital retailing may reduce clients' volume. Any such reduction or loss of work could adversely affect the Company's results of operations and financial condition.

There are additional risks associated with the Company's operations outside of the United States, including trade restrictions, currency fluctuations, the global economy, and geopolitical events like war and terrorism.

Net sales from the Company's wholly-owned subsidiaries outside of the United States accounted for approximately 14% and 13% of its consolidated net sales for the years ended December 31, 2023 and 2022, respectively.

As a result, the Company is subject to the risks inherent in conducting business outside of the United States, including, but not limited to: the impact of economic and political instability; fluctuations in currency values, foreign-currency exchange rates, devaluation and conversion restrictions; exchange control regulations and other limits on the Company's ability to import raw materials or finished product; tariffs and other trade barriers; trade restrictions and economic embargoes by the United States or other countries; health concerns regarding infectious diseases; adverse weather or natural disasters; social unrest, acts of terrorism, force majeure, war or other armed conflicts; inflation and fluctuations in interest rates; language barriers; difficulties in staffing, training, employee retention and managing international operations; logistical and communications challenges; differing local business practices and cultural considerations; restrictions on the ability to repatriate funds; foreign ownership restrictions and the potential for nationalization or expropriation of property or other resources; longer accounts receivable payment cycles; potential adverse tax consequences and being subject to different legal and regulatory regimes that may preclude or make more costly certain initiatives or the implementation of certain elements of its business strategy.

If the Company fails to identify, manage, complete and integrate acquisitions, investment opportunities or other significant transactions, as well as identify and execute strategic divestitures, it may adversely affect the Company's future results and ability to implement its business strategy.

The Company may pursue acquisitions of, investment opportunities in, or other significant transactions with, companies that are complementary to the Company's business, as well as divestitures of businesses, product lines or other assets. In order to pursue this strategy successfully, the Company must identify attractive acquisition or investment opportunities, successfully complete the transaction, some of which may be large and complex, and manage post-closing issues such as integration of the acquired company or employees. The Company may not be able to identify or complete appealing acquisition or investment opportunities given the intense competition for these transactions. Even if the Company identifies and completes suitable corporate transactions, the Company may not be able to successfully address inherent risks in a timely manner, or at all. These inherent risks include, among other things: failure to achieve all or any projected synergies, performance targets or other anticipated benefits of the acquisition, investment or divestiture; failure to successfully integrate the purchased operations, technologies, products or services and maintain uniform standard controls, policies and procedures; substantial unanticipated integration costs; loss of key employees, including those of an acquired business; diversion of management's attention from other business concerns; failure to retain the clients of the acquired business; additional debt and/or assumption of known or unknown liabilities; potential dilutive issuances of equity securities; and a write-off of goodwill, client lists, other intangibles and amortization of expenses. If the Company fails to successfully integrate an acquisition, the Company may not realize all or any of the anticipated benefits of the acquisition, and the Company's future results of operations could be adversely affected.

In addition, the Company's transformation to a marketing experience company is partially dependent upon the Company's continued ability to identify and execute strategic divestiture opportunities to generate cash and related benefits. There can be no assurance whether the strategic benefits and expected financial impact of any divestitures will be achieved.

Negative publicity could have an adverse impact on the Company's business and brand reputation.

Unfavorable publicity, whether accurate or not, related to the Company or the Company's executive management team, employees, board of directors, operations, business or prospects, or to the Quadracci family shareholders of the Company, could negatively affect the Company's reputation, stock price, ability to attract new clients from growth vertical industries, ability to attract and retain high-quality talent, or the performance of the Company's business.

In addition, there has been a substantial increase in the use of social media platforms, including blogs, social media websites, and other forms of internet-based and mobile communications, which allow individuals access to a broad audience of consumers and other interested persons. Many social media platforms immediately publish the content their subscribers' and participants' post, often without filters or checks on accuracy of the content posted. Information or commentary posted on such platforms at any time may be adverse to the Company's interests or may be inaccurate, each of which may harm the Company's reputation, business or prospects. The harm may be immediate without affording the Company an opportunity for redress or correction.

Financial Risks

The Company may be required to make capital expenditures to sustain and grow its platforms and processes, as well as make investments in the development and implementation of new systems, client technology, product technology, marketing and talent in order to keep pace with industry developments, client expectations, and to remain technologically and economically competitive. The cash or financing required for these capital expenditures and investments may not be sufficient or available on terms acceptable to the Company. In addition, these capital expenditures and investments may increase the Company's costs, reduce its profits, disrupt its operations or adversely affect its ability to implement its business strategy.

The printing and advertising and marketing services industries are experiencing rapid change as new digital technologies are developed that offer clients an array of choices for their marketing and publication needs. In order to remain competitive, the Company will need to adapt to future changes, especially with regard to technology and talent, to enhance the Company's existing offerings and introduce new offerings to address the changing demands of clients. In order to remain technologically and economically competitive, the Company may need to make significant capital expenditures and other investments, including in its talent, as it develops and continues to maintain its platforms and processes, and to develop and integrate new technologies. In order to accomplish this effectively, the Company will need to deploy its resources efficiently, maintain effective cost controls and bear potentially significant market and raw material risks. If the Company's revenues decline, it may impact the Company's ability to expend the capital necessary to develop and implement new technology and be economically competitive. Debt or equity financing, or cash generated from operations, may not be available or sufficient for these requirements or for other corporate purposes or, if debt or equity financing is available, it may not be on terms favorable to the Company. In addition, even if capital is available to the Company, there is risk that the Company's vendors will have discontinued the production of parts needed for repairs, replacements or improvements to the Company's existing platforms, leading the Company to expend more capital than expected to perform such repairs, replacements or improvements. The Company's business and operating results may be adversely affected if the Company is unable to keep pace with relevant technological and industry changes or if the technologies or business strategies that the Company adopts or services it promotes do not receive widespread market acceptance.

If the Company is unable to make the capital expenditures and other investments necessary to adapt to industry and technological developments, the Company may experience a decline in demand for its services, be unable to implement its business strategy and its business operating results may be adversely affected. Additionally, if the Company is unable to meet future challenges from competing technologies on a timely basis or at an acceptable cost, the Company could lose clients to competitors. In general, the development of new communication channels inside and outside the printing and media solutions industry requires the Company to anticipate and respond to the varied and continually changing demands of clients. The Company may not be able to accurately predict technological trends or the success of new services in the market.

The Company's debt facilities include various covenants imposing restrictions that may affect the Company's ability to operate its business.

On September 1, 1995, and as last amended on November 24, 2014, the Company entered into a senior secured note agreement (the "Master Note and Security Agreement") pursuant to which the Company has issued over time senior notes in an aggregate principal amount of \$1.1 billion in various tranches. As of December 31, 2023, the borrowings outstanding under the Master Note and Security Agreement were \$2.5 million. On April 28, 2014, and as last amended on January 4, 2024, the Company entered into a senior secured credit facility (the "Senior Secured Credit Facility," which includes two different loan facilities: a \$825.0 million Term Loan A and a \$432.5 million revolving credit facility. As a result of the November 2, 2021 amendment to the Senior Secured Credit Facility, the Term Loan A and revolving credit facility were both broken into two separate maturity dates. Borrowing from lenders who elected to not extend the maturity date matured on January 31, 2024, whereas borrowing from lenders who elected to extend the maturity date matures on November 2, 2026. As of December 31, 2023, the borrowings outstanding under the Senior Secured Credit Facility were \$511.1 million.

The Company's various lending arrangements include certain financial covenants. In addition to the financial covenants, the debt facilities also include certain limitations on acquisitions, indebtedness, liens, dividends and repurchases of capital stock. As of December 31, 2023, the Company was in compliance with all financial covenants in its debt agreements. While the Company currently expects to be in compliance in future periods with all of the financial covenants, there can be no assurance that these covenants will continue to be met. The Company's failure to maintain compliance with the covenants could prevent the Company from borrowing additional amounts and could result in a default under any of the debt agreements. Such default could cause the outstanding indebtedness to become immediately due and payable, by virtue of cross-acceleration or cross-default provisions.

The Company may be adversely affected by interest rates, particularly floating interest rates, and foreign exchange rates.

As of December 31, 2023, 44% of the Company's borrowings were subject to variable interest rates. As a result, the Company is exposed to market risks associated with fluctuations in interest rates, and increases in interest rates could adversely affect the Company.

The Company currently holds one interest rate swap contract. The purpose of entering into this contract was to reduce the variability of cash flows from interest payments related to a portion of the Company's variable-rate debt. The swap converts the notional value of the Company's variable rate debt based on one-month Secured Overnight Finance Rate ("SOFR") to a fixed rate, including a spread on underlying debt, and a monthly reset in the variable interest rate.

The Company has entered into two interest rate collar contracts, both effective February 1, 2023. The purpose of entering into the contracts is to reduce the variability of cash flows from interest payments related to a portion of the Company's variable-rate debt. The interest rate collars convert the notional value of the Company's variable rate debt based on one-month term SOFR to a fixed rate if that month's interest rate is outside of the collars' floor and ceiling rates, including a spread on underlying debt, and a monthly reset in the variable interest rate.

Because a portion of the Company's operations are outside of the United States, significant revenues and expenses are denominated in local currencies. Although operating in local currencies may limit the impact of currency rate fluctuations on the results of operations of the Company's non-United States subsidiaries and business units, fluctuations in such rates may affect the translation of these results into the Company's consolidated financial statements. To the extent revenues and expenses are not in the applicable local currency, the Company may enter into foreign exchange forward contracts to hedge the currency risk. There can be no assurance, however, that the Company's efforts at hedging will be successful. There is always a possibility that attempts to hedge currency risks will lead to greater losses than predicted.

The Company's revenue, operating income and cash flows are subject to cyclical and seasonal variations.

The Company's business is seasonal, with the Company recognizing the majority of its operating income in the second half of the calendar year, primarily as a result of the increased magazine advertising page counts and retail inserts and catalogs from back-to-school and holiday-related advertising and promotions. The fourth quarter is typically the highest seasonal quarter for cash flows from operating activities and Free Cash Flow due to the reduction of working capital requirements that reach peak levels during the third quarter. If the Company does not successfully manage the increased workflow, necessary increases in paper and ink inventory, production capacity flows and other business elements during these high seasons of activity, this seasonality could adversely affect the Company's cash flows and results of operations.

An other than temporary decline in operating results and enterprise value could lead to non-cash impairment charges due to the impairment of property, plant and equipment, goodwill and other intangible assets.

The Company has a material amount of property, plant, equipment, goodwill and other intangible assets on its balance sheet, due in part to acquisitions. As of December 31, 2023, the Company had the following long-lived assets on its consolidated balance sheet included in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K: (a) property, plant and equipment of \$620.6 million; (b) goodwill of \$103.0 million; and (c) other intangible assets, primarily representing the value of customer relationships acquired, of \$21.8 million.

As of December 31, 2023, these assets represented approximately 49% of the Company’s total assets. The Company assesses impairment of property, plant and equipment, goodwill and other intangible assets based upon the expected future cash flows of the respective assets. These valuations include management’s estimates of sales, profitability, cash flow generation, capital structure, cost of debt, interest rates, capital expenditures and other assumptions. A decline in expected profitability, significant negative industry or economic trends, inability to effectively integrate acquired businesses, unexpected significant changes or planned changes in use of the assets or in entity structure, divestitures and discontinued operations may adversely impact the assumptions used in the valuations. As a result, the recoverability of these assets could be called into question, and the Company could be required to write down or write off these assets. Such an occurrence could have a material adverse effect on the Company’s results of operations and financial position.

The Company has liabilities with respect to defined benefit pension plans that could cause the Company to incur additional costs.

As a result of the 2010 acquisition of World Color Press, the Company assumed frozen single employer defined benefit pension plans for certain of its employees in the United States. The majority of the plans’ assets are held in North American and global equity securities and debt securities. The asset allocation as of December 31, 2023, was approximately 21% equity securities and 79% debt securities.

As of December 31, 2023, the Company had underfunded pension liabilities of \$39.4 million for single employer defined benefit plans in the United States. Under current United States pension law, pension funding deficits are generally required to be funded over a seven-year period. These pension deficits may increase or decrease depending on changes in the levels of interest rates, pension plan investment performance, pension legislation and other factors. Declines in global debt and equity markets would increase the Company’s potential pension funding obligations. Any significant increase in the Company’s required contributions could have a material adverse impact on its business, financial condition, results of operations and cash flows.

In addition to the single employer defined benefit plans described above, the Company has previously participated in multiemployer pension plans (“MEPPs”) in the United States, including the Graphic Communications International Union - Employer Retirement Fund (“GCIU”) and the Graphic Communications Conference of the International Brotherhood of Teamsters National Pension Fund (“GCC”). Prior to the acquisition of World Color Press by the Company, World Color Press received notice that certain plans in which it participated were in critical status, as defined in Section 432 of the Internal Revenue Code of 1986, as amended (the “Internal Revenue Code”). As a result, the Company could have been subject to increased contribution rates associated with these plans or other MEPPs suffering from declines in their funding levels. Due to the significantly underfunded status of the United States multiemployer plans and the potential increased contribution rates, the Company withdrew from participation in these multiemployer plans and has replaced these pension benefits with a Company-sponsored “pay as you go” defined contribution plan, which is historically the form of retirement benefit provided to the Company’s employees. As of December 31, 2023, the Company has recorded in its financial statements a pre-tax withdrawal liability for all United States MEPPs of \$24.0 million in the aggregate. The Company is scheduled to make payments to the GCIU and GCC until April 2032 and February 2024, respectively.

The Company may not be able to utilize deferred tax assets to offset future taxable income.

As of December 31, 2023, the Company had deferred tax assets, net of valuation allowances, of \$86.6 million. The Company expects to utilize the deferred tax assets to reduce consolidated income tax liabilities in future taxable years. However, the Company may not be able to fully utilize the deferred tax assets if its future taxable income and related income tax liability is insufficient to permit their use. In addition, in the future, the Company may be required to record a valuation allowance against the deferred tax assets if the Company believes it is unable to utilize them, which would have an adverse effect on the Company's results of operations and financial position.

Legal and Regulatory Risks

Unfavorable outcomes in legal proceedings could result in substantial costs and may harm the Company's financial condition.

The Company's financial condition may be affected by the outcome of pending and future litigation, claims, investigations, legal and administrative cases and proceedings, whether civil or criminal, or lawsuits by governmental agencies or private parties. Defending against any such claims, or any legal proceedings to which the Company is subject, can result in substantial costs and divert management time and resources. An adverse judgment could result in monetary damages, which could have a negative impact on the Company's liquidity and financial condition and/or cause significant reputational harm to the Company's business.

The Company may incur costs or suffer reputational damage due to improper conduct of its employees, contractors or agents under anti-corruption or other laws governing business practices, including the United States Foreign Corrupt Practices Act.

The Company could be adversely affected by engaging in business practices that are in violation of United States or foreign anti-corruption laws, including the United States Foreign Corrupt Practices Act. The Company operates in parts of the world with developing economies that have experienced governmental corruption to some degree, and in certain circumstances, strict compliance with anti-corruption laws may conflict with local customs and practices. In certain countries, the Company does substantial business with government entities or instrumentalities, which creates increased risk of a violation of the Foreign Corrupt Practices Act and international laws. There can be no assurance that all of the Company's employees, contractors or agents, including those representing the Company in countries where practices which violate anti-corruption laws may be customary, will not take actions that violate the Company's policies and procedures. The failure to comply with the laws governing international business practices may result in substantial penalties and fines.

The Company and its facilities are subject to various consumer protection and privacy laws and regulations, and will become subject to additional laws and regulations in the future. If the Company's efforts to comply with such laws or protect the security of information are unsuccessful, any failure may subject the Company to material liability, require it to incur material costs or otherwise adversely affect its results of operations as a result of compliance with such laws, costly enforcement actions and private litigation.

The nature of the Company's business includes the receipt and storage of information about the Company's clients, vendors and the end-users of the Company's products and services. The Company and its clients are subject to various United States and foreign consumer protection, information security, data privacy and "do not mail" requirements at the federal, state, provincial and local levels. The Company is subject to many legislative and regulatory laws and regulations around the world concerning data protection and privacy. In addition, the interpretation and application of consumer and data protection laws in the United States and elsewhere are often fluid and uncertain. To the extent that the Company or its clients become subject to additional or more stringent requirements or that the Company is not successful in its efforts to comply with existing requirements or protect the security of information, demand for the Company's services may decrease and the Company's reputation may suffer, which could adversely affect the Company's results of operations. In addition, such laws may be interpreted and applied in a manner inconsistent with the Company's internal policies. If so, the Company could suffer costly enforcement actions (including an order requiring changes to the Company's data practices) and private litigation, which could have an adverse effect on the Company's business and results of operations. Complying with these various laws could cause the Company to incur substantial costs or require changes to the Company's business practices in a manner adverse to the Company's business.

Changes in the legal and regulatory environment or reporting requirements could limit the Company's business activities, increase its operating costs, reduce demand for its products or result in litigation.

The conduct of the Company's businesses is subject to various laws and regulations administered by federal, state and local government agencies in the United States, as well as to foreign laws and regulations administered by government entities and agencies in markets in which the Company operates. These laws and regulations and interpretations thereof may change, sometimes dramatically, as a result of political, economic or social events, such as the election of the new administration. Such regulatory environment changes may include changes in taxation requirements, accounting and disclosure standards, immigration laws and policy, environmental laws, and requirements of United States and foreign occupational health and safety laws. Changes in laws, regulations or governmental policy and the related interpretations may alter the environment in which the Company does business, and therefore, may impact its results or increase its costs or liabilities.

In addition, the Company and its subsidiaries are party to a variety of legal and environmental remediation obligations arising in the normal course of business, as well as environmental remediation and related indemnification proceedings in connection with certain historical activities, former facilities and contractual obligations of acquired businesses. Permits are required for the operation of certain parts of the Company's business, and these permits are subject to renewal, modification and, in some circumstances, revocation. Due to regulatory complexities, uncertainties inherent in litigation and the risk of unidentified contaminants on current and former properties, the potential exists for remediation, liability and indemnification costs to differ materially from the costs the Company has estimated. The Company cannot assure you that the Company's costs in relation to these matters will not exceed its established liabilities or otherwise have an adverse effect on its results of operations.

Various laws and regulations addressing climate change are being considered at the federal and state levels. Proposals under consideration include requiring climate- and emissions-related disclosures and limitations on the amount of greenhouse gas that can be emitted (so-called "caps") together with systems of trading allowed emissions capacities. The impacts of such proposals could have a material adverse impact on the Company's financial condition and results of operations.

If QuadMed, a wholly-owned subsidiary of the Company, fails to comply with applicable healthcare laws and regulations, the Company could face substantial penalties, and its business, reputation, operations, prospects and financial condition of the Company's subsidiary could be adversely affected.

QuadMed provides employer-sponsored healthcare solutions in the United States to employers of all sizes, including the Company and other private and public-sector companies. These solutions include, but are not limited to, on-site and near-site healthcare clinics, occupational health services, telemedicine, and health and wellness programs. The healthcare industry is heavily regulated, constantly evolving and subject to significant change and fluctuation. The United States federal and state healthcare laws and regulations that impact the QuadMed subsidiary business include, among others, those: (a) regarding privacy, security and transmission of individually identifiable health information; (b) prohibiting, among other things, soliciting, receiving or providing remuneration to induce the referral of an individual for an item or service or the purchasing or ordering of an item or service for which payment may be made under healthcare programs; (c) prohibiting, among other things, knowingly presenting or causing to be presented claims for payment from third-party payors that are false or fraudulent; and (d) prohibiting the corporate practice of medicine.

Risks Relating to Quad's Common Stock

Holders of class A common stock are not able to independently elect directors of the Company or control any of the Company's management policies or business decisions because the holders of class A common stock have substantially less voting power than the holders of the Company's class B common stock, all of which is owned by certain members of the Quadracci family or trusts for their benefit, whose interests may be different from the holders of class A common stock.

The Company's outstanding stock is divided into two classes of common stock: class A common stock ("class A stock") and class B common stock ("class B stock"). The class B stock has ten votes per share on all matters and the class A stock is entitled to one vote per share. As of January 31, 2024, the class B stock constitutes approximately 78% of the Company's total voting power. As a result, holders of class B stock are able to exercise a controlling influence over the Company's business, have the power to elect its directors and indirectly control decisions such as whether to issue additional shares, declare and pay dividends or enter into corporate transactions. All of the class B stock is owned by certain members of the Quadracci family or trusts for their benefit, whose interests may differ from the interests of the holders of class A stock.

As of January 31, 2024, approximately 93% of the outstanding class B stock was held of record by the Quad Voting Trust, and that constitutes approximately 73% of the Company's total voting power. The trustees of the Quad Voting Trust have the authority to vote the stock held by the Quad Voting Trust. Accordingly, the trustees of the Quad Voting Trust are able to exercise a controlling influence over the Company's business, have the power to elect its directors and indirectly control decisions such as whether to issue additional shares, declare and pay dividends or enter into corporate transactions.

Furthermore, in response to recent public focus on dual class capital structures, certain stock index providers are implementing limitations on the inclusion of dual class share structures in their indices and certain institutional shareholder advisory firms are updating their voting guidelines to generally withhold support for directors of companies with dual class voting rights. If these restrictions increase or these guidelines are followed, they may impact who buys and holds the Company's stock.

The Company is a controlled company within the meaning of the rules of the New York Stock Exchange (“NYSE”) and, as a result, it relies on exemptions from certain corporate governance requirements that provide protection to shareholders of other companies.

Since the Quad Voting Trust owns more than 50% of the total voting power of the Company’s stock, the Company is considered a controlled company under the corporate governance listing standards of the NYSE. As a controlled company, an exception under the NYSE listing standards exempts the Company from the obligation to comply with certain of the NYSE’s corporate governance requirements, including the requirements that (a) the Company have a corporate governance and nominating committee that is composed entirely of independent directors with a written charter addressing the committee’s purpose and responsibilities; and (b) the Company have a compensation committee that is composed entirely of independent directors with a written charter addressing the committee’s purpose and responsibilities.

Accordingly, for so long as the Company is a controlled company, holders of class A stock may not have the same protections afforded to shareholders of companies that are subject to all of the corporate governance requirements of the NYSE.

Currently, there is a limited active market for Quad’s class A common stock and, as a result, shareholders may be unable to sell their class A common stock without losing a significant portion of their investment.

The Company’s class A stock has been traded on the NYSE under the symbol “QUAD” since July 6, 2010. However, there is still a limited active market for the class A common shares. The Company cannot predict the extent to which investor interest in the Company will lead to the development of a more active trading market for its class A common stock on the NYSE or how liquid that market will be. If a more active trading market does not develop, shareholders may have difficulty selling any class A stock without negatively affecting the stock price, and thereby, losing a significant portion of their investment.

Item 1B. Unresolved Staff Comments

The Company has no unresolved staff comments to report pursuant to this item.

Item 1C. Cybersecurity

The Company’s Board of Directors (the “Board”) recognizes the critical importance of maintaining the trust and confidence of our customers, clients, employees and communities. The Board is actively involved in oversight of the Company’s operational and strategic risk management process. With regard to cybersecurity risk, the Board (through the Audit Committee) periodically reviews information on management’s policies and processes related to cybersecurity and data-protection, including its assessment, identification and management of material risks, mitigation strategy, governance and incident reporting that are based on recognized frameworks established by the National Institute of Standards and Technology (NIST), the International Organization for Standardization and other applicable industry standards. The entire Board receives periodic updates on the Company’s cybersecurity risk management progress through the Company’s general enterprise risk management (“ERM”) program. In general, the Company seeks to address cybersecurity risks through a comprehensive, cross-functional approach that is focused on preserving the confidentiality, security and availability of the information that the Company collects and stores by identifying, preventing and mitigating cybersecurity threats and effectively responding to cybersecurity incidents when they occur.

Risk Management and Strategy

As one of the critical elements of the Company's overall ERM approach, the Company's cybersecurity program is focused on the following key areas:

Overall

As discussed in more detail under the heading "Governance," the Board's oversight of cybersecurity risk management is supported by the Audit Committee of the Board, which receives periodic updates from the Company's ERM function, the Company's Executive Director of Information Security & Compliance, other members of management and relevant management committees and councils.

Collaborative Approach

The Company has implemented a comprehensive, cross-functional approach to identifying, preventing and mitigating cybersecurity threats and incidents, while also implementing controls and procedures that provide for the prompt escalation of certain cybersecurity incidents so that decisions regarding the public disclosure and reporting of such incidents can be made by management in a timely manner.

Technical Safeguards

The Company deploys technical safeguards that are designed to protect the Company's information systems from cybersecurity threats, including firewalls, intrusion prevention and detection systems, anti-malware functionality and access controls, which are evaluated and improved through vulnerability assessments and cybersecurity threat intelligence.

Incident Response and Recovery Planning

The Company has established and maintains comprehensive incident response and recovery plans that fully address the Company's response to a cybersecurity incident, and such plans are tested and evaluated on a regular basis.

Third-Party Risk Management

The Company maintains a comprehensive, risk-based approach to identifying and overseeing cybersecurity risks presented by third parties, including vendors, service providers and other external users of the Company's systems, as well as the systems of third parties that could adversely impact our business in the event of a cybersecurity incident affecting those third-party systems.

Education and Awareness

The Company launched a security awareness campaign, Be Cyber Smart, that helps employees make sure valuable data remains private, keep physical and digital workspaces secure with good security hygiene, spot potential phishing and malware threats, and avoid risky behaviors. The Be Cyber Smart campaign provides employees with tools and tips for proactive protection measures such as password management, the importance of computer restarts and software updates, security measures when working from home, recognizing and avoiding phishing and maintaining data privacy. In addition, annual compliance, security awareness and acceptable use training, as well as regular phish testing, is delivered to all employees.

The Company engages in the periodic assessment and testing of the Company's policies, standards, processes and practices that are designed to address cybersecurity threats and incidents. These efforts include a wide range of activities, including audits, assessments, tabletop exercises, threat modeling, vulnerability testing and other exercises focused on evaluating the effectiveness of our cybersecurity measures and planning. The Company regularly engages third parties to perform assessments on our cybersecurity measures, including information security maturity assessments, audits and independent reviews of our information security control environment and operating effectiveness. The results of such assessments, audits and reviews are reported to the Audit Committee and the Board, and the Company adjusts its cybersecurity policies, standards, processes and practices as necessary based on the information provided by these assessments, audits and reviews.

Governance

The Board is responsible for the oversight of the Company's operational and strategic risk management process. The Board oversees a company-wide approach to risk management, carried out by management. The Board determines the appropriate risk for the Company generally, assesses the specific risks the Company faces and receives regular reports of the steps taken by management to manage those risks. With regard to cybersecurity risk, the Board (through the Audit Committee) conducts an annual review of the Company's cybersecurity program, and the entire Board receives periodic updates on the Company's cybersecurity risk management progress through the Company's general enterprise risk management program described in the foregoing sentence.

The Executive Director of Information Security & Compliance, with oversight from the Audit Committee, works collaboratively across the Company to implement a program designed to protect the Company's information systems from cybersecurity threats and to promptly respond to any cybersecurity incidents in accordance with the Company's incident response and recovery plans. To facilitate the success of the Company's cybersecurity risk management program, multidisciplinary teams throughout the Company are deployed to address cybersecurity threats and to respond to cybersecurity incidents. Through ongoing communications with these teams, the Executive Director of Information Security & Compliance monitors the prevention, detection, mitigation and remediation of cybersecurity threats and incidents in real time and reports such threats and incidents to the Audit Committee and Board when appropriate.

The Executive Director of Information Security & Compliance has served in various roles in information technology and information security for over 30 years, including serving as the Vice President of Information Technology and Executive Director of Information Security & Compliance for two large companies. The Executive Director of Information Security & Compliance holds undergraduate degrees in information systems and operations management, as well as graduate degrees in information systems and finance and has attained the professional certification of Information Technology Project Management. The Company's CEO, CFO and General Counsel, Corporate Secretary and Chief Risk & Compliance Officer each hold degrees in their respective fields, and each have over 20 years of experience managing risks at the Company or at similar companies, including risks arising from cybersecurity threats.

Cybersecurity threats, including as a result of any previous cybersecurity incidents, have not materially affected or are not reasonably likely to affect the Company, including its business strategy, results of operations or financial condition.

Item 2. Properties

Quad's corporate office is located in Sussex, Wisconsin. The Company owned or leased 96 facilities located in 14 countries including manufacturing operations, warehouses and office space totaling approximately 17,580,000 square feet, of which approximately 12,610,000 is owned space and approximately 4,970,000 is leased space as of December 31, 2023.

Within the United States Print and Related Services segment, the Company operated 34 owned or leased manufacturing facilities, encompassing approximately 14,556,000 square feet as of December 31, 2023. Within the International segment, the Company operated 9 owned or leased manufacturing facilities, encompassing approximately 1,739,000 square feet as of December 31, 2023. The following table lists the Company's operating locations with manufacturing facilities totaling over 500,000 square feet as of December 31, 2023:

Locations	Square Feet	Property Type	Segment
Lomira, Wisconsin, United States	2,174,000	Owned	United States Print and Related Services
Sussex, Wisconsin, United States	1,971,000	Owned	United States Print and Related Services
Martinsburg, West Virginia, United States	1,740,000	Owned	United States Print and Related Services
Hartford, Wisconsin, United States	1,682,000	Owned	United States Print and Related Services
Saratoga Springs, New York, United States ⁽¹⁾	1,034,000	Owned	United States Print and Related Services
West Allis, Wisconsin, United States	913,000	Leased	United States Print and Related Services
The Rock, Georgia, United States	797,000	Owned	United States Print and Related Services
Wyszkow, Poland	709,000	Owned	International
Effingham, Illinois, United States ⁽¹⁾	564,000	Owned	United States Print and Related Services

⁽¹⁾ The Effingham, Illinois facility was announced for closure on October 24, 2023, and the Saratoga Springs, New York facility was announced for closure on January 19, 2024.

Item 3. Legal Proceedings

The Company is subject to various legal actions, administrative proceedings and claims arising out of the ordinary course of business. The Company believes that such unresolved legal actions, proceedings and claims will not materially adversely affect its results of operations, financial condition or cash flows. For additional information, see Note 9, "Commitments and Contingencies — Litigation," to the consolidated financial statements in Part II, Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for the Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Capital Stock and Dividends

Quad’s authorized capital stock consists of 105.0 million shares of class A stock, 80.0 million shares of class B stock, 20.0 million shares of class C common stock and 0.5 million shares of preferred stock. The Company’s outstanding capital stock as of December 31, 2023, consisted of 37.4 million shares of class A stock, 13.6 million shares of class B stock and no shares of class C common stock or preferred stock. As of January 31, 2024, there were 2,031 record holders of the class A stock and 22 record holders of the class B stock.

The Company’s class A stock is listed on the NYSE under the symbol “QUAD”. The class A stock is entitled to one vote per share. The Company’s class B stock is held by certain members of the Quadracci family or trusts for their benefit (and can only be voluntarily transferred to the Company or to a member of the Quadracci “family group” as defined in the Company’s Articles of Incorporation; and any transfer in violation of the Company’s Articles of Incorporation results in the automatic conversion of such class B stock into class A stock). The class B stock is entitled to ten votes per share. Each share of class B stock may, at the option of the holder, be converted at any time into one share of class A stock. There is no public trading market for the class B stock.

Pursuant to the Company’s Articles of Incorporation, each outstanding class of common stock has equal rights with respect to cash dividends. Pursuant to the Company’s debt facilities, the Company is subject to limitations on dividends and repurchases of capital stock. If the Company’s Total Leverage Ratio is greater than 2.75 to 1.00, as defined in the Company’s Senior Secured Credit Facility, last amended on January 4, 2024, (see Note 10. “Debt,” for more details on the amendment), the Company is prohibited from making greater than \$60.0 million of dividend payments, capital stock repurchases and certain other payments, over the course of the agreement. If the Company’s Total Leverage Ratio is above 2.50 to 1.00, but below 2.75 to 1.00, the Company is prohibited from making greater than \$100.0 million of dividend payments, capital stock repurchases, and certain other payments, over the course of the agreement. If the Total Leverage Ratio is less than 2.50 to 1.00, there are no such restrictions.

Securities Authorized for Issuance Under Equity Compensation Plans

See Part III, Item 12, “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters,” of this Annual Report on Form 10-K for certain information regarding the Company’s equity compensation plans.

Information about the Company’s repurchases of its class A common stock during the three months ended December 31, 2023, was as follows:

Period	Issuer Purchases of Equity Securities			
	Total Number of Shares Purchased ⁽¹⁾	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾	Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs ⁽²⁾
October 1, 2023 to October 31, 2023	354,682	4.83	354,682	\$ 78,116,172
November 1, 2023 to November 30, 2023	137,714	4.42	137,714	77,507,158
December 1, 2023 to December 31, 2023	—	—	—	77,507,158
Total	492,396		492,396	

⁽¹⁾ Represents shares of the Company’s class A common stock.

- ⁽²⁾ On July 30, 2018, the Company's Board of Directors authorized a share repurchase program of up to \$100.0 million of the Company's outstanding class A common stock. Under the authorization, share repurchases may be made at the Company's discretion, from time to time, in the open market and/or in privately negotiated transactions as permitted by federal securities laws and other legal requirements. The timing, manner, price and amount of any repurchase will depend on economic and market conditions, share price, trading volume, applicable legal requirements and other factors. The program may be suspended or discontinued at any time. There were 2,852,501 and 3,093,662 shares of the Company's class A stock repurchased during the years ended December 31, 2023 and 2022, respectively. As of December 31, 2023, there were \$77.5 million of authorized repurchases remaining under the program.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion of the financial condition and results of operations of Quad should be read together with Quad’s audited consolidated financial statements for each of the two years in the period ended December 31, 2023, including the notes thereto, included in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K. This discussion contains forward-looking statements that reflect the Company’s plans, estimates and beliefs. The Company’s actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to these differences include, but are not limited to, those discussed in “Cautionary Statement Regarding Forward-Looking Statements” and Part I, Item 1A, “Risk Factors,” included earlier within this Annual Report on Form 10-K.

Management’s discussion and analysis of financial condition and results of operations is provided as a supplement to the Company’s consolidated financial statements and accompanying notes to help provide an understanding of the Company’s financial condition, the changes in the Company’s financial condition and the Company’s results of operations. This discussion and analysis is organized as follows:

- *Overview.* This section includes a general description of the Company’s business and segments, an overview of key performance metrics the Company’s management measures and utilizes to evaluate business performance, and an overview of trends affecting the Company, including management’s actions related to the trends.
- *Results of Operations.* This section contains an analysis of the Company’s results of operations by comparing the results for the year ended December 31, 2023, to the year ended December 31, 2022. Forward-looking statements providing a general description of recent and projected industry and Company developments that are important to understanding the Company’s results of operations are included in this section. This section also provides a discussion of EBITDA and EBITDA margin, financial measures that the Company uses to assess the performance of its business that are not prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”).
- *Liquidity and Capital Resources.* This section provides an analysis of the Company’s capitalization, cash flows and a discussion and table of outstanding debt and commitments. Forward-looking statements important to understanding the Company’s financial condition are included in this section. This section also provides a discussion of Free Cash Flow and Debt Leverage Ratio, non-GAAP financial measures that the Company uses to assess liquidity and capital allocation and deployment.
- *Critical Accounting Policies and Estimates.* This section contains a discussion of the accounting policies that the Company’s management believes are important to the Company’s financial condition and results of operations, as well as allowances and reserves that require significant judgment and estimates on the part of the Company’s management. In addition, all of the Company’s significant accounting policies, including critical accounting policies, are summarized in Note 1, “Basis of Presentation and Summary of Significant Accounting Policies,” to the consolidated financial statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K.

Overview

Business Overview

Quad is a global marketing experience (MX) company that helps brands make direct consumer connections, from household to in-store to online. The Company is focused on providing a better marketing experience for its clients, so they can focus on delivering the best customer experience to theirs. Quad does this with a suite of marketing solutions that is flexible, scalable and connected. Supported by state-of-the-art technology and data-driven intelligence, these solutions are designed to streamline the complexities of marketing and remove friction from wherever it occurs in the marketing journey. Quad tailors its solutions to its clients' objectives, driving cost efficiencies, improving speed to market, strengthening marketing effectiveness, and delivering value on their investments. The Company supports a diverse base of clients, including industry-leading blue-chip companies that serve both businesses and consumers across multiple industry verticals, with a particular focus on commerce, including retail, consumer packaged goods and direct-to-consumer; financial services; and health.

For a full description of the Company's business overview, refer to Part I, Item 1, "Business," of this Annual Report on Form 10-K.

The Company's operating and reportable segments are aligned with how the chief operating decision maker of the Company currently manages the business. The Company's operating and reportable segments, including their product and service offerings, and a "Corporate" category, are summarized below.

The United States Print and Related Services segment is predominantly comprised of the Company's United States printing operations and is managed as one integrated platform. This includes print execution and logistics for retail inserts, catalogs, long-run publications, special interest publications, journals, direct mail, directories, in-store marketing and promotion, packaging, newspapers, custom print products, as well as other commercial and specialty printed products, along with global paper procurement, and marketing and other complementary services, such as data intelligence and analytics, technology solutions, media planning, placement and optimization, creative strategy and content creation, as well as execution in non-print channels (e.g., digital and broadcast). This segment also includes the manufacture of ink. The United States Print and Related Services segment accounted for approximately 86% and 87% of the Company's consolidated net sales during the years ended December 31, 2023 and 2022, respectively.

The International segment consists of the Company's printing operations in Europe and Latin America, including operations in England, France, Germany, Poland, Colombia, Mexico and Peru. This segment provides printed products and marketing and other complementary services consistent with the United States Print and Related Services segment. The International segment accounted for approximately 14% and 13% of the Company's consolidated net sales during the years ended December 31, 2023 and 2022, respectively.

Corporate consists of unallocated general and administrative activities and associated expenses including, in part, executive, legal and finance, as well as certain expenses and income from frozen employee retirement plans, such as pension benefit plans.

Key Performance Metrics Overview

The Company's management believes the ability to generate net sales growth, profit increases and positive cash flow, while maintaining the appropriate level of debt, are key indicators of the successful execution of the Company's business strategy and will increase shareholder value. The Company uses period-over-period net sales growth, EBITDA, EBITDA margin, net cash provided by operating activities, Free Cash Flow and Debt Leverage Ratio as metrics to measure operating performance, financial condition and liquidity. EBITDA, EBITDA margin, Free Cash Flow and Debt Leverage Ratio are non-GAAP financial measures (see the definitions of EBITDA, EBITDA margin and the reconciliation of net earnings (loss) to EBITDA in the "Results of Operations" section below, and see the definitions of Free Cash Flow and Debt Leverage Ratio, the reconciliation of net cash provided by operating activities to Free Cash Flow, and the calculation of Debt Leverage Ratio in the "Liquidity and Capital Resources" section below).

Net sales growth. The Company uses period-over-period net sales growth as a key performance metric. The Company's management assesses net sales growth based on the ability to generate increased net sales through increased sales to existing clients, sales to new clients, sales of new or expanded solutions to existing and new clients, and opportunities to expand sales through strategic investments, including acquisitions.

EBITDA and EBITDA margin. The Company uses EBITDA and EBITDA margin as metrics to assess operating performance. The Company's management assesses EBITDA and EBITDA margin based on the ability to increase revenues while controlling variable expense growth.

Net cash provided by operating activities. The Company uses net cash provided by operating activities as a metric to assess liquidity. The Company's management assesses net cash provided by operating activities based on the ability to meet recurring cash obligations while increasing available cash to fund debt service requirements, capital expenditures, cash restructuring requirements related to cost reduction activities, World Color Press single employer pension plan contributions, World Color Press MEPPs withdrawal liabilities, acquisitions and other investments in future growth, shareholder dividends and share repurchases. Net cash provided by operating activities can be significantly impacted by the timing of non-recurring or infrequent receipts or expenditures.

Free Cash Flow. The Company uses Free Cash Flow as a metric to assess liquidity and capital deployment. The Company's management assesses Free Cash Flow as a measure to quantify cash available for strengthening the balance sheet (debt and pension liability reduction), for strategic capital allocation and deployment through investments in the business (acquisitions and strategic investments) and for returning capital to the shareholders (dividends and share repurchases). The Company's priorities for capital allocation and deployment will change as circumstances dictate for the business, and Free Cash Flow can be significantly impacted by the Company's restructuring activities and other unusual items.

Debt Leverage Ratio. The Company uses the Debt Leverage Ratio as a metric to assess liquidity and the flexibility of its balance sheet. Consistent with other liquidity metrics, the Company monitors the Debt Leverage Ratio as a measure to determine the appropriate level of debt the Company believes is optimal to operate its business, and accordingly, to quantify debt capacity available for strengthening the balance sheet (debt and pension liability reduction), for strategic capital allocation and deployment through investments in the business (capital expenditures, acquisitions and strategic investments), and for returning capital to the shareholders (dividends and share repurchases). The Company's priorities for capital allocation and deployment will change as circumstances dictate for the business, and the Debt Leverage Ratio can be significantly impacted by the amount and timing of large expenditures requiring debt financing, as well as changes in profitability.

The Company remains disciplined with its debt leverage. The Company's consolidated debt and finance lease obligations decreased by \$47.5 million during the year ended December 31, 2023, primarily due to the use of cash and cash equivalents, cash provided by operating activities and proceeds from the sale of property, plant and equipment.

Overview of Trends Affecting Quad

As consumer media consumption habits change, advertising and marketing services providers face increased demand to offer end-to-end marketing services, from strategy and creative through execution. As new marketing channels emerge, these providers must expand their capabilities to create effective multichannel campaigns for their clients, and providers face increased client demand to offer integrated, end-to-end marketing services (i.e., from strategy and creative through execution). These trends greatly influence Quad's ongoing efforts to help brands reduce the complexities of working with multiple agency partners and vendors, increase marketing process efficiency and maximize marketing effectiveness.

Competition in the commercial printing industry remains highly fragmented, and the Company believes that there are indicators of heightened competitive pressures. The commercial printing industry has moved toward a demand for shorter print runs, faster product turnaround and increased production efficiencies of products with lower page counts and increased complexity. This — combined with increases in postage and paper costs as well as marketers' increasing use of online marketing and communication channels — has led to excess manufacturing capacity.

For a full description of the Company's industry and competition overview, refer to Part I, Item 1, "Business," of this Annual Report on Form 10-K.

The Company believes that a disciplined approach for capital management and a strong balance sheet are critical to be able to invest in profitable growth opportunities and technological advances, thereby providing the highest return for shareholders. Management balances the use of cash between deleveraging the Company's balance sheet (through reduction in debt and pension obligations), compelling investment opportunities (through capital expenditures, acquisitions and strategic investments) and returns to shareholders (through dividends and share repurchases).

The Company continues to make progress on integrating and streamlining all aspects of its business, thereby lowering its cost structure by consolidating its manufacturing platform into its most efficient facilities, as well as realizing purchasing, mailing and logistics efficiencies by centralizing and consolidating print manufacturing volumes and eliminating redundancies in its administrative and corporate operations. The Company has continued to evolve its manufacturing platform, equipping facilities to be product-line agnostic, which enables the Company to maximize equipment utilization. Quad believes that the large plant size of its key printing facilities allows the Company to drive savings in certain product lines (such as publications and catalogs) due to economies of scale and from investments in automation and technology. The Company continues to focus on proactively aligning its cost structure to the realities of the top-line pressures it faces in the printing industry through Lean Manufacturing and sustainable continuous improvement programs.

The Company believes it will continue to drive productivity improvements and sustainable cost reduction initiatives into the future through an engaged workforce and ongoing adoption of the latest manufacturing automation and technology. Through this strategy, the Company believes it can maintain the strongest, most efficient print manufacturing platform to remain a high-quality, low-cost producer.

Integrated distribution with the USPS is an important component of the Company's business. Any material change in the current service levels provided by the postal service could impact the demand that clients have for print services. The USPS continues to experience financial problems. The passing of the Postal Service Reform Act of 2022, signed in April 2022, gave the USPS considerable financial relief as well as significant relief over the next ten years. While the legislative postal reform helps considerably, without decreased operational cost structures, increased efficiencies or increased volumes and revenues, these losses will potentially continue into the future. As a result of these financial difficulties, the USPS has continued to adjust its postal rates and service levels. Additional price increases may result in clients reducing mail volumes and exploring the use of alternative methods for delivering a larger portion of their products, such as continued diversion to the internet, digital and mobile channels and other alternative media channels, in order to ensure that they stay within their expected postage budgets.

Federal statute requires the PRC to conduct reviews of the overall rate-making structure for the USPS to ensure funding stability. As a result of those reviews, the PRC authorized a five year rate-making structure that provides the USPS with additional pricing flexibility over the Consumer Price Index cap, which may result in a substantially altered rate structure for mailers. The revised rate authority that is effective as a result of the rules issued by the PRC includes a higher overall rate cap on the USPS' ability to increase rates from year to year. The USPS has used these additional rate authorities to implement twice a year increases and are expected to continue to do so in the future. This has led to price spikes for mailers and may also reduce the incentive for the USPS to continue to take out costs and instead continue to rely on postage to cover the costs of an outdated postal service that does not reflect the industry's ability or willingness to pay. The uncertainty as to how much of the authority the USPS will use on any specific rate increase also creates potential volume declines as rate predictability with respect to cost is no longer known for mailers.

The Company has invested significantly in its mail preparation and distribution capabilities to mitigate the impact of increases in postage costs, and to help clients successfully navigate the ever-changing postal environment. Through its data analytics, unique software to merge mail streams on a large scale, advanced finishing capabilities and technology, and in-house transportation and logistics operations, the Company manages the mail preparation and distribution of most of its clients' products to maximize efficiency, to enable on-time and consistent delivery and to partially reduce these costs.

The Company continues to face several other industry challenges that have been, and are expected to continue to, adversely impact the Company's results of operation. The Company continues to operate in a high interest rate environment, which is expected to continue through 2024. Additionally, the price and availability of paper has been, and may continue to be, adversely affected by paper mills' permanent or temporary closures, and mills' access to raw materials, conversion to produce other types of paper, and ability to transport paper produced. Postal rate increases, along with the previously described industry challenges, have led to reduced demand for printed products and has caused clients to move more aggressively into other delivery methods, such as the many digital and mobile options now available to consumers. This reduced volume has driven the Company to institute several cost saving measures through its restructuring program, including plant closures and headcount reductions. Through these cost saving measures and proceeds from asset sales, the Company has been able to maintain focus on its transformation into an MX company, with flexibility to invest into the growing business, as well as continuing to be advantageous in its efforts to return capital to shareholders and reduce debt. The Company is also dependent on its production personnel to print the Company's products in a cost-effective and efficient manner that allows the Company to obtain new clients and to drive sales from existing clients. The Company is unable to predict the full future impact these challenges will have on its business, financial condition, cash flows and results of operations, but expects them to continue into 2024.

Results of Operations for the Year Ended December 31, 2023, Compared to the Year Ended December 31, 2022

Summary Results

The Company's operating income, operating margin, net earnings (loss) (computed using a 25% normalized tax rate for all items subject to tax) and diluted earnings (loss) per share for the year ended December 31, 2023, changed from the year ended December 31, 2022, as follows (dollars in millions, except per share data):

	Operating Income	Operating Margin	Net Earnings (Loss)	Diluted Earnings (Loss) Per Share
For the year ended December 31, 2022	\$ 53.5	1.7 %	\$ 9.3	\$ 0.18
Restructuring, impairment and transaction-related charges ⁽¹⁾	(32.7)	(1.2)%	(24.5)	(0.56)
Other operating income elements ⁽²⁾	4.9	0.4 %	3.7	0.20
Operating Income	25.7	0.9 %	(11.5)	(0.18)
Interest expense ⁽³⁾	N/A	N/A	(16.2)	(0.40)
Net pension income ⁽⁴⁾	N/A	N/A	(8.2)	(0.15)
Income taxes ⁽⁵⁾	N/A	N/A	(19.5)	(0.41)
For the year ended December 31, 2023	\$ 25.7	0.9 %	\$ (55.4)	\$ (1.14)

- (1) Restructuring, impairment and transaction-related charges increased \$32.7 million (\$24.5 million, net of tax), to \$77.5 million during the year ended December 31, 2023, and included the following:
- a. A \$27.8 million increase in employee termination charges from \$7.3 million during the year ended December 31, 2022, to \$35.1 million during the year ended December 31, 2023;
 - b. A \$23.0 million increase in impairment charges from \$2.2 million during the year ended December 31, 2022, to \$25.2 million during the year ended December 31, 2023;
 - c. A \$2.2 million increase in transaction-related charges from \$2.0 million during the year ended December 31, 2022, to \$4.2 million during the year ended December 31, 2023;
 - d. A \$0.3 million increase in integration-related charges from \$0.7 million during the year ended December 31, 2022, to \$1.0 million during the year ended December 31, 2023; and
 - e. A \$20.6 million decrease in various other restructuring charges from \$32.6 million during the year ended December 31, 2022, to \$12.0 million during the year ended December 31, 2023.

The Company expects to incur additional restructuring and integration costs in future reporting periods in connection with eliminating excess manufacturing capacity and properly aligning its cost structure in conjunction with the Company's acquisitions and strategic investments, and other cost reduction programs.

- (2) Other operating income elements increased \$4.9 million (\$3.7 million, net of tax) primarily due to the following: (1) the impact from print product pricing; (2) a \$14.1 million decrease in selling, general and administrative expenses; (3) a \$12.5 million decrease in depreciation and amortization expense; (4) impacts from improved manufacturing productivity; and (5) savings from other cost reduction initiatives, partially offset by print volume decreases.
- (3) Interest expense increased \$21.6 million (\$16.2 million, net of tax) during the year ended December 31, 2023, to \$70.0 million. This change was due to higher weighted average interest rates on borrowings and a \$6.1 million increase in interest expense related to the interest rate swaps, partially offset by lower average debt levels during the year ended December 31, 2023, as compared to the year ended December 31, 2022.

- (4) Net pension income decreased \$10.9 million (\$8.2 million, net of tax) during the year ended December 31, 2023, to \$1.7 million. This was due to the following: (1) a \$7.9 million increase from interest cost on pension plan liabilities; (2) a \$2.4 million decrease from the expected long-term return on pension plan assets; and (3) amortization of actuarial loss of \$0.6 million in 2023 that did not occur in 2022.
- (5) The \$19.5 million increase in income tax expense as calculated in the following table is primarily due to the following: (1) a \$10.7 million increase in the Company's liability for audit assessments and unrecognized tax benefits; (2) a \$5.1 million increase from the loss on the sale of its Argentina print business in 2022; and (3) a \$1.3 million increase from valuation allowance reserves.

	Year Ended December 31,		\$ Change
	2023	2022	
	(dollars in millions)		
Earnings (loss) before income taxes	\$ (42.6)	\$ 17.7	\$ (60.3)
Normalized tax rate	25.0 %	25.0 %	
Income tax expense (benefit) at normalized tax rate	(10.7)	4.4	(15.1)
Less: Income tax expense from the consolidated statements of operations	12.8	8.4	4.4
Impact of income taxes	\$ 23.5	\$ 4.0	\$ 19.5

Operating Results

The following table sets forth certain information from the Company's consolidated statements of operations on an absolute dollar basis and as a relative percentage of total net sales for each noted period, together with the relative percentage change in such information between the periods set forth below:

	Year Ended December 31,					
	2023	% of Net Sales	2022	% of Net Sales	\$ Change	% Change
	(dollars in millions)					
Net sales:						
Products	\$ 2,334.1	78.9 %	\$ 2,528.3	78.6 %	\$ (194.2)	(7.7)%
Services	623.6	21.1 %	688.7	21.4 %	(65.1)	(9.5)%
Total net sales	2,957.7	100.0 %	3,217.0	100.0 %	(259.3)	(8.1)%
Cost of sales:						
Products	1,984.7	67.1 %	2,156.2	67.0 %	(171.5)	(8.0)%
Services	396.5	13.4 %	462.6	14.4 %	(66.1)	(14.3)%
Total cost of sales	2,381.2	80.5 %	2,618.8	81.4 %	(237.6)	(9.1)%
Selling, general & administrative expenses	344.5	11.6 %	358.6	11.1 %	(14.1)	(3.9)%
Depreciation and amortization	128.8	4.4 %	141.3	4.4 %	(12.5)	(8.8)%
Restructuring, impairment and transaction-related charges	77.5	2.6 %	44.8	1.4 %	32.7	73.0 %
Total operating expenses	2,932.0	99.1 %	3,163.5	98.3 %	(231.5)	(7.3)%
Operating income	\$ 25.7	0.9 %	\$ 53.5	1.7 %	\$ (27.8)	(52.0)%

Net Sales

Product sales decreased \$194.2 million, or 7.7%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following: (1) a \$117.3 million decrease from paper sales; (2) a \$65.4 million decrease in sales in the Company's print product lines, mainly due to decreased print volumes; and (3) a \$26.4 million decrease in net sales (which includes \$8.3 million in paper sales) due to the divestiture of the Company's print operations in Argentina, partially offset by \$14.9 million in favorable foreign exchange impacts.

Service sales, which primarily consist of logistics, distribution, marketing services, imaging and medical services, decreased \$65.1 million, or 9.5%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$59.2 million decrease in logistics sales from lower print volumes and a \$5.9 million decrease in marketing services and medical services.

Cost of Sales

Cost of product sales decreased \$171.5 million, or 8.0%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following: (1) a decrease in paper costs; (2) the impact from lower print volumes; (3) the impact from the divestiture of the Company's print operations in Argentina; (4) impacts from improved manufacturing productivity; and (5) savings from other cost reduction initiatives.

Cost of service sales decreased \$66.1 million, or 14.3%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to decreased freight volumes and other cost reduction initiatives.

Selling, General and Administrative Expenses

Selling, general and administrative expenses decreased \$14.1 million, or 3.9%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following: (1) a \$6.6 million decrease in employee-related expenses; (2) \$6.5 million in favorable foreign exchange impacts; and (3) \$2.2 million in lower professional fees. Selling, general and administrative expenses as a percentage of net sales increased from 11.1% for the year ended December 31, 2022, to 11.6% for the year ended December 31, 2023.

Depreciation and Amortization

Depreciation and amortization decreased \$12.5 million, or 8.8%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, due to a \$9.5 million decrease in depreciation expense, primarily from property, plant and equipment becoming fully depreciated over the past year, a decrease in purchases of property, plant and equipment and a \$3.0 million decrease in amortization expense.

Restructuring, Impairment and Transaction-Related Charges

Restructuring, impairment and transaction-related charges increased \$32.7 million, or 73.0%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following:

	Year Ended December 31,		
	2023	2022	\$ Change
	(dollars in millions)		
Employee termination charges	\$ 35.1	\$ 7.3	\$ 27.8
Impairment charges ^(a)	25.2	2.2	23.0
Transaction-related charges	4.2	2.0	2.2
Integration costs	1.0	0.7	0.3
Other restructuring charges			
Vacant facility carrying costs and lease exit charges	16.6	5.4	11.2
Equipment and infrastructure removal costs	0.9	0.7	0.2
Gain on the sale of a facility ^(b)	(9.2)	—	(9.2)
Other restructuring activities ^(c)	3.7	26.5	(22.8)
Other restructuring charges	12.0	32.6	(20.6)
Total restructuring, impairment and transaction-related charges	\$ 77.5	\$ 44.8	\$ 32.7

^(a) Includes \$25.2 million and \$2.2 million of impairment charges during the years ended December 31, 2023 and 2022, respectively, which consisted of the following: (1) \$17.5 million and \$2.2 million, respectively, for machinery and equipment no longer being utilized in production as a result of facility consolidations, as well as other capacity reduction activities; (2) \$4.1 million for software licensing and related implementation costs from a terminated project in 2023; and (3) \$3.6 million for right-of-use assets in 2023.

^(b) Includes a \$9.2 million gain on the sale of the Merced, California facility during the year ended December 31, 2023.

^(c) Includes a \$23.1 million loss on the sale of its Argentina print business and \$1.8 million in charges from foreign currency losses as a result of the economy in Argentina being classified as highly inflationary during the year ended December 31, 2022. The Company considered the economy in Argentina to be highly inflationary since June 30, 2018.

EBITDA and EBITDA Margin—Consolidated

EBITDA is defined as net earnings (loss), excluding (1) interest expense, (2) income tax expense and (3) depreciation and amortization. EBITDA margin represents EBITDA as a percentage of net sales. EBITDA and EBITDA margin are presented to provide additional information regarding Quad's performance. Both are important measures by which Quad gauges the profitability and assesses the performance of its business. EBITDA and EBITDA margin are non-GAAP financial measures and should not be considered alternatives to net earnings (loss) as a measure of operating performance, or to cash flows provided by operating activities as a measure of liquidity. Quad's calculation of EBITDA and EBITDA margin may be different from the calculations used by other companies, and therefore, comparability may be limited.

EBITDA and EBITDA margin for the year ended December 31, 2023, compared to the year ended December 31, 2022, were as follows:

	Year Ended December 31,			
	2023	% of Net Sales	2022	% of Net Sales
	(dollars in millions)			
EBITDA and EBITDA margin (non-GAAP)	\$ 156.2	5.3 %	\$ 207.4	6.4 %

EBITDA decreased \$51.2 million for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to \$32.7 million of increased restructuring, impairment and transaction-related charges and the impact from lower print and logistics volumes, partially offset by the following: (1) an increase in print product pricing; (2) impacts from improved manufacturing productivity; and (3) savings from other cost reduction initiatives.

A reconciliation of EBITDA to net earnings (loss) for the years ended December 31, 2023 and 2022, was as follows:

	Year Ended December 31,	
	2023	2022
	(dollars in millions)	
Net earnings (loss) ⁽¹⁾	\$ (55.4)	\$ 9.3
Interest expense	70.0	48.4
Income tax expense	12.8	8.4
Depreciation and amortization	128.8	141.3
EBITDA (non-GAAP)	<u>\$ 156.2</u>	<u>\$ 207.4</u>

⁽¹⁾ Net earnings (loss) included the following:

- a. Restructuring, impairment and transaction-related charges of \$77.5 million and \$44.8 million for the years ended December 31, 2023 and 2022, respectively.

United States Print and Related Services

The following table summarizes net sales, operating income, operating margin and certain items impacting comparability within the United States Print and Related Services segment:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Net sales:				
Products	\$ 1,949.7	\$ 2,126.6	\$ (176.9)	(8.3)%
Services	604.6	668.1	(63.5)	(9.5)%
Operating income (including restructuring, impairment and transaction-related charges)	56.6	108.3	(51.7)	(47.7)%
Operating margin	2.2 %	3.9 %	N/A	N/A
Restructuring, impairment and transaction-related charges	\$ 66.3	\$ 12.1	\$ 54.2	nm

Net Sales

Product sales for the United States Print and Related Services segment decreased \$176.9 million, or 8.3%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to an \$89.3 million decrease from paper sales and an \$87.6 million decrease in sales in the Company's print product lines, primarily due to decreased volumes.

Service sales for the United States Print and Related Services segment decreased \$63.5 million, or 9.5%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$56.4 million decrease in logistics sales from lower print volumes and a \$7.1 million decrease in marketing services and medical services.

Operating Income

Operating income for the United States Print and Related Services segment decreased \$51.7 million, or 47.7%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$54.2 million increase in restructuring, impairment and transaction-related charges and the impact from decreased print volumes, partially offset by the following: (1) the impact from an increase in print product pricing; (2) a \$11.0 million decrease in depreciation and amortization expense; (3) impacts from improved manufacturing productivity; and (4) savings from other cost reduction initiatives.

The operating margin for the United States Print and Related Services segment decreased to 2.2% for the year ended December 31, 2023, from 3.9% for the year ended December 31, 2022, primarily due to the reasons provided above.

Restructuring, Impairment and Transaction-Related Charges

Restructuring, impairment and transaction-related charges for the United States Print and Related Services segment increased \$54.2 million for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following:

	Year Ended December 31,		
	2023	2022	\$ Change
	(dollars in millions)		
Employee termination charges	\$ 34.3	\$ 4.1	\$ 30.2
Impairment charges ^(a)	23.2	1.1	22.1
Other restructuring charges			
Vacant facility carrying costs and lease exit charges	16.6	5.4	11.2
Equipment and infrastructure removal costs	0.9	0.7	0.2
Gain on the sale of a facility ^(b)	(9.2)	—	(9.2)
Other restructuring activities	0.5	0.8	(0.3)
Other restructuring charges	8.8	6.9	1.9
Total restructuring, impairment and transaction-related charges	\$ 66.3	\$ 12.1	\$ 54.2

^(a) Includes \$23.2 million and \$1.1 million of impairment charges during the years ended December 31, 2023 and 2022, respectively, which consisted of the following: (1) \$15.5 million and \$1.1 million, respectively, for machinery and equipment no longer being utilized in production as a result of facility consolidations, as well as other capacity reduction; (2) \$4.1 million for software licensing and related implementation costs from a terminated project in 2023; and (3) \$3.6 million for right-of-use assets in 2023.

^(b) Includes a \$9.2 million gain on the sale of the Merced, California facility during the year ended December 31, 2023.

International

The following table summarizes net sales, operating income (loss), operating margin, and certain items impacting comparability within the International segment:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Net sales:				
Products	\$ 384.4	\$ 401.7	\$ (17.3)	(4.3)%
Services	19.0	20.6	(1.6)	(7.8)%
Operating income (loss) (including restructuring, impairment and transaction-related charges)	18.3	(4.5)	22.8	nm
Operating margin	4.5 %	(1.1)%	N/A	N/A
Restructuring, impairment and transaction-related charges	\$ 9.6	\$ 30.7	\$ (21.1)	(68.7)%

Net Sales

Product sales for the International segment decreased \$17.3 million, or 4.3%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$28.0 million decrease in paper sales and a \$26.4 million decrease in net sales (which includes \$8.3 million of paper sales) due to the divestiture of the Company's print operations in Argentina, partially offset by a \$22.2 million increase in print pricing and volume, primarily in Mexico, Peru and Colombia, and \$14.9 million in favorable foreign exchange impacts, primarily in Mexico.

Service sales for the International segment decreased \$1.6 million, or 7.8%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$2.8 million decrease in logistics sales, partially offset by a \$1.2 million increase in marketing services sales.

Operating Income (Loss)

Operating income (loss) for the International segment increased \$22.8 million for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$21.1 million decrease in restructuring, impairment and transaction-related charges and a \$1.3 million decrease in depreciation and amortization.

Restructuring, Impairment and Transaction-Related Charges

Restructuring, impairment and transaction-related charges for the International segment decreased \$21.1 million, or 68.7%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following:

	Year Ended December 31,		
	2023	2022	\$ Change
	(dollars in millions)		
Employee termination charges	\$ 0.5	\$ 3.2	\$ (2.7)
Impairment charges ^(a)	2.0	1.1	0.9
Transaction-related charges	2.7	0.1	2.6
Integration costs	1.0	0.7	0.3
Other restructuring charges ^(b)	3.4	25.6	(22.2)
Total restructuring, impairment and transaction-related charges	\$ 9.6	\$ 30.7	\$ (21.1)

^(a) Includes \$2.0 million and \$1.1 million of impairment charges for machinery and equipment no longer being utilized in production as a result of facility consolidations, as well as other capacity reduction activities, during the years ended December 31, 2023 and 2022, respectively.

^(b) Includes a \$23.1 million loss on the sale of its Argentina print business and \$1.8 million in charges from foreign currency losses as result of the economy in Argentina being classified as highly inflationary during the year ended December 31, 2022.

Corporate

The following table summarizes unallocated operating expenses presented as Corporate:

	Year Ended December 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Operating expenses (including restructuring, impairment and transaction-related charges)	\$ 49.2	\$ 50.3	\$ (1.1)	(2.2)%
Restructuring, impairment and transaction-related charges	1.6	2.0	(0.4)	(20.0)%

Operating Expenses

Corporate operating expenses decreased \$1.1 million, or 2.2%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to lower employee-related costs and a \$0.4 million decrease in restructuring, impairment and transaction-related charges.

Restructuring, Impairment and Transaction-Related Charges

Corporate restructuring, impairment and transaction-related charges decreased \$0.4 million, or 20.0%, for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to the following:

	Year Ended December 31,		
	2023	2022	\$ Change
	(dollars in millions)		
Employee termination charges	\$ 0.3	\$ —	\$ 0.3
Transaction-related charges	1.5	1.9	(0.4)
Other restructuring charges (income)	(0.2)	0.1	(0.3)
Total restructuring, impairment and transaction-related charges	\$ 1.6	\$ 2.0	\$ (0.4)

Liquidity and Capital Resources

The Company utilizes cash flows from operating activities and borrowings under its credit facilities to satisfy its liquidity and capital requirements. The Company had total liquidity of \$454.3 million as of December 31, 2023, which consisted of up to \$401.4 million of unused capacity under its revolving credit arrangement, which was net of \$31.1 million of issued letters of credit, and cash and cash equivalents of \$52.9 million. Total liquidity is reduced to \$406.7 million under the Company's most restrictive debt covenants, and consists of \$353.8 million available under its revolving credit arrangement and \$52.9 million in cash and cash equivalents. There were no borrowings under the \$432.5 million revolving credit facility as of December 31, 2023. Due to a portion of the revolving credit facility maturing on January 31, 2024, the total capacity under the revolving credit facility was reduced to \$342.5 million as of this date.

The Company believes its expected future cash flows from operating activities and its current liquidity and capital resources, are sufficient to fund ongoing operating requirements and service debt and pension requirements for both the next 12 months and beyond.

Net Cash Provided by Operating Activities

Year Ended December 31, 2023, Compared to Year Ended December 31, 2022

Net cash provided by operating activities was \$147.6 million for the year ended December 31, 2023, compared to \$154.6 million for the year ended December 31, 2022, resulting in a \$7.0 million decrease in cash provided by operating activities. The decrease was primarily due to a \$92.6 million decrease in cash from earnings, offset by a \$85.6 million increase in cash flows provided by changes in operating assets and liabilities.

Net Cash Used in Investing Activities

Year Ended December 31, 2023, Compared to Year Ended December 31, 2022

Net cash used in investing activities was \$46.4 million for the year ended December 31, 2023, compared to \$60.5 million for the year ended December 31, 2022, resulting in a \$14.1 million decrease in cash used in investing activities. The decrease was primarily due to the following: (1) a \$27.1 million increase in proceeds from the sale of property, plant and equipment; (2) a \$2.6 million decrease in cost investment in unconsolidated entities; and (3) a \$1.1 million decrease in cash used in acquisition of businesses. These decreases were partially offset by (1) a \$10.5 million increase in purchases of property, plant and equipment; (2) a \$5.6 million increase in cash used in other investing activities; and (3) a \$0.6 million increase in loan to an unconsolidated entity.

Net Cash Used in Financing Activities

Year Ended December 31, 2023, Compared to Year Ended December 31, 2022

Net cash used in financing activities was \$73.6 million for the year ended December 31, 2023, compared to \$248.7 million for the year ended December 31, 2022, resulting in a \$175.1 million decrease in cash used in financing activities. The decrease was primarily due to the following: (1) a \$175.6 million decrease in net payments of debt and lease obligations in 2023 compared to 2022; (2) a \$1.3 million decrease in payment of accrued dividends from vested equity awards; and (3) a \$0.8 million decrease in equity awards redeemed to pay employees' tax obligations. These decreases were partially offset by a \$2.6 million increase in purchases of treasury stock.

Free Cash Flow

Free Cash Flow is defined as net cash provided by operating activities less purchases of property, plant and equipment.

The Company's management assesses Free Cash Flow as a measure to quantify cash available for (1) strengthening the balance sheet (debt reduction), (2) strategic capital allocation and deployment through investments in the business (acquisitions and strategic investments) and (3) returning capital to the shareholders (dividends and share repurchases). The priorities for capital allocation and deployment will change as circumstances dictate for the business, and Free Cash Flow can be significantly impacted by the Company's restructuring activities and other unusual items.

Free Cash Flow is a non-GAAP financial measure and should not be considered an alternative to cash flows provided by operating activities as a measure of liquidity. Quad's calculation of Free Cash Flow may be different from similar calculations used by other companies, and therefore, comparability may be limited.

Free Cash Flow for the years ended December 31, 2023 and 2022, was as follows:

	Year Ended December 31,	
	2023	2022
	(dollars in millions)	
Net cash provided by operating activities	\$ 147.6	\$ 154.6
Less: purchases of property, plant and equipment	70.8	60.3
Free Cash Flow (non-GAAP)	<u>\$ 76.8</u>	<u>\$ 94.3</u>

Free Cash Flow decreased \$17.5 million for the year ended December 31, 2023, compared to the year ended December 31, 2022, primarily due to a \$10.5 million increase in capital expenditures and a \$7.0 million decrease in net cash provided by operating activities. See the "Net Cash Provided by Operating Activities" section above for further explanations of the change in operating cash flows.

Debt Leverage Ratio

The Debt Leverage Ratio is defined as total debt and finance lease obligations less cash and cash equivalents (Net Debt) divided by the trailing twelve months Adjusted EBITDA, comprised of the sum of the last twelve months of EBITDA (see the definition of EBITDA and the reconciliation of net earnings (loss) to EBITDA in the "Results of Operations" section above) and restructuring, impairment and transaction-related charges.

The Company uses the Debt Leverage Ratio as a metric to assess liquidity and the flexibility of its balance sheet. Consistent with other liquidity metrics, the Company monitors the Debt Leverage Ratio as a measure to determine the appropriate level of debt the Company believes is optimal to operate its business, and accordingly, to quantify debt capacity available for strengthening the balance sheet through debt and pension liability reduction, for strategic capital allocation and deployment through investments in the business, and for returning capital to the shareholders. The priorities for capital allocation and deployment will change as circumstances dictate for the business, and the Debt Leverage Ratio can be significantly impacted by the amount and timing of large expenditures requiring debt financing, as well as changes in profitability.

The Debt Leverage Ratio is a non-GAAP measure, and should not be considered an alternative to cash flows provided by operating activities as a measure of liquidity. Quad's calculation of the Debt Leverage Ratio may be different from similar calculations used by other companies and, therefore, comparability may be limited.

The Debt Leverage Ratio calculated below differs from the Total Leverage Ratio, the Total Net Leverage Ratio and Senior Secured Leverage Ratio included in the Company's debt covenant calculations (see "Covenants and Compliance" section below for further information on debt covenants). The Total Leverage Ratio included in the Company's debt covenants includes interest rate derivative liabilities, letters of credit and surety bonds as debt, and excludes non-cash stock-based compensation expense from EBITDA. The Total Net Leverage Ratio includes and excludes the same adjustments as the Total Leverage Ratio, in addition to netting domestic unrestricted cash with debt. Similarly, the Senior Secured Leverage Ratio includes and excludes the same adjustments as the Total Leverage Ratio, in addition to the exclusion of the outstanding balance of the surety bonds from debt and netting domestic unrestricted cash with debt.

The Debt Leverage Ratio as of December 31, 2023 and 2022, was as follows:

	December 31, 2023	December 31, 2022
	(dollars in millions)	
Total debt and finance lease obligations on the consolidated balance sheets	\$ 522.7	\$ 570.2
Less: Cash and cash equivalents	52.9	25.2
Net Debt (non-GAAP)	\$ 469.8	\$ 545.0
Divided by: Adjusted EBITDA for the year ended (non-GAAP)	\$ 233.7	\$ 252.2
Debt Leverage Ratio (non-GAAP)	<u>2.01 x</u>	<u>2.16 x</u>

The calculation of Adjusted EBITDA for the years ended December 31, 2023 and 2022, was as follows:

	Year Ended December 31,	
	2023	2022
	(dollars in millions)	
Net earnings (loss)	\$ (55.4)	\$ 9.3
Interest expense	70.0	48.4
Income tax expense	12.8	8.4
Depreciation and amortization	128.8	141.3
EBITDA (non-GAAP)	\$ 156.2	\$ 207.4
Restructuring, impairment and transaction-related charges	77.5	44.8
Adjusted EBITDA (non-GAAP)	<u>\$ 233.7</u>	<u>\$ 252.2</u>

The Debt Leverage Ratio, at December 31, 2023, decreased 0.15x to 2.01x compared to December 31, 2022, primarily due to a \$75.2 million decrease in net debt, partially offset by an \$18.5 million decrease in Adjusted EBITDA. The Debt Leverage Ratio, at December 31, 2023, is within management's desired target Debt Leverage Ratio range of 1.75x to 2.25x; however, the Company will operate at times above the Debt Leverage Ratio target range depending on the timing of compelling strategic investment opportunities, as well as seasonal working capital needs.

Description of Significant Outstanding Debt Obligations as of December 31, 2023

As of December 31, 2023, the Company utilized a combination of debt instruments to fund cash requirements, including the following:

- Senior Secured Credit Facility:
 - \$432.5 million revolving credit facility (no outstanding balance as of December 31, 2023); and
 - \$825.0 million Term Loan A (\$511.1 million outstanding as of December 31, 2023);
- Master Note and Security Agreement (\$2.5 million outstanding as of December 31, 2023).

Senior Secured Credit Facility

On April 28, 2014, the Company entered into its Senior Secured Credit Facility, which included a revolving credit facility, Term Loan A and Term Loan B (Term Loan B was retired in July 2019). The Company completed the fifth amendment to the Senior Secured Credit Facility on November 2, 2021. The Senior Secured Credit Facility was amended to (a) reduce the aggregate amount of the existing revolving credit facility from \$500.0 million to \$432.5 million, and extend the maturity of a portion of the revolving credit facility such that \$90.0 million under the revolving credit facility is due on the existing maturity date of January 31, 2024 (the “Existing Maturity Date”) and \$342.5 million under the revolving credit facility is due on November 2, 2026 (the “Extended Maturity Date”); (b) extend the maturity of a portion of the existing term loan facility such that \$91.5 million (of which a principal payment of \$87.7 million was due upon maturity on January 31, 2024) of such term loan facility is due on the Existing Maturity Date and \$483.9 million is due on the Extended Maturity Date; (c) make certain adjustments to pricing, including an increase of 0.50% to the interest rate margin applicable to the loans maturing on the Extended Maturity Date; (d) modify certain financial and operational covenants; and (e) modify the interest rate provisions relating to the phase-out of London Interbank Offered Rate (“LIBOR”) as a reference rate.

The Company completed the sixth amendment to the Senior Secured Credit Facility on March 25, 2022, which expanded the number of currencies available for letters of credit. The Company completed the seventh amendment to the Senior Secured Credit Facility on January 24, 2023, which transitioned the Company’s reference rate from LIBOR to SOFR effective February 1, 2023. The Company elected the practical expedient outlined in Accounting Standards Update (“ASU”) 2020-04 and ASU 2021-01 which allowed the Company to prospectively adjust the effective interest rate after the reference rate change. The transition from LIBOR to SOFR did not have a material impact on the condensed consolidated financial statements.

The Company completed the eighth amendment to the Senior Secured Credit Facility on January 4, 2024, which added an additional \$25.0 million principal value to the Term Loan A (under the Extended Maturity Date). On January 31, 2024, the Company used liquidity available under its revolving credit facility and available cash on hand to fund the repayment on maturity of \$87.7 million aggregate principal amount, outstanding at the time, of its Term Loan A.

Borrowings under the revolving credit facility and Term Loan A made under the Senior Secured Credit Facility bear interest at 2.75% in excess of reserve adjusted SOFR, or 1.75% in excess of an alternate base rate with a SOFR floor of 0.75% for the extended tranche and bear interest at 2.50% in excess of reserve adjusted SOFR, or 1.50% in excess of an alternate base rate with a SOFR floor of 0.75% for the non-extending tranche.

At December 31, 2023, the Company had no outstanding borrowings on the revolving credit facility, and had \$31.1 million of issued letters of credit, leaving up to \$401.4 million available for future borrowings. The amount available for future borrowings is reduced to \$353.8 million under the Company’s most restrictive debt covenants. The Senior Secured Credit Facility is secured by substantially all of the unencumbered assets of the Company. The Senior Secured Credit Facility also requires the Company to provide additional collateral to the lenders in certain limited circumstances.

Master Note and Security Agreement

On September 1, 1995, and as last amended on November 24, 2014, the Company entered into its Master Note and Security Agreement. As of December 31, 2023, the borrowings outstanding under the Master Note and Security Agreement were \$2.5 million. The senior notes under the Master Note and Security Agreement had a weighted average interest rate of 8.09% at December 31, 2023, which is fixed to maturity, with interest payable semiannually. Principal payments commenced September 1997 and extend through 2026 in various tranches. The notes are collateralized by certain United States press equipment under the terms of the Master Note and Security Agreement.

Senior Unsecured Notes

The Company issued \$300.0 million aggregate principal amount of its unsecured 7.0% senior notes due May 1, 2022 (the “Senior Unsecured Notes”) on April 28, 2014. During the first quarter of 2022, the Company repurchased \$2.4 million of its outstanding Senior Unsecured Notes in the open market. All repurchased Senior Unsecured Notes were canceled. The Company used cash flows from operating activities and borrowings under its revolving credit facility to fund the repurchases. These repurchases were completed primarily to reduce interest expense.

On May 2, 2022, the Company used liquidity available under its revolving credit facility and available cash on hand to fund the repayment on maturity of all \$209.1 million aggregate principal amount, outstanding at the time, of its Senior Unsecured Notes.

Covenants and Compliance

The Company’s various lending arrangements include certain financial covenants (all financial terms, numbers and ratios are as defined in the Company’s debt agreements). Among these covenants, the Company was required to maintain the following as of December 31, 2023:

- *Total Leverage Ratio.* On a rolling twelve-month basis, the Total Leverage Ratio, defined as consolidated total indebtedness to consolidated EBITDA, shall not exceed 3.75 to 1.00 (for the twelve months ended December 31, 2023, the Company’s Total Leverage Ratio was 2.18 to 1.00).
- Liquidity, defined as unrestricted cash and permitted investments of the Company and its subsidiaries (subject to certain conditions) plus the aggregate amount of the unused revolving credit facility commitments, shall not be less than \$181.6 million at any time during the period commencing December 15, 2023 and ending when all obligations owed under the Senior Secured Credit Facility to lenders that are not extending lenders are paid in full.
- If there is any amount outstanding on the Revolving Credit Facility or Term Loan A, or if any lender has any revolving credit exposure or Term Loan A credit exposure, the Company is required to maintain the following:
 - *Senior Secured Leverage Ratio.* On a rolling four-quarter basis, the Senior Secured Leverage Ratio, defined as the ratio of consolidated senior secured net indebtedness to consolidated EBITDA, shall not exceed (a) 3.50 to 1.00 for any fiscal quarter ending prior to December 31, 2023, and (b) 3.25 to 1.00 for any fiscal quarter ending on or after December 31, 2023 (other than, in the case of this clause (b), any fiscal quarter ending September 30 of any year, each of which shall be subject to a maximum Senior Secured Leverage Ratio not to exceed 3.50 to 1.00) (for the twelve months ended December 31, 2023, the Company’s Senior Secured Leverage Ratio was 1.99 to 1.00).
 - *Interest Coverage Ratio.* On a rolling twelve-month basis, the Interest Coverage Ratio, defined as consolidated EBITDA to cash consolidated interest expense, shall not be less than 3.00 to 1.00 (for the twelve months ended December 31, 2023, the Company’s Interest Coverage Ratio was 4.10 to 1.00).

The Company was in compliance with all financial covenants in its debt agreements as of December 31, 2023. While the Company currently expects to be in compliance in future periods with all of the financial covenants, there can be no assurance that these covenants will continue to be met. The Company's failure to maintain compliance with the covenants could prevent the Company from borrowing additional amounts and could result in a default under any of the debt agreements. Such default could cause the outstanding indebtedness to become immediately due and payable, by virtue of cross-acceleration or cross-default provisions.

In addition to those covenants, the Senior Secured Credit Facility also includes certain limitations on acquisitions, indebtedness, liens, dividends and repurchases of capital stock.

- If the Company's Total Leverage Ratio is greater than 2.75 to 1.00, the Company is prohibited from making greater than \$60.0 million of dividend payments, capital stock repurchases and certain other payments, over the course of the agreement. If the Company's Total Leverage Ratio is above 2.50 to 1.00 but below 2.75 to 1.00, the Company is prohibited from making greater than \$100.0 million of dividend payments, capital stock repurchases and certain other payments, over the course of the agreement. If the Total Leverage Ratio is less than 2.50 to 1.00, there are no such restrictions. As the Company's Total Leverage Ratio as of December 31, 2023, was 2.18 to 1.00, the limitations described above are not applicable at this time.
- If the Company's Senior Secured Leverage Ratio is greater than 3.00 to 1.00 or the Company's Total Net Leverage Ratio which, on a rolling twelve-month basis, is defined as consolidated net indebtedness to consolidated EBITDA, is greater than 3.50 to 1.00, the Company is prohibited from voluntarily prepaying any unsecured or subordinated indebtedness, with certain exceptions (including any mandatory prepayments on the Senior Unsecured Notes or any other unsecured or subordinated debt). If the Senior Secured Leverage Ratio is less than 3.00 to 1.00 and the Total Net Leverage Ratio is less than 3.50 to 1.00, there are no such restrictions. The limitations described above are currently not applicable, as the Company's Senior Secured Leverage Ratio was 1.99 to 1.00 and Total Net Leverage Ratio was 1.99 to 1.00, as of December 31, 2023.

Net Pension Obligations

The net underfunded pension and MEPPs obligations decreased by \$1.2 million during the year ended December 31, 2023, from \$64.6 million at December 31, 2022, to \$63.4 million at December 31, 2023. This decrease was primarily due to a \$4.3 million decrease in MEPPs obligations, primarily due to payments totaling \$6.2 million made to the MEPPS during the year ended December 31, 2023. The underfunded defined benefit plan obligations increased by \$3.1 million during the year ended December 31, 2023, due to an overall decrease of \$9.7 million in pension plan assets from \$36.6 million in benefits paid, offset by an actual gain on pension plan assets of \$26.2 million or 10.67% during the year ended December 31, 2023, which was above the expected return on plan assets assumption of 6.75% and employer contributions of \$0.7 million. The decrease in plan assets was partially offset by a decrease in overall pension obligations of \$6.6 million from \$36.6 million in benefits paid, offset by a \$17.6 million increase in interest cost due to a 35 basis point decrease in the pension discount rate from 5.46% at December 31, 2022, to 5.11% at December 31, 2023 and \$12.4 million from an actuarial loss.

The Company continues to focus on reducing pension obligations through cash contributions to the plans, lump-sum settlements and plan design changes.

Share Repurchase Program

On July 30, 2018, the Company's Board of Directors authorized a share repurchase program of up to \$100.0 million of the Company's outstanding class A common stock. Under the authorization, share repurchases may be made at the Company's discretion, from time to time, in the open market and/or in privately negotiated transactions as permitted by federal securities laws and other legal requirements. The timing, manner, price and amount of any repurchase will depend on economic and market conditions, share price, trading volume, applicable legal requirements and other factors. The program may be suspended or discontinued at any time. The following repurchases occurred during the years ended December 31, 2023 and 2022:

	December 31, 2023	December 31, 2022
Shares of Class A common stock	2,852,501	3,093,662
Weighted average price per share	\$ 4.40	\$ 3.21
Total repurchases during the period (in millions) ⁽¹⁾	\$ 12.6	\$ 10.0

⁽¹⁾ Excluding commissions, total repurchases were \$12.6 million and \$9.9 million during the years ended December 31, 2023 and 2022.

As of December 31, 2023, there were \$77.5 million of authorized repurchases remaining under the program.

Risk Management

For a discussion of the Company's exposure to market risks and management of those market risks, see Item 7A, "Quantitative and Qualitative Disclosures About Market Risk," of this Annual Report on Form 10-K.

Critical Accounting Policies and Estimates

The Company's consolidated financial statements are prepared in accordance with GAAP. The Company's most critical accounting policies are those that are most important to the portrayal of its financial condition and results of operations, and which require the Company to make its most difficult and subjective estimates. Management is required to make judgments and estimates that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the statements, and the reported amounts of revenues and expenses during the reporting period. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances. The Company's management believes that such judgments and estimates are made with consistent and appropriate methods based on information available at the time, and that any reasonable deviation from those judgments and estimates would not have a material impact on the Company's consolidated financial position or results of operations. Actual results may differ from these estimates under different assumptions or conditions. To the extent that the estimates used differ from actual results, adjustments to the consolidated statements of operations and corresponding consolidated balance sheets would be necessary. These adjustments would be made in future statements.

The Company has identified the following as its critical accounting policies and estimates.

Revenue Recognition

Performance Obligations

At contract inception, the Company assesses the products and services promised in its contracts with customers and identifies performance obligations for each promise to transfer to the customer a product or service that is distinct. To identify the performance obligations, the Company considers the goods or services promised in the contract regardless of whether they are explicitly stated or are implied by customary business practices. The Company determined that the following distinct products and services represent separate performance obligations:

- Pre-Press Services
- Print
- Other Services

For Pre-Press and Other Services, the Company recognizes revenue at point-in-time upon completion of the performed service and acceptance by the customer. The Company considers transfer of control to occur once the service is performed as the Company has right to payment and the customer has legal title and risk and reward of ownership.

The Company recognizes its Print revenues upon transfer of title and the passage of risk of loss, which is point-in-time upon shipment to the customer, and when there is a reasonable assurance as to collectability. Revenues related to the Company's logistics operations, which includes the delivery of printed material, are included in the Print performance obligation and are also recognized at point-in-time as services are completed. Revenues related to the Company's imaging operations, which include digital content management, photography, color services and page production, are recognized in accordance with the terms of the contract, typically upon completion of the performed service and acceptance by the customer. Under agreements with certain customers, products may be stored by the Company for future delivery and revenue is recognized upon shipment to the customer. In these situations, the Company may receive warehouse management fees for the services it provides.

Certain revenues earned by the Company require judgment to determine if revenue should be recorded gross as principal or net of related costs as an agent. Billings for third-party shipping and handling costs, primarily in the Company's logistics operations, and out-of-pocket expenses are recorded gross in net sales and cost of sales in the consolidated statements of operations in Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K. Many of the Company's operations process materials, primarily paper, that may be supplied directly by customers or may be purchased by the Company and sold to customers. No revenue is recognized for customer-supplied paper. Revenues for the Company-supplied paper are recognized on a gross basis. In some instances, the Company will deliver print work for a customer and bill the customer for postage. In these cases, the Company is acting as an agent and billings are recorded on a net basis in net sales.

Significant Payment Terms

Payment terms and conditions for contracts with customers vary. The Company typically offers standard terms of net 30 days. It is not the Company's standard business practice to offer extended payment terms longer than one year. The Company may offer cash discounts or prepayment and extended terms depending on certain facts and circumstances. As such, when the timing of the Company's delivery of products and services differs from the timing of payment, the Company will record either a contract asset or a contract liability.

Variable Consideration

When evaluating the transaction price, the Company analyzes on a contract by contract basis all applicable variable considerations and non-cash consideration and also performs a constraint analysis. The nature of the Company's contracts give rise to variable consideration, including, volume rebates, credits, discounts, and other similar items that generally decrease the transaction price. These variable amounts generally are credited to the customer, based on achieving certain levels of sales activity, when contracts are signed, or making payments within specific terms.

Product returns are not significant because the products are customized; however, the Company accrues for the estimated amount of customer allowances at the time of sale based on historical experience and known trends.

When the transaction price requires allocation to multiple performance obligations, the Company uses the estimated stand-alone selling prices using the adjusted market assessment approach.

Impairment of Property, Plant and Equipment, Right-of-Use Assets and Finite-lived Intangible Assets

The Company performs impairment evaluations of its long-lived assets whenever business conditions, events or circumstances indicate that those assets may be impaired, including whether the estimated useful life of such long-lived assets may warrant revision or whether the remaining balance of an asset may not be recoverable. The Company's most significant long-lived assets are property, plant and equipment, right-of-use assets and customer relationship intangible assets recorded in conjunction with an acquisition. Assessing the impairment of long-lived assets requires the Company to make important estimates and assumptions, including, but not limited to, the expected future cash flows that the assets will generate, how the assets will be used based on the strategic direction of the Company, their remaining useful life and their residual value, if any. Considerable judgment is also applied in incorporating the potential impact of the current economic climate on customer demand and selling prices, the cost of production and the limited activity on secondary markets for the assets and on the cost of capital. When the estimated future undiscounted cash flows to be generated by the assets are less than the carrying value of the long-lived assets, the assets are written down to fair value and a charge is recorded to current operations. The Company uses internal discounted cash flow estimates, quoted market prices when available and independent appraisals, as appropriate, to determine fair value. This fair value determination was categorized as Level 3 in the fair value hierarchy (see Note 13, "Financial Instruments and Fair Value Measurements," to the consolidated financial statements in Part II, Item 8, "Financial Statements and Supplementary Data," of this Annual Report on Form 10-K for the definition of Level 3 inputs).

The Company classifies long-lived assets to be sold as held for sale in the period in which: (i) there is an approved plan to sell the asset and the Company is committed to that plan, (ii) the asset is available for immediate sale in its present condition, (iii) an active program to locate a buyer and other actions required to sell the asset have been initiated, (iv) the sale of the asset is probable, (v) the asset is being actively marketed for sale at a price that is reasonable in relation to its current fair value, and (vi) it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn. Assets held for sale are initially measured at the lower of the carrying value or the fair value less cost to sell. Losses resulting from this measurement are recognized in the period in which the held for sale criteria are met while gains are not recognized until the date of sale. Once designated as held for sale, the Company stops recording depreciation expense on the property, plant and equipment. The fair value less cost to sell of long-lived assets held for sale is assessed at each reporting period until it no longer meets this classification.

Based on the assessments completed during the years ended December 31, 2023, and 2022, the Company recognized property, plant and equipment and right-of-use assets impairment charges of \$21.1 million and \$2.2 million, respectively, primarily related to facility consolidations and other capacity reduction. There were no finite-lived intangible asset impairment charges recorded during the years ended December 31, 2023 and 2022.

The Company continues to monitor groups of assets to identify any new events or changes in circumstances that could indicate that their carrying values are not recoverable, particularly in light of potential declines in profitability that may result from the highly competitive industry landscape and continued uncertainty in the global economy. In the event that there are significant and unanticipated changes in circumstances, such as significant adverse changes in business climate, adverse actions by regulators, unanticipated competition, loss of key customers and/or changes in technology or markets, or that actual results differ from management's estimates, a provision for impairment could be required in a future period.

Workers' Compensation

The Company is self-insured for a significant portion of its expected workers' compensation program. Insurance is purchased for individual workers' compensation claims that exceed \$0.8 million. The Company establishes reserves for unresolved claims and for an estimate of incurred but not reported ("IBNR") claims. These reserves and estimates of IBNR claims are based upon an actuarial study, which is performed annually as of October 31st and is adjusted by the actuarially determined losses and actual claims payments for November and December. The Company also monitors actual claim developments, including incurrence or settlement of individual large claims during the interim periods between actuarial studies as another means of estimating the adequacy of the reserves. As of December 31, 2023, the Company has net reserves for workers' compensation of \$28.7 million, of which \$6.7 million was recorded in other current liabilities and \$31.0 million was recorded in other long-term liabilities in the consolidated balance sheets (see Note 8, "Other Current and Long-Term Liabilities"). These reserves are net of \$9.0 million recorded in other long-term assets in the consolidated balance sheets for claims covered by purchased insurance.

New Accounting Pronouncements

As of December 31, 2023, there have been no new accounting pronouncements requiring disclosure within the consolidated financial statements of this Annual Report on Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

The Company is exposed to a variety of market risks which may adversely impact the Company's results of operations and financial condition, including changes in interest and foreign currency exchange rates, changes in the economic environment that would impact credit positions and changes in the prices of certain commodities. The Company's management takes an active role in the risk management process and has developed policies and procedures that require specific administrative and business functions to assist in the identification, assessment and control of various risks. These risk management strategies may not fully insulate the Company from adverse impacts due to market risks.

Interest Rate Risk

The Company is exposed to interest rate risk on variable rate debt obligations and price risk on fixed rate debt and finance leases. The variable rate debt outstanding at December 31, 2023, was primarily comprised of \$511.1 million outstanding on the Term Loan A. As of December 31, 2023, there was no outstanding balance on the revolving credit facility. In order to reduce the variability of cash flows from interest payments related to a portion of Quad's variable-rate debt, the Company entered into a \$130.0 million interest rate swap in March 2019, and two \$75.0 million interest rate collars in February 2023, and has classified \$280.0 million of the Company's variable rate debt as fixed rate debt. Including the impact of the \$280.0 million interest rate hedges of variable rate to fixed rate debt, Quad had variable rate debt outstanding of \$229.9 million at a current weighted average interest rate of 7.5% and fixed rate debt and finance leases outstanding of \$292.8 million at a current weighted average interest rate of 6.3% as of December 31, 2023. A hypothetical 10% increase in the market interest rates impacting the Company's current weighted average interest rate on variable rate debt obligations would not have a material impact on the Company's interest expense. In addition, a hypothetical 10% change in market interest rates would change the fair value of fixed rate debt at December 31, 2023 by approximately \$0.1 million.

Foreign Currency Risk and Translation Exposure

The Company is exposed to the impact of foreign currency fluctuations in certain countries in which it operates. The exposure to foreign currency movements is limited in most countries because the operating revenues and expenses of its various subsidiaries and business units are substantially in the local currency of the country in which they operate. To the extent revenues and expenses are not in the applicable local currency, the Company may enter into foreign exchange forward contracts to hedge the currency risk.

Although operating in local currencies may limit the impact of currency rate fluctuations on the results of operations of the Company's non-United States subsidiaries and business units, rate fluctuations may impact the consolidated financial position as the assets and liabilities of its foreign operations are translated into U.S. dollars in preparing the Company's consolidated balance sheets. As of December 31, 2023, the Company's foreign subsidiaries had net current assets (defined as current assets less current liabilities) subject to foreign currency translation risk of \$88.7 million. The potential decrease in net current assets as of December 31, 2023, from a hypothetical 10% adverse change in quoted foreign currency exchange rates would be approximately \$8.9 million. This sensitivity analysis assumes a parallel shift in all major foreign currency exchange rates versus the U.S. dollar. Exchange rates rarely move in the same direction relative to the U.S. dollar due to positive and negative correlations of the various global currencies. This assumption may overstate or understate the impact of changing exchange rates on individual assets and liabilities denominated in a foreign currency.

The Company's hedging operations have historically not been material, and gains or losses from these operations have not been material to the Company's results of operations, financial position or cash flows. The Company does not use derivative financial instruments for trading or speculative purposes.

These international operations are subject to risks typical of international operations, including, but not limited to, differing economic conditions, changes in political climate, potential restrictions on the movement of funds, differing tax structures, and other regulations and restrictions. Accordingly, future results could be adversely impacted by changes in these or other factors.

Credit Risk

Credit risk is the possibility of loss from a client's failure to make payments according to contract terms. Prior to granting credit, each client is evaluated in an underwriting process, taking into consideration the prospective client's financial condition, past payment experience, credit bureau information and other financial and qualitative factors that may affect the client's ability to pay. Specific credit reviews and standard industry credit scoring models are used in performing this evaluation. Clients' financial condition is continuously monitored as part of the normal course of business. Some of the Company's clients are highly leveraged or otherwise subject to their own operating and regulatory risks. Based on those client account reviews and the continued uncertainty of the global economy, the Company has established an allowance for credit losses of \$25.7 million as of December 31, 2023.

The Company has a large, diverse client base and does not have a high degree of concentration with any single client account. During the year ended December 31, 2023, the Company's largest client accounted for less than 5% of the Company's net sales. Even if the Company's credit review and analysis mechanisms work properly, the Company may experience financial losses in its dealings with clients and other parties. Any increase in nonpayment or nonperformance by clients could adversely impact the Company's results of operations and financial condition. Economic disruptions could result in significant future charges.

Commodity Risk

The primary raw materials that the Company uses in its print business are paper, ink and energy. At this time, the Company's supply of raw materials are available from numerous vendors. The Company generally buys these raw materials based upon market prices that are established with the vendor as part of the procurement process. The price of such raw materials has fluctuated over time and has caused fluctuations in the Company's net sales and cost of sales. This volatility may continue and the Company may experience increases in the costs of its raw materials in the future as prices in the overall paper, ink and energy markets are expected to remain beyond its control. The price and availability of paper may also be adversely affected by paper mills' permanent or temporary closures, and mills' access to raw materials, conversion to produce other types of paper, and ability to transport paper produced.

Approximately half of the paper used by the Company is supplied directly by its clients. For those clients that do not directly supply their own paper, the Company makes use of its purchasing efficiencies to supply paper by negotiating with leading paper vendors, uses a wide variety of paper grades, weights and sizes, and does not rely on any one vendor. In addition, the Company generally includes price adjustment clauses in sales contracts for paper and other critical raw materials in the printing process. Although these clauses generally mitigate paper price risk, higher paper prices and tight paper supplies, as well as changes in the United States import or trade regulations may have an impact on client demand for printed products. The Company's working capital requirements, including the impact of seasonality, are partially mitigated through the direct purchasing of paper by its clients.

The Company produces the majority of ink used in its print production, allowing it to control the quality, cost and supply of key inputs. Raw materials for the ink manufacturing process are purchased externally from a variety of vendors. The price and availability of ink and ink components may be adversely affected by the availability of component raw materials, labor and transportation.

The Company may not be able to fully pass on to clients the impact of higher electric and natural gas energy prices on its manufacturing costs, and increases in energy prices result in higher manufacturing costs for certain of its operations. The Company mitigates its risk through natural gas hedges when appropriate. In its logistics operations, however, the Company is able to pass a substantial portion of any increase in fuel prices directly to its clients.

To the extent the cost of other raw materials increase and the Company is not able to increase selling prices of its products, then the Company may experience margin declines.

Management believes a hypothetical 10% change in the price of paper and other raw materials would not have a significant direct impact on the Company's consolidated annual results of operations or cash flows; however, significant increases in commodity pricing or tight supply could influence future client demand for printed products.

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Quad/Graphics, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Quad/Graphics, Inc. (the Company) as of December 31, 2023 and 2022, the related consolidated statements of operations, comprehensive income (loss), shareholders' equity and cash flows for each of the two years in the period ended December 31, 2023, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2023, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 21, 2024, expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Measurement of accrued liabilities for workers' compensation claims

Description of the Matter

At December 31, 2023, the Company's consolidated accrued liabilities for workers' compensation claims were \$37.7 million and included within other current and long-term liabilities. As discussed in Note 1, the Company establishes accrued liabilities for workers' compensation claims reported plus an estimate for loss development and potential claims that have been incurred but not reported (IBNR) to the Company or its insurance provider. The IBNR calculation utilizes a variety of assumptions, including but not limited to selected loss development factors, loss trend rates, increased limit factors and loss rates. The accrued liabilities for workers' claims are based upon an actuarial analysis performed annually by actuarial specialists as of October 31 and are adjusted by the actuarially determined losses and actual claims payments to update through year end.

Auditing management's estimate of the IBNR was especially challenging due to the various assumptions and the complexity of the actuarial analysis.

How We Addressed the Matter in Our Audit

We tested certain of the Company's controls over the measurement of accrued liabilities for workers' compensation claims process, which included, among others, management's review and approval of the actuarial analysis and related year-end update, management's validation of data inputs as well as their review and approval of assumptions used in the analysis.

To test the measurement of accrued liabilities for workers' compensation claims, we performed audit procedures that included, among other others, assessing methodologies and testing the significant assumptions discussed above, as well as testing the completeness and accuracy of the underlying data used by the Company in its analysis. We also involved our actuarial professionals with specialized skills and knowledge, who assisted in: (1) assessing the actuarial models and procedures used by the Company by comparing them to generally accepted actuarial methods and procedures to estimate the ultimate losses, (2) evaluating the Company's key assumptions and judgments underlying the Company's estimate by developing an independent range of the IBNR and comparing it against the Company's recorded amount and (3) evaluating the qualifications of the external actuarial specialists.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2022.

Milwaukee, Wisconsin
February 21, 2024

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Quad/Graphics, Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Quad/Graphics, Inc.'s internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Quad/Graphics, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2023 and 2022, the related consolidated statements of operations, comprehensive income (loss), shareholders' equity and cash flows for each of the two years in the period ended December 31, 2023, and the related notes and our report dated February 21, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Milwaukee, Wisconsin
February 21, 2024

QUAD/GRAPHICS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(in millions, except per share data)

	Year Ended December 31,	
	2023	2022
Net sales		
Products	\$ 2,334.1	\$ 2,528.3
Services	623.6	688.7
Total net sales	2,957.7	3,217.0
Cost of sales		
Products	1,984.7	2,156.2
Services	396.5	462.6
Total cost of sales	2,381.2	2,618.8
Operating expenses		
Selling, general and administrative expenses	344.5	358.6
Depreciation and amortization	128.8	141.3
Restructuring, impairment and transaction-related charges	77.5	44.8
Total operating expenses	2,932.0	3,163.5
Operating income	25.7	53.5
Interest expense	70.0	48.4
Net pension income	(1.7)	(12.6)
Earnings (loss) before income taxes	(42.6)	17.7
Income tax expense	12.8	8.4
Net earnings (loss)	\$ (55.4)	\$ 9.3
Earnings (loss) per share		
Basic and Diluted	\$ (1.14)	\$ 0.18
Weighted average number of common shares outstanding		
Basic	48.4	50.7
Diluted	48.4	52.5

See accompanying Notes to Consolidated Financial Statements.

QUAD/GRAPHICS, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in millions)

	Year Ended December 31,	
	2023	2022
Net earnings (loss)	\$ (55.4)	\$ 9.3
Other comprehensive income		
Translation adjustments		
Foreign currency translation adjustments	15.0	(3.2)
Translation of long-term loans to foreign subsidiaries	(1.9)	0.9
Revaluation loss from the dissolution of an equity method investment entity	—	29.4
Total translation adjustments	13.1	27.1
Reclassification of foreign currency translation adjustments	—	27.3
Interest rate derivative adjustments	2.5	3.4
Net loss arising from pension benefit plans during period	(5.4)	(30.7)
Other comprehensive income, before tax	10.2	27.1
Income tax impact related to items of other comprehensive income	0.5	5.8
Other comprehensive income, net of tax	10.7	32.9
Total comprehensive income (loss)	\$ (44.7)	\$ 42.2

See accompanying Notes to Consolidated Financial Statements.

QUAD/GRAPHICS, INC.
CONSOLIDATED BALANCE SHEETS
(in millions, except per share data)

	December 31, 2023	December 31, 2022
ASSETS		
Cash and cash equivalents	\$ 52.9	\$ 25.2
Receivables, less allowances for credit losses of \$25.7 million at December 31, 2023, and \$26.4 million at December 31, 2022	316.2	372.6
Inventories	178.8	260.7
Prepaid expenses and other current assets	39.8	46.0
Total current assets	587.7	704.5
Property, plant and equipment—net	620.6	672.1
Operating lease right-of-use assets—net	96.6	111.1
Goodwill	103.0	86.4
Other intangible assets—net	21.8	46.9
Other long-term assets	80.0	80.8
Total assets	<u>\$ 1,509.7</u>	<u>\$ 1,701.8</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Accounts payable	\$ 373.6	\$ 456.6
Other current liabilities	237.6	249.1
Short-term debt and current portion of long-term debt	151.7	61.1
Current portion of finance lease obligations	2.5	0.8
Current portion of operating lease obligations	25.4	27.8
Total current liabilities	790.8	795.4
Long-term debt	362.5	506.7
Finance lease obligations	6.0	1.6
Operating lease obligations	77.2	87.1
Deferred income taxes	5.1	9.3
Other long-term liabilities	148.6	128.8
Total liabilities	1,390.2	1,528.9
Commitments and contingencies (Note 9)		
Shareholders' equity (Note 17)		
Preferred stock, \$0.01 par value; Authorized: 0.5 million shares; Issued: None	—	—
Common stock, Class A, \$0.025 par value; Authorized: 105.0 million shares; Issued: 42.5 million shares at December 31, 2023, and 42.6 million shares at December 31, 2022	1.0	1.0
Common stock, Class B, \$0.025 par value; Authorized: 80.0 million shares; Issued: 13.6 million shares at December 31, 2023 and 2022	0.4	0.4
Common stock, Class C, \$0.025 par value; Authorized: 20.0 million shares; Issued: 0.5 million shares at December 31, 2023 and 2022	—	—
Additional paid-in capital	842.7	841.8
Treasury stock, at cost, 5.6 million shares at December 31, 2023, and 3.9 million shares at December 31, 2022	(33.1)	(23.5)
Accumulated deficit	(573.9)	(518.5)
Accumulated other comprehensive loss	(117.6)	(128.3)
Total shareholders' equity	119.5	172.9
Total liabilities and shareholders' equity	<u>\$ 1,509.7</u>	<u>\$ 1,701.8</u>

See accompanying Notes to Consolidated Financial Statements.

QUAD/GRAPHICS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

	Year Ended December 31,	
	2023	2022
OPERATING ACTIVITIES		
Net earnings (loss)	\$ (55.4)	\$ 9.3
Adjustments to reconcile net earnings (loss) to net cash provided by operating activities:		
Depreciation and amortization	128.8	141.3
Impairment charges	25.2	2.2
Amortization of debt issuance costs and original issue discount	2.0	2.2
Stock-based compensation	5.6	6.0
Gain on the sale or disposal of property, plant and equipment, net	(10.9)	(2.3)
Loss on the sale of a business	—	23.1
Deferred income taxes	(3.7)	2.4
Changes in operating assets and liabilities—net of acquisitions and divestitures:		
Receivables	65.0	(18.6)
Inventories	90.3	(41.1)
Prepaid expenses and other current assets	18.5	3.0
Accounts payable and other current liabilities	(106.7)	63.9
Other	(11.1)	(36.8)
Net cash provided by operating activities	147.6	154.6
INVESTING ACTIVITIES		
Purchases of property, plant and equipment	(70.8)	(60.3)
Cost investment in unconsolidated entities	(0.7)	(3.3)
Proceeds from the sale of property, plant and equipment	31.7	4.6
Loan to an unconsolidated entity	(0.6)	—
Acquisitions of businesses	(1.5)	(2.6)
Other investing activities	(4.5)	1.1
Net cash used in investing activities	(46.4)	(60.5)
FINANCING ACTIVITIES		
Payments of current and long-term debt	(51.9)	(235.9)
Payments of finance lease obligations	(2.6)	(2.1)
Borrowings on revolving credit facilities	1,437.9	995.7
Payments on revolving credit facilities	(1,442.6)	(995.0)
Proceeds from issuance of long-term debt	0.6	3.1
Purchases of treasury stock	(12.6)	(10.0)
Equity awards redeemed to pay employees' tax obligations	(1.7)	(2.5)
Payment of cash dividends	(0.1)	(1.4)
Other financing activities	(0.6)	(0.6)
Net cash used in financing activities	(73.6)	(248.7)
Effect of exchange rates on cash and cash equivalents	0.1	(0.1)
Net increase (decrease) in cash and cash equivalents	27.7	(154.7)
Cash and cash equivalents at beginning of year	25.2	179.9
Cash and cash equivalents at end of year	<u>\$ 52.9</u>	<u>\$ 25.2</u>

See accompanying Notes to Consolidated Financial Statements.

QUAD/GRAPHICS, INC.
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(in millions)

	Common Stock		Additional Paid-in Capital	Treasury Stock		Accumulated Deficit	Accumulated Other Comprehensive Loss	Quad's Shareholders' Equity
	Shares	Amount		Shares	Amount			
Balance at January 1, 2022	55.7	\$ 1.4	\$ 839.3	(1.4)	\$ (14.9)	\$ (527.8)	\$ (161.2)	\$ 136.8
Net earnings	—	—	—	—	—	9.3	—	9.3
Foreign currency translation adjustments	—	—	—	—	—	—	27.2	27.2
Reclassification of foreign currency translation adjustments	—	—	—	—	—	—	27.3	27.3
Pension benefit plan liability adjustments, net of \$6.5 million tax benefit	—	—	—	—	—	—	(24.2)	(24.2)
Interest rate swap adjustments, net of tax	—	—	—	—	—	—	2.6	2.6
Stock-based compensation	—	—	5.8	—	—	—	—	5.8
Purchases of treasury stock	—	—	—	(3.1)	(10.0)	—	—	(10.0)
Issuance of share-based awards, net of other activity	0.9	—	(3.3)	1.0	3.9	—	—	0.6
Equity awards redeemed to pay employees' tax obligations	—	—	—	(0.4)	(2.5)	—	—	(2.5)
Balance at December 31, 2022	56.6	\$ 1.4	\$ 841.8	(3.9)	\$ (23.5)	\$ (518.5)	\$ (128.3)	\$ 172.9
Net loss	—	—	—	—	—	(55.4)	—	(55.4)
Foreign currency translation adjustments	—	—	—	—	—	—	13.1	13.1
Pension benefit plan liability adjustments, net of \$1.0 million tax benefit	—	—	—	—	—	—	(4.4)	(4.4)
Interest rate swap adjustments, net of tax	—	—	—	—	—	—	2.0	2.0
Stock-based compensation	—	—	5.6	—	—	—	—	5.6
Purchases of treasury stock	—	—	—	(2.9)	(12.6)	—	—	(12.6)
Issuance of share-based awards, net of other activity	—	—	(4.7)	1.5	4.7	—	—	—
Equity awards redeemed to pay employees' tax obligations	—	—	—	(0.3)	(1.7)	—	—	(1.7)
Balance at December 31, 2023	56.6	\$ 1.4	\$ 842.7	(5.6)	\$ (33.1)	\$ (573.9)	\$ (117.6)	\$ 119.5

See accompanying Notes to Consolidated Financial Statements.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Note 1. Basis of Presentation and Summary of Significant Accounting Policies

Nature of Operations—Quad is a global marketing experience (MX) company that helps brands make direct consumer connections, from household to in-store to online. The Company is focused on providing a better marketing experience for its clients, so they can focus on delivering the best customer experience to theirs. Quad does this with a suite of marketing solutions that is flexible, scalable and connected. Supported by state-of-the-art technology and data-driven intelligence, these solutions are designed to streamline the complexities of marketing and remove friction from wherever it occurs in the marketing journey. Quad tailors its solutions to its clients' objectives, driving cost efficiencies, improving speed to market, strengthening marketing effectiveness, and delivering value on their investments. The Company supports a diverse base of clients, including industry-leading blue-chip companies that serve both businesses and consumers across multiple industry verticals, with a particular focus on commerce, including retail, consumer packaged goods and direct-to-consumer; financial services; and health.

Principles of Consolidation and Basis of Presentation—The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned and majority-owned controlled subsidiaries and have been prepared in accordance with GAAP. The results of operations and accounts of businesses acquired are included in the consolidated financial statements from the dates of acquisition.

Investments in entities where the Company has both the ability to exert significant influence but not control and an ownership interest of 50% or less but more than 20% are accounted for using the equity method of accounting. Investments in entities where the Company does not exert significant influence or control and has an ownership interest of less than 20% are accounted for using the cost method of accounting. Intercompany transactions and balances have been eliminated in consolidation.

Foreign Operations—Assets and liabilities denominated in foreign currencies are translated into United States dollars at the exchange rate existing at the respective balance sheet dates. Income and expense items are translated at the average rates during the respective periods. Translation adjustments resulting from fluctuations in exchange rates are recorded as a separate component of accumulated other comprehensive income (loss) on the consolidated statements of shareholders' equity, while transaction gains and losses are recorded in selling, general and administrative expenses on the consolidated statements of operations. Foreign exchange transactions resulted in gains of \$4.4 million during the year ended December 31, 2023 and losses of \$2.1 million during the year ended December 31, 2022.

Use of Estimates—The preparation of consolidated financial statements requires the use of management's estimates and assumptions that affect the reported assets and liabilities, disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reporting periods. Actual results could differ from these estimates. Estimates are used when accounting for items and matters including, but not limited to: allowances for doubtful accounts, inventory obsolescence, asset valuations and useful lives, pension benefits, self-insurance reserves, stock-based compensation, taxes, restructuring and other provisions and contingencies.

Revenue Recognition—The Company recognizes its products and services revenue based on when the transfer of control passes to the customer or when the service is completed and accepted by the customer. Under agreements with certain customers, products may be stored by the Company for future delivery and revenue is recognized upon shipment to the customer. In these situations, the Company may receive warehouse management fees for the services it provides. Product returns are not significant because the products are customized; however, the Company accrues for the estimated amount of customer allowances at the time of sale based on historical experience and known trends.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Revenue from services is recognized as services are performed. Revenues related to the Company's imaging operations, which include digital content management, photography, color services and page production, are recognized in accordance with the terms of the contract, typically upon completion of the performed service and acceptance by the customer. Revenues related to the Company's logistics operations, which includes the delivery of printed material, are recognized upon completion of services.

Certain revenues earned by the Company require judgment to determine if revenue should be recorded gross as a principal or net of related costs as an agent. Billings for third-party shipping and handling costs, primarily in the Company's logistics operations, and out-of-pocket expenses are recorded gross in net sales and cost of sales in the consolidated statements of operations. Many of the Company's operations process materials, primarily paper, that may be supplied directly by customers or may be purchased by the Company and sold to customers. No revenue is recognized for customer-supplied paper. Revenues for Company-supplied paper are recognized on a gross basis.

Financial Instruments—The Company uses derivative financial instruments for the purpose of hedging interest rate, commodity and foreign exchange exposures that exist as part of ongoing business operations, including interest rate swap and collar agreements, natural gas forward purchase contracts and foreign exchange contracts. As a policy, the Company does not engage in speculative or leveraged transactions, nor does the Company hold or issue financial instruments for trading purposes.

Derivative instruments are recorded on the consolidated balance sheets as either assets or liabilities measured at their fair value. If the derivative is designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are recognized in earnings. If the derivative is designated as a cash flow hedge, the effective portion of the changes in the fair value of the derivative are recorded as a component of accumulated other comprehensive income (loss) and recognized in the consolidated statements of operations when the hedged item affects earnings.

The ineffective portions of the changes in the fair value of hedges are recognized in earnings. Cash flows from derivatives that are accounted for as cash flow or fair value hedges are included in the consolidated statements of cash flows in the same category as the item being hedged.

Fair Value Measurement—The Company applies fair value accounting for all assets and liabilities that are recognized or disclosed at fair value in its consolidated financial statements on a recurring basis. Fair value represents the amount that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities that are required to be recorded at fair value, the Company considers the principal or most advantageous market and the market-based risk measurements or assumptions that market participants would use in pricing the asset or liability. See Note 13, "Financial Instruments and Fair Value Measurements," for further discussion.

Research and Development—Research and development costs related to the development of new products or the adaptation of existing products are expensed as incurred, included in cost of sales and totaled \$3.1 million and \$3.3 million during the years ended December 31, 2023 and 2022, respectively.

Cash and Cash Equivalents and Restricted Cash—The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Receivables—Receivables are stated net of allowances for credit losses. No single customer comprised more than 5% of the Company’s consolidated net sales in 2023 or 2022, or 5% of the Company’s consolidated receivables as of December 31, 2023 or 2022. In accordance with Accounting Standards Codification (“ASC”) 326—*Financial Instruments—Credit Losses* (“ASC 326”), the Company measures expected credit losses for financial instruments, including trade receivables, based on historical experience, current conditions and reasonable forecasts. See Note 5, “Receivables,” for further discussion on the transactions affecting the allowances for doubtful accounts.

Inventories—Inventories include material, labor, and plant overhead and are stated at the lower of cost or net realizable value. At December 31, 2023 and 2022, all inventories were valued using the first-in, first-out method. See Note 6, “Inventories,” for the components of the Company’s inventories.

Leases—Leases are accounted for under the right-of-use model, which requires a lessee to record a right-of-use asset and a lease liability on the balance sheet for all leases with terms longer than twelve months. Leases are classified as either finance or operating, with classification affecting the pattern of expense recognition. See Note 11, “Leases,” for additional accounting policies.

Property, Plant and Equipment—Property, plant and equipment are recorded at cost, and are depreciated over the estimated useful lives of the assets using the straight-line method for financial reporting purposes. See Note 7, “Property, Plant and Equipment,” for the components of the Company’s property, plant and equipment. Major improvements that extend the useful lives of existing assets are capitalized and charged to the asset accounts. Repairs and maintenance, which do not significantly improve or extend the useful lives of the respective assets, are expensed as incurred. Leasehold improvements are depreciated over the shorter of the lease term or the estimated useful life of the respective asset. When an asset is retired or disposed, the associated costs and accumulated depreciation are eliminated, and the resulting gain or loss is recognized in the Company’s consolidated statements of operations.

Asset Category	Range of Useful Lives
Buildings	10 to 40 Years
Machinery and equipment	3 to 15 Years
Other	3 to 10 Years

Other Intangible Assets—Identifiable intangible assets are recognized apart from goodwill and are amortized over their estimated useful lives.

Impairment of Long-Lived and Other Intangible Assets—The Company evaluates long-lived assets and other intangible assets (of which the most significant are property, plant and equipment; right-of-use assets; and customer relationship intangible assets) whenever events and circumstances have occurred that indicate the carrying value of an asset may not be recoverable. Determining whether impairment has occurred typically requires various estimates and assumptions, including determining which cash flows are directly related to the potentially impaired asset, the useful life over which cash flows will occur, their amount and the asset’s residual value, if any. In turn, assessing whether there is an impairment loss requires a determination of recoverability, which is generally estimated by the ability to recover the balance of the assets from expected future operating cash flows on an undiscounted basis. If impairment is determined to exist, any related impairment loss is calculated based on the difference in the fair value and carrying value of the asset.

Goodwill—Goodwill is reviewed annually for impairment as of October 31, or more frequently if events or changes in circumstances indicate that it is more likely than not that the fair value of a reporting unit is below its carrying value. In performing this analysis, the Company compares each reporting unit’s fair value to its carrying value. The fair value is estimated based on comparable company market valuations and/or expected future discounted cash flows to be generated by the reporting unit. If the carrying value exceeds the reporting unit’s fair value, an impairment loss would be charged to operations in the period identified. See Note 4, “Goodwill and Other Intangible Assets,” for further discussion.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Workers' Compensation—The Company is self-insured for a significant portion of its expected workers' compensation program. Insurance is purchased for individual workers' compensation claims that exceed \$0.8 million. The Company establishes reserves for unresolved claims and for an estimate of incurred but not reported ("IBNR") claims. These reserves and estimates of IBNR claims are based upon an actuarial study, which is performed annually as of October 31st and is adjusted by the actuarially determined losses and actual claims payments for November and December. The Company also monitors actual claim developments, including incurrence or settlement of individual large claims during the interim periods between actuarial studies as another means of estimating the adequacy of the reserves. As of December 31, 2023, the Company has net reserves for workers' compensation of \$28.7 million, of which \$6.7 million was recorded in other current liabilities and \$31.0 million was recorded in other long-term liabilities in the consolidated balance sheets (see Note 8, "Other Current and Long-Term Liabilities"). These reserves are net of \$9.0 million recorded in other long-term assets in the consolidated balance sheets for estimated claims covered by purchased insurance. As of December 31, 2022, the Company had net reserves for workers' compensation of \$29.9 million, of which \$6.6 million was recorded in other current liabilities and \$34.5 million was recorded in other long-term liabilities in the consolidated balance sheets (see Note 8, "Other Current and Long-Term Liabilities"). These reserves were net of \$11.2 million recorded in other long-term assets in the consolidated balance sheets for estimated claims covered by purchased insurance.

Income Taxes—The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of items reported in the financial statements. Under this method, deferred tax assets and liabilities are measured based on the differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the effective date of enactment.

The Company records net deferred tax assets to the extent the Company believes these assets will more likely than not be realized. This determination is based upon all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax planning strategies, and recent financial operations. If the Company determines that a deferred income tax asset will not be fully realized in the future, then a valuation allowance is established or increased to reflect the amount at which the asset will more likely than not be realized, which would increase the Company's provision for income taxes. In a period after a valuation allowance has been established, if the Company determines the related deferred income tax assets will be realized in the future in excess of their net recorded amount, then an adjustment to reduce the related valuation allowance will be made, which would reduce the Company's provision for income taxes.

The Company is regularly audited by foreign and domestic tax authorities. These audits occasionally result in proposed assessments where the ultimate resolution might result in the Company owing additional taxes, including in some cases, penalties and interest. The Company recognizes a tax position in its consolidated financial statements when it is more likely than not that the position would be sustained upon examination by tax authorities. This recognized tax position is then measured at the largest amount of benefit that is more likely than not of being recognized upon ultimate settlement. The Company recognizes interest and penalties related to unrecognized tax benefits in income tax expense.

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The determination of the Company's worldwide tax provision and related tax assets and liabilities requires the use of significant judgment in estimating the impact of uncertainties in the application of GAAP and the interpretation of complex tax laws. In the ordinary course of business, there are transactions and calculations where the final tax outcome is uncertain. Where fair market value is required to measure a tax asset or liability for GAAP purposes, the Company periodically obtains independent, third party assistance to validate that such value is determined in conformity with Internal Revenue Service fair market value guidelines. While the Company believes it has the appropriate support for the positions taken, certain positions may be successfully challenged by taxing authorities. Resolution of these uncertainties in a manner inconsistent with management's expectations could have a material impact on the Company's financial condition and operating results. The Company applies the provisions of the authoritative guidance on accounting for uncertain tax positions to determine the appropriate amount of tax benefits to be recognized with respect to uncertain tax positions. The determination of the Company's worldwide tax provision includes the impact of any changes to the amount of tax benefits recognized with respect to uncertain tax positions. See Note 12, "Income Taxes," for further discussion.

Pension Plans—The Company assumed certain frozen underfunded defined benefit pension plans as part of the 2010 World Color Press acquisition. Pension plan costs are determined using actuarial methods and are funded through contributions. The Company records amounts relating to its pension plans based on calculations which include various actuarial assumptions including discount rates, assumed rates of return, and mortality. The Company reviews its actuarial assumptions on an annual basis and modifies the assumptions based on current rates and trends when it is appropriate to do so. The effects of modifications are recognized immediately on the consolidated balance sheets, but are generally amortized into operating income over future periods, with the deferred amount recorded in accumulated other comprehensive loss on the consolidated balance sheets. The Company believes that the assumptions utilized in recording its obligations under its plans are reasonable based on its experience, market conditions and input from its actuaries and investment advisors. For the purposes of calculating the expected return on plan assets, those assets are valued at fair value. When an event gives rise to both a curtailment and a settlement, the curtailment is accounted for prior to the settlement. The Company's measurement date to measure the defined benefit plan assets and the projected benefit obligation is December 31.

The Company has previously participated in MEPPs as a result of the acquisition of World Color Press. Due to the significant underfunded status of the MEPPs, the Company has withdrawn from all significant MEPPs and replaced these union sponsored "promise to pay in the future" defined benefit plans with a Company sponsored "pay as you go" defined contribution plan, which is the form of retirement benefit provided to Quad's employees. As a result of the decision to withdraw, the Company recorded a withdrawal liability for the MEPPs based on information received from the MEPPs' trustees. See Note 14, "Employee Retirement Plans," for further discussion.

Stock-Based Compensation—The Company recognizes stock-based compensation expense over the vesting period for all stock-based awards made to employees and directors based on the fair value of the instrument at the time of grant. Equity awards accounted for as liabilities are recorded at fair value on the initial issuance date and are remeasured to fair value at each reporting period, with the change in fair value being recorded in selling, general and administrative expense in the consolidated statements of operations. See Note 16, "Equity Incentive Programs," for further discussion.

Accumulated Other Comprehensive Income (Loss)—Accumulated other comprehensive income (loss) consists primarily of unrecognized actuarial gains and losses and prior service costs for pension plans, foreign currency translation adjustments and interest rate swap adjustments, and is presented in the consolidated statements of shareholders' equity. See Note 18, "Accumulated Other Comprehensive Loss," for further discussion.

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Supplemental Cash Flow Information—The following table summarizes certain supplemental cash flow information for the years ended December 31, 2023 and 2022:

	2023	2022
Interest paid, net of amounts capitalized	\$ 55.9	\$ 44.0
Income taxes paid	12.2	6.2
Non-cash investing and financing activities:		
Non-cash finance lease additions	8.3	1.1
Non-cash operating lease additions	18.9	17.6
Acquisitions of businesses:		
Fair value of assets acquired	0.2	5.0
Liabilities assumed	(15.3)	(2.4)
Goodwill	16.6	—
Acquisitions of businesses	<u>\$ 1.5</u>	<u>\$ 2.6</u>

Note 2. Revenue Recognition

Revenue Disaggregation

The following table provides information about disaggregated revenue by the Company's operating segments and major products and services offerings for the years ended December 31, 2023 and 2022:

	United States Print and Related Services	International	Total
Year ended December 31, 2023			
Catalog, publications, retail inserts and directories	\$ 1,398.2	\$ 254.0	\$ 1,652.2
Direct mail and other printed products	543.5	129.9	673.4
Other	8.0	0.5	8.5
Total Products	1,949.7	384.4	2,334.1
Logistics services	254.0	16.5	270.5
Marketing services and medical services	350.6	2.5	353.1
Total Services	604.6	19.0	623.6
Total Net Sales	<u>\$ 2,554.3</u>	<u>\$ 403.4</u>	<u>\$ 2,957.7</u>
Year ended December 31, 2022			
Catalog, publications, retail inserts and directories	\$ 1,476.3	\$ 282.5	\$ 1,758.8
Direct mail and other printed products	640.6	118.2	758.8
Other	9.7	1.0	10.7
Total Products	2,126.6	401.7	2,528.3
Logistics services	310.4	19.3	329.7
Marketing services and medical services	357.7	1.3	359.0
Total Services	668.1	20.6	688.7
Total Net Sales	<u>\$ 2,794.7</u>	<u>\$ 422.3</u>	<u>\$ 3,217.0</u>

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Nature of Products and Services

The Company recognizes its products and services revenue based on when the transfer of control passes to the client or when the service is completed and accepted by the client.

The products offering is predominantly comprised of the Company's print operations which includes retail inserts, publications, catalogs, special interest publications, journals, direct mail, directories, in-store marketing and promotion, packaging, newspapers, custom print products, other commercial and specialty printed products and global paper procurement.

The Company considers its logistic operations as services, which include the delivery of printed material. The services offering also includes revenues related to the Company's marketing services operations, which include data and analytics, technology solutions, media services, creative and content solutions, managed services and execution in non-print channels (e.g., digital and broadcast), as well as medical services.

Performance Obligations

At contract inception, the Company assesses the products and services promised in its contracts with customers and identifies performance obligations for each promise to transfer to the customer a product or service that is distinct. To identify the performance obligations, the Company considers the goods or services promised in the contract regardless of whether they are explicitly stated or are implied by customary business practices. The Company determined that the following distinct products and services represent separate performance obligations:

- Pre-Press Services
- Print
- Other Services

For Pre-Press and Other Services, the Company recognizes revenue at point-in-time upon completion of the performed service and acceptance by the customer. The Company considers transfer of control to occur once the service is performed as the Company has right to payment and the customer has legal title and risk and reward of ownership.

The Company recognizes its Print revenues upon transfer of title and the passage of risk of loss, which is point-in-time upon shipment to the customer, and when there is a reasonable assurance as to collectability. Revenues related to the Company's logistics operations, which includes the delivery of printed material, are included in the Print performance obligation and are also recognized at point-in-time as services are completed. Revenues related to the Company's imaging operations, which include digital content management, photography, color services and page production, are recognized in accordance with the terms of the contract, typically upon completion of the performed service and acceptance by the customer. Under agreements with certain customers, products may be stored by the Company for future delivery and revenue is recognized upon shipment to the customer. In these situations, the Company may receive warehouse management fees for the services it provides. Revenue from warehouse management fees was immaterial for the years ended December 31, 2023 and 2022.

Certain revenues earned by the Company require judgment to determine if revenue should be recorded gross as principal or net of related costs as an agent. Billings for third-party shipping and handling costs, primarily in the Company's logistics operations, and out-of-pocket expenses are recorded gross in net sales and cost of sales in the consolidated statements of operations. Many of the Company's operations process materials, primarily paper, that may be supplied directly by customers or may be purchased by the Company and sold to customers. No revenue is recognized for customer-supplied paper. Revenues for the Company-supplied paper are recognized on a gross basis. In some cases, the Company will print items that are mailed to consumers and bill the customer for postage. In these cases, the Company is acting as an agent and billings are recorded on a net basis in net sales.

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Significant Payment Terms

Payment terms and conditions for contracts with customers vary. The Company typically offers standard terms of net 30 days. It is not the Company's standard business practice to offer extended payment terms longer than one year. The Company may offer cash discounts or prepayment and extended terms depending on certain facts and circumstances. As such, when the timing of the Company's delivery of products and services differs from the timing of payment, the Company will record either a contract asset or a contract liability.

Variable Consideration

When evaluating the transaction price, the Company analyzes on a contract by contract basis all applicable variable considerations and non-cash consideration and also performs a constraint analysis. The nature of the Company's contracts give rise to variable consideration, including, volume rebates, credits, discounts, and other similar items that generally decrease the transaction price. These variable amounts generally are credited to the customer, based on achieving certain levels of sales activity, when contracts are signed, or making payments within specific terms.

Product returns are not significant because the products are customized; however, the Company accrues for the estimated amount of customer allowances at the time of sale based on historical experience and known trends.

When the transaction price requires allocation to multiple performance obligations, the Company uses the estimated stand-alone selling prices using the adjusted market assessment approach.

Costs to Obtain Contracts

In accordance with ASC 606 — Revenue from Contracts with Customers ("ASC 606"), the Company defers certain contract acquisition costs paid to the client at contract inception. The Company also capitalizes certain sales incentives of the sales compensation packages for costs that are directly attributed to being awarded a client contract or renewal and would not have been incurred had the contract not been obtained. Costs to obtain contracts with a duration of less than one year are expensed as incurred. For all contract costs with contracts over one year, the Company amortizes the costs to obtain contracts on a straight-line basis over the estimated life of the contract and reviews quarterly for impairment. Activity impacting costs to obtain contracts for the year ended December 31, 2023, was as follows:

	Costs to Obtain Contracts
Balance at January 1, 2023	\$ 3.3
Costs to obtain contracts	0.7
Amortization of costs to obtain contracts	(2.2)
Balance at December 31, 2023	<u>\$ 1.8</u>

Practical Expedients

The Company has elected to apply the following practical expedients allowed under ASC 606:

- For certain performance obligations related to print contracts, the Company has elected not to disclose the value of unsatisfied performance obligations for the following: (1) contracts that have an original expected length of one year or less; (2) contracts where revenue is recognized as invoiced; or (3) contracts with variable consideration related to unsatisfied performance obligations. The Company had no volume commitments in contracts that extend beyond one year as of December 31, 2023.

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- The Company expenses costs to obtain contracts as incurred when the contract duration is less than one year.
- The transaction amount is not adjusted for a significant financing component as the period between transfer of the products or services and payment is less than one year.
- The Company accounts for shipping and handling activities, which includes postage, that occur after control of the related products or services transfers to the customer as fulfillment activities and are therefore recognized at time of shipping.
- The Company excludes from its transaction price any amounts collected from customers for sales taxes.

Note 3. Restructuring, Impairment and Transaction-Related Charges

The Company recorded restructuring, impairment and transaction-related charges for the years ended December 31, 2023 and 2022, as follows:

	2023	2022
Employee termination charges	\$ 35.1	\$ 7.3
Impairment charges	25.2	2.2
Transaction-related charges	4.2	2.0
Integration costs	1.0	0.7
Other restructuring charges	12.0	32.6
Total	<u>\$ 77.5</u>	<u>\$ 44.8</u>

The costs related to these activities have been recorded on the consolidated statements of operations as restructuring, impairment and transaction-related charges. See Note 19, “Segment Information,” for restructuring, impairment and transaction-related charges by segment.

Restructuring Charges

The Company has a restructuring program related to eliminating excess manufacturing capacity and properly aligning its cost structure. The Company classifies the following charges as restructuring:

- *Employee termination charges* are incurred when the Company reduces its workforce through facility consolidations and separation programs.
- *Integration costs* are incurred primarily for the integration of acquired companies.

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- *Other restructuring charges* are presented net of the gains or losses on the sale of facilities and businesses. During the year ended December 31, 2023, the Company recognized a gain from the sale of the facility located in Merced, California. The components of other restructuring charges consisted of the following during the years ended December 31, 2023 and 2022:

	Year Ended December 31,	
	2023	2022
Vacant facility carrying costs and lease exit charges	\$ 16.6	\$ 5.4
Equipment and infrastructure removal costs	0.9	0.7
Gain on the sale of a facility	(9.2)	—
Loss on the sale of Argentina print business	—	23.1
Other restructuring activities	3.7	3.4
Other restructuring charges	<u>\$ 12.0</u>	<u>\$ 32.6</u>

The restructuring charges recorded were based on plans that have been committed to by management and were, in part, based upon management's best estimates of future events. Changes to the estimates may require future restructuring charges and adjustments to the restructuring liabilities. The Company expects to incur additional restructuring charges related to these and other initiatives.

Impairment Charges

The Company recognized impairment charges of \$25.2 million during the year ended December 31, 2023, which consisted of \$17.5 million for machinery and equipment no longer being utilized in production as a result of facility consolidations, as well as other capacity reduction activities, \$4.1 million for software licensing and related implementation costs from a terminated project and \$3.6 million for right-of-use assets.

The Company recognized impairment charges of \$2.2 million during the year ended December 31, 2022, primarily for machinery and equipment no longer being utilized in production as a result of facility consolidations, as well as other capacity reduction.

The fair values of the impaired assets were determined by the Company to be Level 3 under the fair value hierarchy (see Note 13, "Financial Instruments and Fair Value Measurements," for the definition of Level 3 inputs) and were estimated based on broker quotes, internal expertise related to current marketplace conditions and estimated future discounted cash flows. These assets were adjusted to their estimated fair values at the time of impairment. If estimated fair values subsequently decline, the carrying values of the assets are adjusted accordingly.

Transaction-Related Charges

The Company incurs transaction-related charges primarily consisting of professional service fees related to business acquisition and divestiture activities. Transaction-related charges of \$4.2 million and \$2.0 million were recorded during the years ended December 31, 2023 and 2022, respectively.

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Restructuring Reserves

Activity impacting the Company's restructuring reserves for the years ended December 31, 2023 and 2022, was as follows:

	Employee Termination Charges	Impairment Charges	Transaction- Related Charges	Integration Costs	Other Restructuring Charges	Total
Balance at January 1, 2022 . . .	\$ 4.7	\$ —	\$ 0.4	\$ —	\$ 50.2	\$ 55.3
Expense, net	7.3	2.2	2.0	0.7	32.6	44.8
Cash payments, net	(4.1)	—	(0.9)	(0.7)	(15.7)	(21.4)
Non-cash adjustments/ reclassifications	(5.0)	(2.2)	—	—	(61.9)	(69.1)
Balance at December 31, 2022	\$ 2.9	\$ —	\$ 1.5	\$ —	\$ 5.2	\$ 9.6
Expense, net	35.1	25.2	4.2	1.0	12.0	77.5
Cash payments, net	(20.4)	—	(3.2)	(1.0)	(8.1)	(32.7)
Non-cash adjustments/ reclassifications	—	(25.2)	—	—	2.7	(22.5)
Balance at December 31, 2023	\$ 17.6	\$ —	\$ 2.5	\$ —	\$ 11.8	\$ 31.9

The Company's restructuring reserves at December 31, 2023, included a short-term and a long-term component. The short-term portion included \$21.4 million in other current liabilities (see Note 8, "Other Current and Long-Term Liabilities") and \$2.7 million in accounts payable in the consolidated balance sheets as the Company expects these reserves to be settled within the next twelve months. The long-term portion of \$7.8 million was included in other long-term liabilities (see Note 8, "Other Current and Long-Term Liabilities") in the consolidated balance sheets.

Note 4. Goodwill and Other Intangible Assets

Goodwill

Goodwill represents the excess of the purchase price over the fair value of identifiable net assets acquired in a business combination. Goodwill is assigned to specific reporting units and is tested annually for impairment as of October 31, or more frequently if events or changes in circumstances indicate that it is more likely than not that the fair value of a reporting unit is below its carrying value.

The Company completed its annual impairment test as of October 31, 2023, and identified no indicators of impairment in any of the Company's reporting units during the year ended December 31, 2023. Fair value was determined using an equal weighting of both the income and market approaches. Under the income approach, the Company determined fair value based on estimated future cash flows discounted by an estimated weighted-average cost of capital, which reflects the overall level of inherent risk and the rate of return an outside investor would expect to earn. Under the market approach, the Company derived the fair value of the reporting units based on market multiples of comparable publicly-traded companies. This fair value determination was categorized as Level 3 in the fair value hierarchy (see Note 13, "Financial Instruments and Fair Value Measurements," for the definition of Level 3 inputs).

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No goodwill impairment charges were recorded during the years ended December 31, 2023 or 2022. The accumulated goodwill impairment losses and the carrying value of goodwill at December 31, 2023 and 2022, were as follows:

	December 31, 2023			December 31, 2022		
	United States Print and Related Services	International	Total	United States Print and Related Services	International	Total
Goodwill	\$ 881.3	\$ 30.0	\$ 911.3	\$ 864.7	\$ 30.0	\$ 894.7
Accumulated goodwill impairment loss	(778.3)	(30.0)	(808.3)	(778.3)	(30.0)	(808.3)
Goodwill, net of accumulated goodwill impairment loss	\$ 103.0	\$ —	\$ 103.0	\$ 86.4	\$ —	\$ 86.4

Activity impacting goodwill for the year ended December 31, 2023, was as follows:

	United States Print and Related Services	International	Total
Balance at January 1, 2023	\$ 86.4	\$ —	\$ 86.4
Acquisition of a business	16.6	—	16.6
Balance at December 31, 2023	\$ 103.0	\$ —	\$ 103.0

In December 2023, the Company completed the acquisition of DART Innovation, an in-store digital media solutions provider. The acquisition expands and integrates into the Company's suite of products and services, enabling brands and marketers to more effectively reach consumers. As of December 31, 2023, the preliminary purchase price includes \$16.6 million of goodwill. There was no activity impacting goodwill for the year ended December 31, 2022.

Other Intangible Assets

The components of other intangible assets at December 31, 2023 and 2022, were as follows:

		December 31, 2023			December 31, 2022		
	Weighted Average Amortization Period (Years)	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
Finite-lived intangible assets:							
Trademarks, patents, licenses and agreements	7	\$ 65.4	\$ (60.2)	\$ 5.2	\$ 67.2	\$ (57.2)	\$ 10.0
Capitalized software	5	23.5	(19.6)	3.9	21.5	(17.4)	4.1
Acquired technology	5	3.6	(2.7)	0.9	3.6	(1.9)	1.7
Customer relationships	6	553.7	(541.9)	11.8	559.9	(528.8)	31.1
Total finite-lived intangible assets		\$ 646.2	\$ (624.4)	\$ 21.8	\$ 652.2	\$ (605.3)	\$ 46.9

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Other intangible assets are evaluated for potential impairment whenever events or circumstances indicate that the carrying value may not be recoverable. There were no impairment charges recorded on finite-lived intangible assets for the years ended December 31, 2023 and 2022.

Amortization expense for other intangible assets was \$27.9 million and \$30.9 million for the years ended December 31, 2023 and 2022, respectively. The following table outlines the estimated future amortization expense related to other intangible assets as of December 31, 2023:

	Amortization Expense
2024	\$ 16.9
2025	2.9
2026	1.0
2027	0.7
2028 and Thereafter	0.3
Total	<u>\$ 21.8</u>

Note 5. Receivables

Prior to granting credit, the Company evaluates each client in an underwriting process, taking into consideration the prospective client's financial condition, past payment experience, credit bureau information and other financial and qualitative factors that may affect the client's ability to pay. Specific credit reviews and standard industry credit scoring models are used in performing this evaluation. Clients' financial condition is continuously monitored as part of the normal course of business. Some of the Company's clients are highly leveraged or otherwise subject to their own operating and regulatory risks.

Specific client provisions are made when a review of significant outstanding amounts, utilizing information about client creditworthiness, as well as current and future economic trends based on reasonable forecasts, indicates that collection is doubtful. The Company also records a general provision based on the overall risk profile of the receivables and through the assessment of reasonable economic forecasts. The risk profile is assessed on a quarterly basis using various methods, including external resources and credit scoring models. Accounts that are deemed uncollectible are written off when all reasonable collection efforts have been exhausted.

The Company has recorded credit loss expense of \$2.8 million and \$3.4 million during the years ended December 31, 2023 and 2022, respectively, which is included in selling, general and administrative expenses in the consolidated statements of operations.

Activity impacting the allowance for credit losses for the years ended December 31, 2023 and 2022, was as follows:

	2023	2022
Balance at January 1,	\$ 26.4	\$ 28.2
Provisions	2.8	3.4
Write-offs	(3.5)	(5.2)
Balance at December 31,	<u>\$ 25.7</u>	<u>\$ 26.4</u>

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Note 6. Inventories

The components of inventories at December 31, 2023 and 2022, were as follows:

	2023	2022
Raw materials and manufacturing supplies	\$ 102.7	\$ 173.7
Work in process	30.1	38.3
Finished goods	46.0	48.7
Total	<u>\$ 178.8</u>	<u>\$ 260.7</u>

Note 7. Property, Plant and Equipment

The components of property, plant and equipment at December 31, 2023 and 2022, were as follows:

	2023	2022
Land	\$ 65.8	\$ 68.2
Buildings	638.7	651.9
Machinery and equipment	2,728.0	2,854.0
Other ⁽¹⁾	157.2	165.0
Construction in progress	34.6	30.5
Property, plant and equipment—gross	3,624.3	3,769.6
Less: accumulated depreciation	(3,003.7)	(3,097.5)
Property, plant and equipment—net	<u>\$ 620.6</u>	<u>\$ 672.1</u>

⁽¹⁾ Other consists of computer equipment and software, vehicles, furniture and fixtures, leasehold improvements and communication related equipment.

The Company recorded impairment charges of \$17.5 million and \$2.2 million during the years ended December 31, 2023 and 2022, respectively, to reduce the carrying amounts of certain property, plant and equipment no longer utilized in production, or due to other capacity reduction, to fair value (see Note 3, “Restructuring, Impairment and Transaction-Related Charges,” for further discussion on impairment charges).

The Company recognized depreciation expense of \$100.9 million and \$110.4 million for the years ended December 31, 2023 and 2022, respectively.

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Note 8. Other Current and Long-Term Liabilities

The components of other current and long-term liabilities at December 31, 2023 and 2022, were as follows:

	December 31, 2023			December 31, 2022		
	Other Current Liabilities	Other Long-Term Liabilities	Total	Other Current Liabilities	Other Long-Term Liabilities	Total
Employee-related liabilities ⁽¹⁾	\$ 118.1	\$ 42.2	\$ 160.3	\$ 117.6	\$ 45.3	\$ 162.9
Single employer pension plan obligations	1.6	37.8	39.4	1.4	34.9	36.3
Multiemployer pension plans – withdrawal liability	2.5	21.5	24.0	4.1	24.2	28.3
Deferred revenue	35.6	0.9	36.5	53.1	1.2	54.3
Tax-related liabilities	19.6	10.3	29.9	18.9	4.4	23.3
Restructuring liabilities	21.4	7.8	29.2	4.2	4.3	8.5
Interest and rent liabilities	0.7	—	0.7	0.4	—	0.4
Other	38.1	28.1	66.2	49.4	14.5	63.9
Total	\$ 237.6	\$ 148.6	\$ 386.2	\$ 249.1	\$ 128.8	\$ 377.9

⁽¹⁾ Employee-related liabilities consist primarily of payroll, bonus, vacation, health and workers' compensation.

Note 9. Commitments and Contingencies

Commitments

The Company had firm commitments of \$5.4 million as of December 31, 2023, to purchase press, finishing and other equipment.

Litigation

The Company is named as a defendant in various lawsuits in which claims are asserted against the Company in the normal course of business. The liabilities, if any, which ultimately result from such lawsuits are not expected by management to have a material impact on the consolidated financial statements of the Company.

Environmental Reserves

The Company is subject to various laws, regulations and government policies relating to health and safety, to the generation, storage, transportation, and disposal of hazardous substances, and to environmental protection in general. The Company provides for expenses associated with environmental remediation obligations when such amounts are probable and can be reasonably estimated. Such reserves are adjusted as new information develops or as circumstances change. The environmental reserves are not discounted. The Company believes it is in compliance with such laws, regulations and government policies in all material respects. Furthermore, the Company does not anticipate that maintaining compliance with such environmental statutes will have a material impact upon the Company's consolidated financial position.

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Note 10. Debt

The weighted average interest rate for the year ended December 31, 2023 and the components of long-term debt at December 31, 2023 and 2022, were as follows:

	Weighted Average Interest Rate	2023	2022
Master note and security agreement	8.09 %	\$ 2.5	\$ 4.4
Term loan A	7.52 %	511.1	556.7
Revolving credit facility	7.57 %	—	—
International term loans	17.63 %	1.8	5.2
International revolving credit facilities	6.28 %	3.7	8.4
Debt issuance costs		(4.9)	(6.9)
Total debt		\$ 514.2	\$ 567.8
Less: short-term debt and current portion of long-term debt		(151.7)	(61.1)
Long-term debt		\$ 362.5	\$ 506.7

Description of Debt Obligations
Master Note and Security Agreement

On September 1, 1995, and as last amended on November 24, 2014, the Company entered into its Master Note and Security Agreement. As of December 31, 2023, the borrowings outstanding under the Master Note and Security Agreement were \$2.5 million. The senior notes under the Master Note and Security Agreement had a weighted average interest rate of 8.09% at December 31, 2023, which is fixed to maturity, with interest payable semiannually. Principal payments commenced September 1997 and extend through 2026 in various tranches. The notes are collateralized by certain United States press equipment under the terms of the Master Note and Security Agreement.

Senior Secured Credit Facility

On April 28, 2014, the Company entered into its Senior Secured Credit Facility, which included a revolving credit facility, Term Loan A and Term Loan B (Term Loan B was retired in July 2019). The Company completed the fifth amendment to the Senior Secured Credit Facility on November 2, 2021. The Senior Secured Credit Facility was amended to (a) reduce the aggregate amount of the existing revolving credit facility from \$500.0 million to \$432.5 million, and extend the maturity of a portion of the revolving credit facility such that \$90.0 million under the revolving credit facility is due on the existing maturity date of January 31, 2024 (the “Existing Maturity Date”) and \$342.5 million under the revolving credit facility is due on November 2, 2026 (the “Extended Maturity Date”); (b) extend the maturity of a portion of the existing term loan facility such that \$91.5 million (of which a principal payment of \$87.7 million was due upon maturity on January 31, 2024) of such term loan facility is due on the Existing Maturity Date and \$483.9 million is due on the Extended Maturity Date; (c) make certain adjustments to pricing, including an increase of 0.50% to the interest rate margin applicable to the loans maturing on the Extended Maturity Date; (d) modify certain financial and operational covenants; and (e) modify the interest rate provisions relating to the phase-out of LIBOR as a reference rate.

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The Company completed the sixth amendment to the Senior Secured Credit Facility on March 25, 2022, which expanded the number of currencies available for letters of credit. The Company completed the seventh amendment to the Senior Secured Credit Facility on January 24, 2023, which transitioned the Company's reference rate from LIBOR to SOFR effective February 1, 2023. The Company elected the practical expedient outlined in ASU 2020-04 and ASU 2021-01 which allowed the Company to prospectively adjust the effective interest rate after the reference rate change. The transition from LIBOR to SOFR did not have a material impact on the condensed consolidated financial statements.

The Company completed the eighth amendment to the Senior Secured Credit Facility on January 4, 2024, which added an additional \$25.0 million principal value to the Term Loan A (under the Extended Maturity Date). On January 31, 2024, the Company used liquidity available under its revolving credit facility and available cash on hand to fund the repayment on maturity of \$87.7 million aggregate principal amount, outstanding at the time, of its Term Loan A. Additionally, due to a portion of the revolving credit facility maturing on January 31, 2024, the total capacity under the revolving credit facility was reduced to \$342.5 million as of this date.

Borrowings under the revolving credit facility and Term Loan A made under the Senior Secured Credit Facility bear interest at 2.75% in excess of reserve adjusted SOFR, or 1.75% in excess of an alternate base rate with a SOFR floor of 0.75% for the extended tranche and bear interest at 2.50% in excess of reserve adjusted SOFR, or 1.50% in excess of an alternate base rate with a SOFR floor of 0.75% for the non-extending tranche.

At December 31, 2023, the Company had no outstanding borrowings on the revolving credit facility, and had \$31.1 million of issued letters of credit, leaving up to \$401.4 million available for future borrowings. The amount available for future borrowings is reduced to \$353.8 million under the Company's most restrictive debt covenants. The Senior Secured Credit Facility is secured by substantially all of the unencumbered assets of the Company. The Senior Secured Credit Facility also requires the Company to provide additional collateral to the lenders in certain limited circumstances.

Senior Unsecured Notes

The Company issued \$300.0 million aggregate principal amount of its Senior Unsecured Notes due May 1, 2022, on April 28, 2014. During the first quarter of 2022, the Company repurchased \$2.4 million of its outstanding Senior Unsecured Notes in the open market. All repurchased Senior Unsecured Notes were canceled. The Company used cash flows from operating activities and borrowings under its revolving credit facility to fund the repurchases. These repurchases were completed primarily to reduce interest expense.

On May 2, 2022, the Company used liquidity available under its revolving credit facility and available cash on hand to fund the repayment on maturity of all \$209.1 million aggregate principal amount, outstanding at the time, of its Senior Unsecured Notes.

International Debt Obligations

The Company had one fixed rate, Euro denominated, international term loan for purposes of financing certain capital expenditures and general business needs. The international term loan in the amount of \$12.8 million was entered into on December 21, 2018, at a 1.96% interest rate, with a term of five years, and matured on December 31, 2023. In addition, as of December 31, 2023, there is \$1.8 million outstanding on a term loan in Colombia.

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The Company has two multicurrency international revolving credit facilities that are used for financing working capital and general business needs. The Company had \$3.7 million of borrowings outstanding at a weighted average interest rate of 6.28% on the international revolving credit facilities as of December 31, 2023, leaving \$12.4 million available for future borrowing. The terms of the international revolving credit facilities includes certain financial covenants, a guarantee of the international revolving credit facilities by the Company and a security agreement that includes collateralizing substantially all of the Quad Europe Sp. z.o.o. assets. The first multicurrency international revolving credit facility expires on October 29, 2024, and bears interest at the aggregate of the Warsaw Interbank Offered Rate (“WIBOR”) plus 1.40% for any Polish Zloty denominated borrowings, the aggregate of Euro Interbank Offered Rate (“EURIBOR”) plus 1.45% for any Euro denominated borrowings or the aggregate of British pound sterling LIBOR plus 1.45% for any British pound sterling denominated borrowings. The second multicurrency international revolving credit facility expires on January 14, 2025, and bears interest at the aggregate of WIBOR plus 1.00% for any Polish Zloty denominated borrowings or the aggregate of EURIBOR plus 1.00% for any Euro denominated borrowings.

Fair Value of Debt

Based upon the interest rates available to the Company for borrowings with similar terms and maturities, the fair value of the Company’s total debt was approximately \$0.5 billion and \$0.6 billion at December 31, 2023 and 2022, respectively. The fair value determination of the Company’s total debt was categorized as Level 2 in the fair value hierarchy (see Note 13, “Financial Instruments and Fair Value Measurements,” for the definition of Level 2 inputs). As of December 31, 2023, approximately \$1.2 billion of the Company’s assets were pledged as security under various loans and other agreements.

Debt Issuance Costs

The debt issuance costs are amortized on a straight-line basis over the lives of the related debt instruments. Activity impacting the Company’s capitalized debt issuance costs for the years ended December 31, 2023 and 2022, was as follows:

	Capitalized Debt Issuance Costs
Balance at January 1, 2022	\$ 9.1
Amortization expense	(2.2)
Balance at December 31, 2022	6.9
Amortization expense	(2.0)
Balance at December 31, 2023	\$ 4.9

Covenants and Compliance

The Company’s various lending arrangements include certain financial covenants (all financial terms, numbers and ratios are as defined in the Company’s debt agreements). Among these covenants, the Company was required to maintain the following as of December 31, 2023:

- **Total Leverage Ratio.** On a rolling twelve-month basis, the Total Leverage Ratio, defined as consolidated total indebtedness to consolidated EBITDA, shall not exceed 3.75 to 1.00 (for the twelve months ended December 31, 2023, the Company’s Total Leverage Ratio was 2.18 to 1.00).

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- Liquidity, defined as unrestricted cash and permitted investments of the Company and its subsidiaries (subject to certain conditions) plus the aggregate amount of the unused revolving credit facility commitments, shall not be less than \$181.6 million at any time during the period commencing December 15, 2023 and ending when all obligations owed under the Senior Secured Credit Facility to lenders that are not extending lenders are paid in full.
- If there is any amount outstanding on the Revolving Credit Facility or Term Loan A, or if any lender has any revolving credit exposure or Term Loan A credit exposure, the Company is required to maintain the following:
 - *Senior Secured Leverage Ratio.* On a rolling four-quarter basis, the Senior Secured Leverage Ratio, defined as the ratio of consolidated senior secured net indebtedness to consolidated EBITDA, shall not exceed (a) 3.50 to 1.00 for any fiscal quarter ending prior to December 31, 2023, and (b) 3.25 to 1.00 for any fiscal quarter ending on or after December 31, 2023 (other than, in the case of this clause (b), any fiscal quarter ending September 30 of any year, each of which shall be subject to a maximum Senior Secured Leverage Ratio not to exceed 3.50 to 1.00) (for the twelve months ended December 31, 2023, the Company's Senior Secured Leverage Ratio was 1.99 to 1.00).
 - *Interest Coverage Ratio.* On a rolling twelve-month basis, the Interest Coverage Ratio, defined as consolidated EBITDA to cash consolidated interest expense, shall not be less than 3.00 to 1.00 (for the twelve months ended December 31, 2023, the Company's Interest Coverage Ratio was 4.10 to 1.00).

In addition to those covenants, the Senior Secured Credit Facility also includes certain limitations on acquisitions, indebtedness, liens, dividends and repurchases of capital stock.

- If the Company's Total Leverage Ratio is greater than 2.75 to 1.00, the Company is prohibited from making greater than \$60.0 million of dividend payments, capital stock repurchases and certain other payments, over the course of the agreement. If the Company's Total Leverage Ratio is above 2.50 to 1.00 but below 2.75 to 1.00, the Company is prohibited from making greater than \$100.0 million of dividend payments, capital stock repurchases and certain other payments, over the course of the agreement. If the Total Leverage Ratio is less than 2.50 to 1.00, there are no such restrictions. As the Company's Total Leverage Ratio as of December 31, 2023, was 2.18 to 1.00, the limitations described above are not applicable at this time.
- If the Company's Senior Secured Leverage Ratio is greater than 3.00 to 1.00 or the Company's Total Net Leverage Ratio which, on a rolling twelve-month basis, is defined as consolidated net indebtedness to consolidated EBITDA, is greater than 3.50 to 1.00, the Company is prohibited from voluntarily prepaying any unsecured or subordinated indebtedness, with certain exceptions (including any mandatory prepayments on the Senior Unsecured Notes or any other unsecured or subordinated debt). If the Senior Secured Leverage Ratio is less than 3.00 to 1.00 and the Total Net Leverage Ratio is less than 3.50 to 1.00, there are no such restrictions. The limitations described above are currently not applicable, as the Company's Senior Secured Leverage Ratio was 1.99 to 1.00 and Total Net Leverage Ratio was 1.99 to 1.00, as of December 31, 2023.

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Estimated Principal Payments

The approximate annual principal amounts due on long-term debt, excluding \$4.9 million for future amortization of debt issuance costs, at December 31, 2023, were as follows:

	Principal Payments
2024	\$ 149.3
2025	71.9
2026	297.9
Total	<u>\$ 519.1</u>

Note 11. Leases

The Company determines if an arrangement is or contains a lease at contract inception. The Company recognizes a right-of-use (“ROU”) asset and a lease liability at the lease commencement date.

For operating and finance leases, the lease liability is initially measured at the present value of the unpaid lease payments at the lease commencement date, and is subsequently measured at amortized cost using the effective interest method.

Key estimates and judgments include how the Company determines the discount rate, lease term and lease payments.

- ASC 842 requires a lessee to discount its unpaid lease payments using the interest rate implicit in the lease or, if that rate cannot be readily determined, its incremental borrowing rate. Generally, the Company cannot determine the implicit interest rate as it does not have access to the lessor’s estimated residual value or the amount of the lessor’s deferred initial direct costs. Therefore, the Company generally uses its incremental borrowing rate as the discount rate for the lease. The Company’s incremental borrowing rate for a lease is the rate of interest it would have to pay on a collateralized basis to borrow an amount equal to the lease payments under similar terms based on the published United States Treasury rates as well as the Company’s credit rating at implementation or at the lease inception date.
- The lease term for all of the Company’s leases includes the non-cancelable period of the lease, plus or minus any additional periods covered by an option to extend or terminate the lease that the Company is reasonably certain to exercise.
- Lease payments included in the lease liability are comprised of fixed payments as well as any exercise price of a Company option to purchase the underlying asset if the Company is reasonably certain to exercise. The Company’s leases do not contain variable lease payments.

ROU assets are initially measured at cost, which comprises the initial amount of the lease liability adjusted for lease payments made at or before the lease commencement date, plus any initial direct costs incurred less any lease incentives received. For operating leases, the ROU asset is subsequently amortized by the straight-line lease expense adjusted by the lease liability accretion over the lease term.

For finance leases, the ROU asset is subsequently amortized on a straight-line basis from the lease commencement date to the earlier of the end of its useful life or the end of the lease term. Amortization of the ROU asset is recognized and presented separately from interest expense on the lease liability.

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The Company's ROU assets for both operating and finance leases are reviewed for impairment losses on a quarterly basis in line with ASC 360-10 — *Property, Plant, and Equipment — Overall*. The Company recorded impairment charges of \$3.6 million for the year ended December 31, 2023 to reduce the carrying value of certain ROU assets. There was no ROU impairment recorded for the year ended December 31, 2022.

The Company also monitors its leases for events or changes in circumstances that require a reassessment of the lease. When a reassessment results in the remeasurement of a lease liability, a corresponding adjustment is made to the carrying amount of the ROU asset.

Operating leases are included in operating lease right-of-use assets—net, current portion of operating lease obligations, and operating lease obligations in the consolidated balance sheets. Finance leases are included in property and equipment—net, current portion of finance lease obligations, and finance lease obligations in the consolidated balance sheets.

The Company has elected not to recognize ROU assets and lease liabilities for short-term leases that have an original lease term of twelve months or less. Therefore, the Company recognizes the lease payments associated with these short-term leases as an expense over the lease term in the consolidated statement of operations.

Practical Expedients

The Company has elected to apply the following practical expedients allowed under Accounting Standards Update 842:

- The Company elected the practical expedient package and therefore did not reassess for any existing leases:
 - whether contracts are or contain leases;
 - the lease classification for any existing leases; and
 - any initial direct costs.
- The Company elected the practical expedient related to land easements, allowing to carry forward the accounting treatment for land easements on existing agreements.
- The Company used “hindsight” judgments that impact the lease term.
- The Company elected to combine lease and non-lease components into one lease component for select underlying lease asset categories. Real estate leases are accounted for separately while all other leases, primarily equipment leases, with separate lease and non-lease components are accounted for as a single lease component.

Leases Financial Information

The Company enters into various lease agreements for real estate, such as office space and manufacturing facilities, as well as equipment leases, including press, finishing and transportation equipment. Many of these leases provide the Company with options to renew, terminate, or in the case of equipment leases, purchase the related equipment at the termination value, as defined, and at various early buyout dates during the term of the lease. In general, the Company has determined these options were not reasonably certain to be exercised, and therefore are not included in the determination of the lease term.

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The following summarizes certain lease information for the years ended December 31, 2023 and 2022:

	Year Ended December 31, 2023	Year Ended December 31, 2022
Lease cost		
Finance lease cost:		
Amortization of right-of-use assets	\$ 2.2	\$ 1.8
Interest on lease liabilities	0.4	0.1
Operating lease cost	27.8	29.7
Short-term lease cost	0.3	0.2
Sublease income	(1.1)	(1.9)
Total lease cost	<u>\$ 29.6</u>	<u>\$ 29.9</u>
Other information		
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash flows from finance leases	\$ 0.4	\$ —
Operating cash flows from operating leases	28.4	28.1
Financing cash flows from finance leases	2.6	2.1
Right-of-use assets obtained in exchange for new finance lease liabilities	8.3	1.1
Right-of-use assets obtained in exchange for new operating lease liabilities	18.9	17.6
Weighted-average remaining lease term — finance leases	3.9 years	4.2 years
Weighted-average remaining lease term — operating leases	5.0 years	5.2 years
Weighted-average discount rate — finance leases	4.8 %	5.2 %
Weighted-average discount rate — operating leases	5.8 %	5.4 %

The components of finance lease assets at December 31, 2023 and 2022, were as follows:

	2023	2022
Leased equipment—gross	\$ 29.6	\$ 24.3
Less: accumulated depreciation	(20.9)	(21.9)
Leased equipment—net	<u>\$ 8.7</u>	<u>\$ 2.4</u>

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Future maturities of lease liabilities at December 31, 2023, were as follows:

	Future Maturities of Operating Leases	Future Maturities of Finance Leases
2024	\$ 30.5	\$ 2.9
2025	24.4	2.1
2026	19.8	1.9
2027	16.6	1.7
2028	12.5	0.4
2029 and thereafter	13.7	0.2
Total minimum payments	117.5	9.2
Less: present value discount	(14.9)	(0.7)
Present value of minimum payments	102.6	8.5
Less: current portion	(25.4)	(2.5)
Long-term lease liability	<u>\$ 77.2</u>	<u>\$ 6.0</u>

Note 12. Income Taxes

Income taxes have been based on the following components of earnings (loss) before income taxes for the years ended December 31, 2023 and 2022:

	2023	2022
United States	\$ (65.8)	\$ (13.9)
Foreign	23.2	31.6
Total	<u>\$ (42.6)</u>	<u>\$ 17.7</u>

The components of income tax expense for the years ended December 31, 2023, and 2022, were as follows:

	2023	2022
Federal:		
Current	\$ (2.7)	\$ 0.4
Deferred	(4.0)	3.3
State:		
Current	0.4	1.4
Deferred	(0.1)	(0.3)
Foreign:		
Current	18.8	4.2
Deferred	0.4	(0.6)
Total income tax expense	<u>\$ 12.8</u>	<u>\$ 8.4</u>

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The following table outlines the reconciliation of differences between the Federal statutory tax rate and the Company's income tax expense for the years ended December 31, 2023 and 2022:

	2023	2022
Federal statutory rate	\$ (8.9)	\$ 3.7
Adjustment of uncertain tax positions and audit assessments	10.4	(0.3)
Adjustment to valuation allowances	4.7	3.1
Executive compensation limitation	2.3	2.9
Foreign rate differential	2.0	—
Other permanent tax differences	1.4	—
Credits	(1.2)	(1.5)
Impact from foreign branches	0.6	1.9
Adjustment of deferred tax liabilities	0.3	1.5
State taxes, net of federal benefit	0.3	1.1
Loss on the sale of Argentina print business	—	(5.1)
Other	0.9	1.1
Income tax expense	<u>\$ 12.8</u>	<u>\$ 8.4</u>

The \$4.7 million adjustment to valuation allowance in 2023 primarily relates to adjusting reserves related to deferred tax assets for interest limitation, credits and other deferred tax assets that are not expected to be realized in the future for federal income tax purposes. The \$3.1 million adjustment to valuation allowance in 2022 primarily relates to increasing reserves related to deferred tax assets for credits and interest limitation that are not expected to be realized in the future for federal income tax purposes. The \$0.3 million effective rate reconciling item for State taxes, net of federal benefit, in 2023 includes a \$3.1 million adjustment for partial release of valuation allowance reserves. The \$1.1 million effective rate reconciling item for State taxes, net of federal benefit, in 2022 includes a \$2.8 million adjustment for partial release of valuation allowance reserves.

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Deferred Income Taxes

The significant deferred tax assets and liabilities as of December 31, 2023 and 2022, were as follows:

	2023	2022
Deferred tax assets:		
Net operating loss and other tax carryforwards	\$ 104.3	\$ 108.8
Goodwill and intangible assets	25.2	24.0
Pension and workers compensation benefits	23.0	23.9
Accrued liabilities	13.3	9.4
Research or experimental expenditures	12.6	8.0
Interest limitation	11.3	12.8
Accrued compensation	6.0	7.6
Allowance for doubtful accounts	5.8	5.9
Other	6.5	8.6
Total deferred tax assets	208.0	209.0
Valuation allowance	(121.4)	(113.9)
Net deferred tax assets	\$ 86.6	\$ 95.1
Deferred tax liabilities:		
Property, plant and equipment	\$ (73.5)	\$ (86.0)
Other	(5.8)	(6.9)
Total deferred tax liabilities	(79.3)	(92.9)
Net deferred tax assets	\$ 7.3	\$ 2.2

The Company has recorded deferred income tax liabilities of \$5.1 million and \$9.3 million as of December 31, 2023 and 2022, respectively, which were included in deferred income taxes in the consolidated balance sheets. The Company has also recorded deferred income tax assets of \$12.4 million and \$11.5 million as of December 31, 2023 and 2022, respectively, which were included in other long-term assets in the consolidated balance sheets.

At December 31, 2023, the Company had the following gross amounts of tax-related carryforwards:

- Net operating loss carryforwards of \$27.9 million and \$516.5 million for foreign and state, respectively. Of the foreign net operating loss carryforwards, \$8.7 million is available without expiration, while the remainder expires through 2043. Of the state net operating loss carryforwards, \$63.8 million is available without expiration, while the remainders expire through 2043.
- Various credit carryforwards of \$7.8 million, \$29.5 million and \$32.5 million for federal, foreign and state, respectively. The federal carryforward expires through 2043, the foreign credit carryforward expires in 2026, and the state credit carryforwards include \$25.5 million that is available without expiration, while the remainder expires through 2037.

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As of December 31, 2023, the Company has recorded a valuation allowance of \$121.4 million on its consolidated balance sheet primarily related to the tax-affected amounts of the above carryforwards. The valuation allowance includes \$17.6 million, \$37.5 million and \$66.3 million of federal, foreign and state deferred tax assets, respectively, that are not expected to be realized.

Uncertain Tax Positions

The following table summarizes the activity of the Company's liability for unrecognized tax benefits at December 31, 2023 and 2022:

	2023	2022
Balance at January 1,	\$ 11.1	\$ 11.7
Additions for tax positions of prior years	6.1	0.2
Reductions for tax positions of prior years	(0.3)	(0.3)
Lapses of applicable statutes of limitations	(0.2)	(0.5)
Balance at December 31,	<u>\$ 16.7</u>	<u>\$ 11.1</u>

As of December 31, 2023, \$5.3 million of unrecognized tax benefits would impact the Company's effective tax rate, if recognized. It is reasonably possible that \$6.7 million of the total amount of unrecognized tax benefits will decrease within the next twelve months due to resolution of income tax audits or statute expirations.

The Company classified interest expense (income) and any related penalties (refunds) related to income tax uncertainties as a component of income tax expense. The following table summarizes the Company's interest income related to tax uncertainties and refunds recognized during the years ended December 31, 2023 and 2022:

	2023	2022
Interest expense (income)	\$ 3.3	\$ (0.1)
Penalties (refunds)	1.6	—

Accrued interest and penalties related to income tax uncertainties are reported as components of other current liabilities and other long-term liabilities in the consolidated balance sheets. The following table summarizes the Company's liabilities for accrued interest and penalties related to income tax uncertainties at December 31, 2023 and 2022:

	December 31, 2023		December 31, 2022	
	Accrued interest	Accrued penalties	Accrued interest	Accrued penalties
Other current liabilities	\$ —	\$ —	\$ —	\$ —
Other long-term liabilities	3.4	1.6	0.1	—
Total liabilities	<u>\$ 3.4</u>	<u>\$ 1.6</u>	<u>\$ 0.1</u>	<u>\$ —</u>

The Company has tax years from 2013 through 2023 that remain open and subject to examination by the Internal Revenue Service. Tax years from 2013 through 2023 remain open and subject to examination in the Company's various major state jurisdictions within the United States. Tax years 2011 and 2016 through 2023 remain open and subject to examination or litigation in the Company's major foreign jurisdictions.

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The Company's practice and intention is to reinvest certain earnings of its non-U.S. subsidiaries in those operations. The Company has analyzed its global working capital and cash requirements and the potential tax liabilities attributable to repatriation of earnings, and has determined not to change its permanent reinvestment assertion. The Company does not have significant prior year untaxed, undistributed earnings from its foreign operations at December 31, 2023, and the Company does not provide for, nor expect to incur, any significant, additional taxes which could become payable upon repatriation of such amounts.

Reform of International Taxation

The Organization for Economic Co-operation and Development's reform of international taxation known as Pillar Two Global Anti-Base Erosion Rules is effective for the Company starting in 2024. The Company is closely monitoring developments and evaluating the impacts that the new Pillar 2 minimum tax may have on its tax rate, including eligibility to qualify for safe harbor rules that would eliminate or reduce the Pillar 2 minimum tax. Based upon preliminary calculations for calendar year 2024, the Company anticipates it will meet the safe harbor rules in most jurisdictions, and any remaining tax under Pillar 2 should be immaterial.

Note 13. Financial Instruments and Fair Value Measurements

Certain assets and liabilities are required to be recorded at fair value on a recurring basis, while other assets and liabilities are recorded at fair value on a nonrecurring basis, generally as a result of acquisitions or impairment charges. Fair value is determined based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. GAAP also classifies the inputs used to measure fair value into the following hierarchy:

- Level 1: Quoted prices in active markets for identical assets or liabilities.
- Level 2: Quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs other than quoted prices that are observable for the asset or liability.
- Level 3: Unobservable inputs for the asset or liability. There were no Level 3 recurring measurements of assets or liabilities as of December 31, 2023.

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Interest Rate Swap

The Company currently holds one interest rate swap contract. The purpose of entering into the contract was to reduce the variability of cash flows from interest payments related to a portion of Quad's variable-rate debt. The interest rate swap was previously designated as cash flow hedges as it effectively converted the notional value of the Company's variable rate debt based on one-month LIBOR to a fixed rate, including a spread on underlying debt, and a monthly reset in the variable interest rate. However, the Company amended its Senior Secured Credit Facility during the second quarter of 2020, which added a 0.75% LIBOR floor to the Company's variable rate debt, changing the critical terms of the hedged instrument. Due to this change in critical terms, the Company elected to de-designate the swap as a cash flow hedge, resulting in future changes in fair value being recognized in interest expense. The balance of the accumulated other comprehensive loss attributable to the interest rate swap as of June 30, 2020 was then amortized to interest expense on a straight-line basis over the remaining lives of the swap contracts. The Company expects to reclassify \$0.7 million of this balance to interest expense over the next twelve months. Due to the Company's transition from LIBOR to SOFR during the first quarter of 2023, the interest rate swap's fixed swap rate was amended to be based on one-month term SOFR.

	March 19, 2019 Interest Rate Swap
Effective date	March 29, 2019
Termination date	March 28, 2024
Term	5 years
Notional amount	\$130.0
Fixed swap rate	2.40%

The Company classifies interest rate swaps as Level 2 because the inputs into the valuation model are observable or can be derived or corroborated utilizing observable market data at commonly quoted intervals. The fair value of the interest rate swaps classified as Level 2 as of December 31, 2023 and 2022, were as follows:

	Balance Sheet Location	December 31, 2023	December 31, 2022
Interest rate swap assets	Prepaid expenses and other current assets	\$ 0.9	\$ 3.8

Prior to the Company's de-designation of the interest rate swap as a cash flow hedge, the interest rate swap was considered highly effective, with no amount of ineffectiveness recorded into earnings. The change in the fair value of the interest rate swap is recorded as an adjustment to interest expense in the consolidated statements of operations. The cash flows associated with the interest rate swap have been recognized as an adjustment to interest expense in the consolidated statements of operations:

	Year Ended December 31,	
	2023	2022
<i>Cash Flow Impacts</i>		
Net interest paid (received)	\$ (3.4)	\$ 1.7
<i>Impacts with Swaps as Nonhedging Instruments</i>		
(Income) loss recognized in interest expense excluded from hedge effectiveness assessments	\$ 2.9	\$ (9.0)
Amounts reclassified out of accumulated other comprehensive loss to interest expense	2.7	3.4
Net interest expense	(3.4)	1.7
Total impact of swaps to interest expense	<u>\$ 2.2</u>	<u>\$ (3.9)</u>

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Interest Rate Collars

The Company has entered into two interest rate collar contracts, both effective February 1, 2023. The purpose of entering into the contracts is to reduce the variability of cash flows from interest payments related to a portion of Quad's variable-rate debt. The interest rate collars will be designated as cash flow hedges as they effectively convert the notional value of the Company's variable rate debt based on one-month term SOFR to a fixed rate if that month's interest rate is outside of the collars' floor and ceiling rates, including a spread on underlying debt, and a monthly reset in the variable interest rate. The key terms of the interest rate collars are as follows:

	December 12, 2022 Interest Rate Collar	December 14, 2022 Interest Rate Collar
Effective date	February 1, 2023	February 1, 2023
Termination date	October 30, 2026	October 31, 2025
Term	45 Months	33 Months
Notional amount	\$75.0	\$75.0
Floor Rate	2.09%	2.25%
Ceiling Rate	5.00%	5.00%

The Company classifies interest rate collars as Level 2 because the inputs into the valuation model are observable or can be derived or corroborated utilizing observable market data at commonly quoted intervals. The fair value of the interest rate collars classified as Level 2 as of December 31, 2023 and 2022, were as follows:

	Balance Sheet Location	December 31, 2023	December 31, 2022
Interest rate collar liabilities ..	Other long-term liabilities	(0.2)	—

The interest rate collars were highly effective as of December 31, 2023. No amount of ineffectiveness has been recorded into earnings related to these cash flow hedges. The cash flows associated with the interest rate collars have been recognized as an adjustment to interest expense in the condensed consolidated statements of operations, and the changes in the fair value of the interest rate collars have been included in other comprehensive income (loss) in the condensed consolidated statements of comprehensive income (loss):

	Year Ended December 31,	
	2023	2022
Net interest received	\$ (0.2)	\$ —
Gain recognized in other comprehensive income (loss)	\$ (0.2)	\$ —

Foreign Exchange Contracts

The Company has operations in countries that have transactions outside their functional currencies and periodically enters into foreign exchange contracts. These contracts are used to hedge the net exposures of changes in foreign currency exchange rates and are designated as either cash flow hedges or fair value hedges. Gains or losses on net foreign currency hedges are intended to offset losses or gains on the underlying net exposures in an effort to reduce the earnings volatility resulting from fluctuating foreign currency exchange rates. As of December 31, 2023, there were no open foreign currency exchange contracts designated as cash flow hedges.

Natural Gas Forward Contracts

The Company periodically enters into natural gas forward purchase contracts to hedge against increases in commodity costs. The Company's commodity contracts qualified for the exception related to normal purchases and sales during the years ended December 31, 2023 and 2022, as the Company takes delivery in the normal course of business.

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Debt

The Company measures fair value on its debt instruments using interest rates available to the Company for borrowings with similar terms and maturities and is categorized as Level 2. See Note 10, “Debt,” for the fair value of the Company’s debt as of December 31, 2023 and 2022.

Other Estimated Fair Value Measurements

In addition to assets and liabilities that are recorded at fair value on a recurring basis, the Company is required to record certain assets and liabilities at fair value on a nonrecurring basis, generally as a result of acquisitions or the remeasurement of assets that may result in impairment charges, which are categorized as Level 3. See Note 3, “Restructuring, Impairment and Transaction-Related Charges”; Note 4, “Goodwill and Other Intangible Assets”; Note 7, “Property, Plant and Equipment”; and Note 11, “Leases” for further discussion on fair value remeasurements. See Note 3, “Restructuring, Impairment and Transaction-Related Charges” for impairment charges recorded as a result of the remeasurement of certain long-lived assets.

The Company records the fair value of its forward contracts and pension plan assets on a recurring basis. The fair value of cash and cash equivalents, receivables, inventories, accounts payable and other current liabilities approximate their carrying values as of December 31, 2023 and 2022. See Note 14, “Employee Retirement Plans,” for the details of Level 1 and Level 2 inputs related to employee retirement plans.

Note 14. Employee Retirement Plans

Defined Contribution Plans

The Quad/Graphics, Inc. Diversified Plan is comprised of participant-directed 401(k) contributions, Company match and profit sharing contributions, with total participant assets of \$2.0 billion as of December 31, 2023. Company 401(k) matching contributions were \$16.1 million and \$16.8 million for the years ended December 31, 2023 and 2022, respectively. The Company’s Employee Stock Ownership Plan holds profit sharing contributions of Company stock, which are made at the discretion of the Company’s Board of Directors. There were no profit sharing contributions for the years ended December 31, 2023 and 2022.

Defined Benefit Plans

The Company assumed various funded and unfunded frozen pension plans for a portion of its full-time employees in the United States as part of the acquisition of World Color Press in 2010. Benefits are generally based upon years of service and compensation. These plans are funded in conformity with the applicable government regulations. The Company funds at least the minimum amount required for all qualified plans using actuarial cost methods and assumptions acceptable under government regulations.

The components of net pension income for the years ended December 31, 2023 and 2022, were as follows:

	Pension Benefits	
	2023	2022
Interest cost	\$ (17.6)	\$ (9.7)
Expected return on plan assets	19.9	22.3
Amortization of actuarial loss	(0.6)	—
Net pension income	<u>\$ 1.7</u>	<u>\$ 12.6</u>

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The Company made \$0.7 million in benefit payments to its non-qualified defined benefit pension plans and made no contributions to its qualified defined benefit pension plans during the year ended December 31, 2023.

The underfunded pension obligations are calculated using generally accepted actuarial methods and are measured annually as of December 31. The following table provides a reconciliation of the projected benefit obligation, fair value of plan assets and the underfunded status of the pension plans as of December 31, 2023 and 2022:

	Pension Benefits	
	2023	2022
Changes in benefit obligation		
Projected benefit obligation, beginning of year	\$ (349.3)	\$ (462.7)
Interest cost	(17.6)	(9.7)
Actuarial gain (loss)	(12.4)	86.1
Benefits paid	36.6	37.0
Projected benefit obligation, end of year	(342.7)	(349.3)
Changes in plan assets		
Fair value of plan assets, beginning of year	313.0	443.5
Actual gain (loss) on plan assets	26.2	(94.5)
Employer contributions	0.7	1.0
Benefits paid	(36.6)	(37.0)
Fair value of plan assets, end of year	303.3	313.0
Underfunded status	<u>\$ (39.4)</u>	<u>\$ (36.3)</u>

The underfunded defined benefit plan obligations increased by \$3.1 million during the year ended December 31, 2023. This increase in the underfunded status was primarily due to an overall decrease of \$9.7 million in pension plan assets from \$36.6 million in benefits paid, offset by an actual gain on pension plan assets of \$26.2 million or 10.67% during the year ended December 31, 2023, which was above the expected return on plan assets assumption of 6.75%, and employer contributions of \$0.7 million. This decrease in plan assets was partially offset by a decrease in overall pension obligations of \$6.6 million from \$36.6 million in benefits paid, offset by a \$17.6 million increase in interest cost due to a 35 basis point decrease in the pension discount rate from 5.46% at December 31, 2022, to 5.11% at December 31, 2023 and \$12.4 million from an actuarial loss.

Amounts recognized on the consolidated balance sheets as of December 31, 2023 and 2022, were as follows:

	Pension Benefits	
	2023	2022
Current liabilities	\$ (1.6)	\$ (1.4)
Noncurrent liabilities	(37.8)	(34.9)
Total amount recognized	<u>\$ (39.4)</u>	<u>\$ (36.3)</u>

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The following table provides a reconciliation of the Company's accumulated other comprehensive loss prior to any deferred tax effects at December 31, 2023 and 2022:

	Actuarial Gain / (Loss), net
Balance at January 1, 2022	\$ (16.9)
Amount arising during the period	(30.7)
Balance at December 31, 2022	(47.6)
Amount arising during the period	(6.0)
Amortization included in net loss	0.6
Balance at December 31, 2023	\$ (53.0)

During 2023, the Company provided the option to receive a lump-sum pension payment to a select group of in-service and terminated vested participants. Total lump sum payments of \$8.0 million were paid during 2023, of which \$2.0 million was paid under the lump-sum program and \$1.4 million was paid under the in-service withdrawal program in December 2023. Payments to eligible participants who elected to receive a lump-sum pension payment were funded from existing pension plan assets and constituted a settlement of the Company's pension liabilities with respect to these participants.

Actuarial gains and losses in excess of 10% of the greater of the projected benefit obligation or the market-related value of plan assets are recognized as a component of net periodic benefit costs over the average remaining service period of a plan's active employees. Unrecognized prior service costs or credits are also recognized as a component of net periodic benefit cost over the average remaining service period of a plan's active employees.

The weighted average assumptions used to determine net periodic benefit costs for the years ended December 31, 2023 and 2022, were as follows:

	Pension Benefits	
	2023	2022
Discount rate	5.46 %	2.77 %
Expected long-term return on plan assets	6.75 %	5.25 %

The weighted average assumptions used to determine pension benefit obligations at December 31, 2023 and 2022, were as follows:

	Pension Benefits	
	2023	2022
Discount rate (end of year rate)	5.11 %	5.46 %

The Company determines its assumed discount rate based on an index of high-quality corporate bond yields and matched-funding yield curve analysis as of the measurement date.

Estimated Company Contributions and Benefit Payments

In 2024, the Company expects to make cash contributions of \$4.2 million to its qualified defined benefit pension plans and expects to make estimated benefit payments of \$1.7 million to its non-qualified defined benefit pension plans. The actual pension contributions may differ based on the funding calculations, and the Company may choose to make additional discretionary contributions. The estimated benefit payments may differ based on actual experience.

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Estimated Future Benefit Payments by the Plans to or on Behalf of Plan Participants

An estimate of the Plans' present value of future benefit payments to be made from funded qualified plans and unfunded non-qualified plans to plan participants at December 31, 2023, were as follows:

	Future Pension Benefit Payments
2024	\$ 35.8
2025	32.9
2026	31.7
2027	30.7
2028	29.4
2029 - 2033	128.3
Thereafter	53.9
Total	<u>\$ 342.7</u>

Plan Assets and Investment Strategy

The Company follows a disciplined investment strategy, which provides diversification of investments by asset class, foreign currency, sector and company. The Pension Committee has an approved investment policy for the pension plan that establishes long-term asset mix targets based on several factors including the following: the funded status, historical returns achieved by worldwide investment markets, the time horizon of the pension plan's obligations, and the investment risk. An allocation range by asset class is developed whereby a mix of equity securities and debt securities are used to provide an appropriate risk-adjusted long-term return on plan assets. Third-party investment managers are employed to invest assets in both passively-indexed and actively-managed strategies and investment returns and risks are monitored on an ongoing basis. Derivatives are used at certain times to hedge foreign currency exposure. Gains or losses on the derivatives are offset by a corresponding change in the value of the hedged assets. Derivatives are strictly used for hedging purposes and not speculative purposes.

The current target allocations for plan assets on a weighted average basis are 25% equity securities and 75% debt securities, including cash and cash equivalents. The actual asset allocation as of December 31, 2023, was approximately 21% equity securities and 79% debt securities, and as of December 31, 2022, was approximately 23% equity securities and 77% debt securities. Equity investments are diversified by country, issuer and industry sector. Debt securities primarily consist of government bonds and corporate bonds from diversified industries.

The expected long-term rate of return on assets assumption is selected by first identifying the expected range of long-term rates of return for each major asset class. Expected long-term rates of return are developed based on long-term historical averages, current expectations of future returns, anticipated inflation rates and active investment management of the portfolio. The expected long-term rate of return on plan assets is then calculated by weighting each asset class.

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The fair values of the Company's pension plan assets at December 31, 2023 and 2022, by asset category were as follows:

Asset Category	December 31, 2023				December 31, 2022			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Cash and cash equivalents	\$ 0.5	\$ 0.5	\$ —	\$ —	\$ 0.6	\$ 0.6	\$ —	\$ —
Debt securities	75.4	—	75.4	—	76.2	—	76.2	—
Equity securities	11.4	—	11.4	—	13.4	—	13.4	—
Total pension plan assets, excluding those measured at net asset value ("NAV")	87.3	\$ 0.5	\$ 86.8	\$ —	90.2	\$ 0.6	\$ 89.6	\$ —
Investments measured at NAV ⁽¹⁾	216.0				222.8			
Total pension plan assets	<u>\$ 303.3</u>				<u>\$ 313.0</u>			

⁽¹⁾ These investments consist of privately placed funds that are valued based on NAV. NAV of the funds is based on the fair value of each fund's underlying investments. In accordance with ASC Subtopic 820-10, certain investments that are measured at fair value using the NAV per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy.

There were no Level 3 assets as of December 31, 2023 and 2022. See Note 13, "Financial Instruments and Fair Value Measurements," for definitions of fair value levels.

The Company segregated its plan assets by the following major categories and levels for determining their fair value as of December 31, 2023:

Cash and cash equivalents. Carrying value approximates fair value and these assets are classified as Level 1.

Debt Securities. This category consists of bonds, short-term fixed income securities and fixed income pooled funds fair valued based on a compilation of primarily observable market information or broker quotes in over-the-counter markets and are classified as Level 2.

Equity Securities. This category consists of equity pooled funds that are classified as Level 2 in the fair value hierarchy. Level 2 assets are valued using quoted prices in markets that are not active, broker dealer quotations, and other methods by which all significant input was observable at the measurement date.

The valuation methodologies described above may generate a fair value calculation that may not be indicative of net realizable value or future fair values. While the Company believes the valuation methodologies used are appropriate, the use of different methodologies or assumptions in calculating fair value could result in different amounts. The Company invests in various assets in which valuation is determined by NAV. The Company believes that NAV is representative of fair value at the reporting date, as there are no significant restrictions on redemption on these investments or other reasons to indicate that the investment would be redeemed at an amount different than NAV.

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The fair value measurements in common/collective trusts, calculated using a NAV and their redemption restrictions, for the years ended December 31, 2023 and 2022, are as follows:

	Fair Value		Redemption Frequency (If Currently Eligible)	Redemption Notice Period
	2023	2022		
JP Morgan Chase Bank Strategic Property Fund . . .	\$ 9.7	\$ 11.7	Quarterly	30 days
Pyramis Long Corporate A or Better	24.0	24.0	Daily	15 days
Pyramis Long Duration	12.2	12.4	Daily	15 days
Pyramis 810 Corporate	123.5	124.7	Daily	15 days
Russell 3000 Index NL	42.7	46.0	Daily	1 day
NT Collective Short Term Investment Fund	3.9	4.0	Daily	1 day
Total value of investments measured at NAV	<u>\$ 216.0</u>	<u>\$ 222.8</u>		

Risk Management

For all directly invested funds, the concentration risk is monitored through specific guidelines in the investment manager mandates. The investment manager mandates were developed by the Company's external investment advisor, and specify diversification standards such as the maximum exposure per issuer, and concentration limits per type of security, industry and country when applicable.

For the investments made through pooled funds, the investment mandates of the funds were again reviewed by the Company's external investment advisor, to determine that the investment objectives and guidelines were consistent with the Company's overall pension plan risk management objectives. In managing the plan assets, management reviews and manages risk associated with funded status risk, interest rate risk, market risk, counterparty risk, liquidity risk and operational risk. Liability management and asset class diversification are central to the Company's risk management approach and are integral to the overall investment strategy.

Given the process in place to ensure a proper diversification of the portfolio, management believes that the Company pension plan assets are not exposed to significant concentration risk.

Multiemployer Pension Plans

The Company has previously participated in a number of MEPPs under terms of collective bargaining agreements that cover a number of its employees. The risks of participating in these MEPPs are different from single employer plans in the following aspects:

- Assets contributed to the MEPPs by one company may be used to provide benefits to employees of other participating companies.
- If a participating company stops contributing to the plan, the unfunded obligations of the plan may be borne by the remaining participating companies.
- If the Company stops participating in some or all of its MEPPs, and continues in business, the Company would be required to pay an amount, referred to as a withdrawal liability, based on the unfunded status of the plan.

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The Company has withdrawn from all significant MEPPs and replaced these union sponsored “promise to pay in the future” defined benefit plans with a Company sponsored “pay as you go” defined contribution plan. The two MEPPs, the GCIU and GCC, are significantly underfunded, and will require the Company to pay a withdrawal liability to fund its pro rata share of the underfunding as of the plan year the full withdrawal was completed. As a result of the decision to withdraw, the Company accrued the estimated withdrawal liability based on information provided by each plan’s trustee.

The GCIU Plan is a defined benefit plan that provides retirement benefits, total and permanent disability benefits, and pre-retirement death benefits for the participating union employees of the Company. The funded status of the GCIU Plan is classified as critical and declining based on the GCIU Plan’s 2022 certification to the United States Department of Labor, as the plan is projected to become insolvent within 20 years. As of January 1, 2022, the plan was projected to be insolvent in 2033. As a result, the GCIU Plan implemented a rehabilitation plan to improve the plan’s funded status. In 2019, the Company and the GCIU reached a settlement agreement for all claims, with scheduled payments until April 2032.

The GCC Plan is a defined benefit plan that provides retirement benefits, disability benefits, and early retirement benefits for the participating union employees of the Company. The funded status of the GCC Plan is classified as critical based on the GCC Plan’s 2023 certification to the Internal Revenue Service. While the GCC Plan has no projected insolvency for the next 20 years, it will be deemed in critical status through April 30, 2051, regardless of its funded status as a result of having received special financial assistance from the Pension Benefit Guaranty Corporation. In 2016, the Company and the GCC reached a settlement agreement for all claims, with scheduled payments until February 2024.

The Company made payments totaling \$6.2 million for the years ended December 31, 2023 and 2022. The Company has reserved \$24.0 million as the total MEPPs withdrawal liability as of December 31, 2023, of which \$21.5 million was recorded in other long-term liabilities and \$2.5 million was recorded in other current liabilities in the consolidated balance sheets.

Note 15. Earnings (Loss) Per Share

Basic earnings (loss) per share is computed as net earnings (loss) divided by the basic weighted average common shares outstanding. The calculation of diluted earnings (loss) per share includes the effect of any dilutive equity incentive instruments. The Company uses the treasury stock method to calculate the effect of outstanding dilutive equity incentive instruments, which requires the Company to compute total proceeds as the sum of the amount the employee must pay upon exercise of the award and the amount of unearned stock-based compensation costs attributable to future services.

Equity incentive instruments for which the total employee proceeds from exercise exceed the average fair value of the same equity incentive instrument over the period have an anti-dilutive effect on earnings per share during periods with net earnings, and accordingly, the Company excludes them from the calculation. Due to the net loss incurred during the year ended December 31, 2023, the assumed exercise of all equity incentive instruments was anti-dilutive and therefore, not included in the diluted loss per share calculation. Anti-dilutive equity instruments excluded from the computation of diluted net earnings per shares were 0.2 million class A common shares for the year ended December 31, 2022.

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Reconciliations of the numerator and the denominator of the basic and diluted per share computations for the Company's common stock for the years ended December 31, 2023 and 2022, are summarized as follows:

	2023	2022
Numerator:		
Net earnings (loss)	\$ (55.4)	\$ 9.3
Denominator:		
Basic weighted average number of common shares outstanding for all classes of common stock	48.4	50.7
Plus: effect of dilutive equity incentive instruments	—	1.8
Diluted weighted average number of common shares outstanding for all classes of common shares	48.4	52.5
Earnings (loss) per share:		
Basic and Diluted	\$ (1.14)	\$ 0.18

Note 16. Equity Incentive Programs

The shareholders of the Company approved the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (the “2020 Plan”) at the Company’s annual meeting of shareholders held on May 18, 2020, for two complementary purposes: (1) to attract and retain outstanding individuals to serve as directors, officers and employees; and (2) to increase shareholder value. The Company’s previous plan, the Quad/Graphics, Inc. 2010 Omnibus Plan (the “2010 Plan”), was terminated on the date of approval of the 2020 Plan, and no new awards will be granted under the 2010 Plan. All awards that were granted under the 2010 Plan that were outstanding as of May 18, 2020, will remain outstanding and will continue to be governed by the 2010 Plan.

The 2020 Plan provides for an aggregate 6,000,000 shares of class A common stock reserved for issuance, plus shares still available for issuance or re-credited under the 2010 Plan. Awards under the 2020 Plan may consist of incentive awards, stock options, stock appreciation rights, performance shares, performance share units, shares of class A common stock, restricted stock (“RS”), restricted stock units (“RSU”), deferred stock units (“DSU”) or other stock-based awards as determined by the Company’s Board of Directors. Each stock option granted has an exercise price of no less than 100% of the fair market value of the class A common stock on the date of grant. There were 2,588,136 shares of class A common stock reserved for issuance under the 2020 Plan as of December 31, 2023. Authorized unissued shares or treasury shares may be used for issuance under the Company’s equity incentive programs. The Company plans to either use treasury shares of its class A common stock or issue shares of class A common stock to meet the stock requirements of its awards in the future.

The Company recognizes compensation expense based on estimated grant date fair values for all share-based awards issued to employees and non-employee directors, including stock options, performance shares, performance share units, restricted stock, restricted stock units and deferred stock units. The Company recognizes these compensation costs for only those awards expected to vest, on a straight-line basis over the requisite approximate three year service period of the awards, except DSU awards, which are fully vested and expensed on the grant date. The Company estimated the number of awards expected to vest based, in part, on historical forfeiture rates and also based on management’s expectations of employee turnover within the specific employee groups receiving each type of award. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods, if actual forfeitures differ from those estimates.

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Equity Incentive Compensation Expense

Equity incentive compensation expense was recorded primarily in selling, general and administrative expenses in the consolidated statements of operations and includes expense recognized for liability awards that are remeasured on a quarterly basis. The total compensation expense recognized related to all equity incentive programs for the years ended December 31, 2023 and 2022, was as follows:

	Year ended December 31,	
	2023	2022
RS and RSU equity awards expense	\$ 4.3	\$ 5.1
RSU liability awards expense	—	0.2
DSU awards expense	1.3	0.7
Total equity incentive compensation expense	\$ 5.6	\$ 6.0

Total future compensation expense related to all equity incentive programs granted as of December 31, 2023, was estimated to be \$6.9 million, which consists entirely of expense for RS and RSU awards. Estimated future compensation expense is \$4.2 million for 2024, \$2.4 million for 2025 and \$0.3 million for 2026.

Restricted Stock and Restricted Stock Units

Restricted stock and restricted stock unit awards consist of shares or the rights to shares of the Company's class A stock which are awarded to employees of the Company. The awards are restricted such that they are subject to substantial risk of forfeiture and to restrictions on their sale or other transfer by the employee. RSU awards are typically granted to eligible employees outside of the United States. As defined in the individual grant agreements, acceleration of vesting may occur under a change in control, death, disability or normal retirement of the grantee. Grantees receiving RS grants are able to exercise full voting rights and receive full credit for dividends during the vesting period. All such dividends will be paid to the RS grantee within 45 days of full vesting. Grantees receiving RSUs are not entitled to vote but do earn dividends. Upon vesting, RSUs will be settled either through cash payment equal to the fair market value of the RSUs on the vesting date or through issuance of Company class A stock. In general, RS and RSU awards will vest on the third anniversary of the grant date, provided the holder of the share is continuously employed by the Company until the vesting date.

The following table is a summary of RS and RSU award activity for the year ended December 31, 2023:

	Restricted Stock			Restricted Stock Units		
	Shares	Weighted-Average Grant Date Fair Value Per Share	Weighted-Average Remaining Contractual Term (Years)	Units	Weighted-Average Grant Date Fair Value Per Share	Weighted-Average Remaining Contractual Term (Years)
Nonvested at December 31, 2022	3,606,295	\$ 4.11	1.4	100,943	\$ 4.08	1.5
Granted	1,789,799	4.10		66,879	4.08	
Vested	(817,768)	4.64		(19,842)	4.67	
Forfeited	(588,308)	4.08		—	—	
Nonvested at December 31, 2023	3,990,018	\$ 4.01	1.4	147,980	\$ 4.00	1.4

In general, RS and RSU awards will vest on the third anniversary of the grant date, provided the holder of the share is continuously employed by the Company until the vesting date. Compensation expense recognized for RS and RSUs classified as equity was \$4.3 million and \$5.1 million for the years ended December 31, 2023 and 2022, respectively.

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Deferred Stock Units

Deferred stock units are awards of rights to shares of the Company's class A stock and are awarded to non-employee directors of the Company. The following table is a summary of DSU award activity for the year ended December 31, 2023:

	Deferred Stock Units	
	Units	Weighted Average Grant Date Fair Value Per Share
Outstanding at December 31, 2022	773,194	\$ 7.25
Granted	317,014	3.87
Settled	(224,941)	6.13
Outstanding at December 31, 2023	865,267	\$ 6.30

Each DSU award entitles the grantee to receive one share of class A stock upon the earlier of the separation date of the grantee or the second anniversary of the grant date, but could be subject to acceleration for a change in control, death or disability as defined in the individual DSU grant agreement. Grantees of DSU awards may not exercise voting rights, but are credited with dividend equivalents and those dividend equivalents will be converted into additional DSU awards based on the closing price of the class A stock. Compensation expense recognized for DSUs was \$1.3 million and \$0.7 million for the years ended December 31, 2023 and 2022, respectively. As DSU awards are fully vested on the grant date, all compensation expense was recognized at the date of grant.

Note 17. Shareholders' Equity

The Company has three classes of common stock as follows (share data in millions):

	Authorized Shares	Issued Common Stock		
		Outstanding	Treasury	Total Issued Shares
Class A stock (\$0.025 par value)				
December 31, 2023	105.0	37.4	5.1	42.5
December 31, 2022	105.0	39.2	3.4	42.6
Class B stock (\$0.025 par value)				
December 31, 2023	80.0	13.6	—	13.6
December 31, 2022	80.0	13.6	—	13.6
Class C stock (\$0.025 par value)				
December 31, 2023	20.0	—	0.5	0.5
December 31, 2022	20.0	—	0.5	0.5

In accordance with the Articles of Incorporation, each class A common share has one vote per share and each class B and class C common share has ten votes per share on all matters voted upon by the Company's shareholders. Liquidation rights are the same for all three classes of stock.

The Company also has 0.5 million shares of \$0.01 par value preferred stock authorized, of which none were issued at December 31, 2023 and 2022. The Company has no present plans to issue any preferred stock.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

On July 30, 2018, the Company's Board of Directors authorized a share repurchase program of up to \$100.0 million of the Company's outstanding class A common stock. Under the authorization, share repurchases may be made at the Company's discretion, from time to time, in the open market and/or in privately negotiated transactions as permitted by federal securities laws and other legal requirements. The timing, manner, price and amount of any repurchase will depend on economic and market conditions, share price, trading volume, applicable legal requirements and other factors. The program may be suspended or discontinued at any time. The following repurchases occurred during the years ended December 31, 2023 and 2022:

	2023	2022
Shares of Class A common stock	2,852,501	3,093,662
Weighted average price per share	\$ 4.40	\$ 3.21
Total repurchases during the period (in millions) ⁽¹⁾	\$ 12.6	\$ 10.0

⁽¹⁾ Excluding commissions, total repurchases were \$12.6 million and \$9.9 million during the years ended December 31, 2023 and 2022.

As of December 31, 2023, there were \$77.5 million of authorized repurchases remaining under the program.

In accordance with the Articles of Incorporation, dividends are paid equally for all three classes of common shares. Beginning in the second quarter of 2020, the Company's Board of Directors proactively suspended the Company's quarterly dividends. On February 15, 2024, the Board of Directors reinstated the Company's quarterly dividends.

Note 18. Accumulated Other Comprehensive Loss

The changes in accumulated other comprehensive loss by component, net of tax, for the years ended December 31, 2023 and 2022, were as follows:

	Translation Adjustments	Interest Rate Derivative Adjustments	Pension Benefit Plan Adjustments	Total
Balance at January 1, 2022	\$ (143.1)	\$ (6.7)	\$ (11.4)	\$ (161.2)
Other comprehensive income (loss) before reclassifications	27.2	—	(24.2)	3.0
Amounts reclassified from accumulated other comprehensive loss to net earnings	27.3	2.6	—	29.9
Net other comprehensive income (loss)	54.5	2.6	(24.2)	32.9
Balance at December 31, 2022	(88.6)	(4.1)	(35.6)	(128.3)
Other comprehensive income (loss) before reclassifications	13.1	(0.2)	(4.4)	8.5
Amounts reclassified from accumulated other comprehensive loss to net loss	—	2.2	—	2.2
Net other comprehensive income (loss)	13.1	2.0	(4.4)	10.7
Balance at December 31, 2023	\$ (75.5)	\$ (2.1)	\$ (40.0)	\$ (117.6)

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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The details about the reclassifications from accumulated other comprehensive loss to net earnings (loss) for the years ended December 31, 2023 and 2022, were as follows:

Details about Accumulated Other Comprehensive Loss Components	Year Ended December 31,		Consolidated Statements of Operations Presentation
	2023	2022	
Amortization of amounts accumulated for interest rate swaps de-designated as cash flow hedges	\$ 2.7	\$ 3.4	Interest expense
Impact of income taxes	(0.5)	(0.8)	Income tax expense
Amortization of amounts accumulated for interest rate swaps de-designated as cash flow hedges, net of tax	2.2	2.6	
Reclassification of foreign currency translation adjustments	—	27.3	Restructuring, impairment and transaction-related charges
Impact of income taxes	—	—	Income tax expense
Reclassification of foreign currency translation adjustments, net of tax	—	27.3	
Total reclassifications for the period, net of tax	\$ 2.2	\$ 29.9	

Note 19. Segment Information

Quad is a global MX company that helps brands make direct consumer connections, from household to in-store to online. The Company's mission is to provide a better marketing experience for its clients, so they can focus on delivering the best customer experience to theirs. The Company's operating and reportable segments are aligned with how the chief operating decision maker of the Company currently manages the business. The Company's operating and reportable segments, including their product and service offerings, and a "Corporate" category are as follows:

- ***United States Print and Related Services***
- ***International***
- ***Corporate***

United States Print and Related Services

The United States Print and Related Services segment is predominantly comprised of the Company's United States printing operations and is managed as one integrated platform. This includes print execution and logistics for retail inserts, catalogs, long-run publications, special interest publications, journals, direct mail, directories, in-store marketing and promotion, packaging, newspapers, custom print products, as well as other commercial and specialty printed products, along with global paper procurement, and marketing and other complementary services, such as data intelligence and analytics, technology solutions, media planning, placement and optimization, creative strategy and content creation, as well as execution in non-print channels (e.g., digital and broadcast). This segment also includes the manufacture of ink.

International

The International segment consists of the Company's printing operations in Europe and Latin America, including operations in England, France, Germany, Poland, Colombia, Mexico and Peru. This segment provides printed products and marketing and other complementary services consistent with the United States Print and Related Services segment.

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Corporate

Corporate consists of unallocated general and administrative activities and associated expenses including, in part, executive, legal and finance, as well as certain expenses and income from frozen employee retirement plans, such as pension benefit plans.

The following is a summary of segment information for the years ended December 31, 2023 and 2022:

	Net Sales		Operating Income (Loss)	Depreciation and Amortization	Capital Expenditures	Restructuring, Impairment and Transaction- Related Charges
	Products	Services				
Year ended December 31, 2023						
United States Print and Related Services	\$ 1,949.7	\$ 604.6	\$ 56.6	\$ 113.7	\$ 57.6	\$ 66.3
International	384.4	19.0	18.3	14.8	13.2	9.6
Total operating segments	2,334.1	623.6	74.9	128.5	70.8	75.9
Corporate	—	—	(49.2)	0.3	—	1.6
Total	<u>\$ 2,334.1</u>	<u>\$ 623.6</u>	<u>\$ 25.7</u>	<u>\$ 128.8</u>	<u>\$ 70.8</u>	<u>\$ 77.5</u>
Year ended December 31, 2022						
United States Print and Related Services	\$ 2,126.6	\$ 668.1	\$ 108.3	\$ 124.7	\$ 46.4	\$ 12.1
International	401.7	20.6	(4.5)	16.1	13.9	30.7
Total operating segments	2,528.3	688.7	103.8	140.8	60.3	42.8
Corporate	—	—	(50.3)	0.5	—	2.0
Total	<u>\$ 2,528.3</u>	<u>\$ 688.7</u>	<u>\$ 53.5</u>	<u>\$ 141.3</u>	<u>\$ 60.3</u>	<u>\$ 44.8</u>

Restructuring, impairment and transaction-related charges for the years ended December 31, 2023 and 2022, are further described in Note 3, “Restructuring, Impairment and Transaction-Related Charges,” and are included in the operating income (loss) results by segment above.

A reconciliation of operating income to earnings (loss) before income taxes as reported in the consolidated statements of operations for the years ended December 31, 2023 and 2022, was as follows:

	2023	2022
Operating income	\$ 25.7	\$ 53.5
Less: interest expense	70.0	48.4
Less: net pension income	(1.7)	(12.6)
Earnings (loss) before income taxes	<u>\$ (42.6)</u>	<u>\$ 17.7</u>

Total assets by segment at December 31, 2023 and 2022, are shown in the following table:

	2023	2022
United States Print and Related Services	\$ 1,191.2	\$ 1,390.2
International	271.1	289.5
Total operating segments	1,462.3	1,679.7
Corporate	47.4	22.1
Total	<u>\$ 1,509.7</u>	<u>\$ 1,701.8</u>

QUAD/GRAPHICS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In millions, except share and per share data and unless otherwise indicated)

Note 20. Geographic Area Information

The table below presents the Company's net sales and long-lived assets as of and for the years ended December 31, 2023 and 2022, by geographic region. The amounts in this table differ from the segment data presented in Note 19, "Segment Information," because each operating segment includes operations in multiple geographic regions, based on the Company's management reporting structure.

	United States	Europe	Latin America	Other	Combined
2023					
Net sales					
Products	\$ 1,902.3	\$ 160.2	\$ 263.6	\$ 8.0	\$ 2,334.1
Services	604.6	19.0	—	—	623.6
Property, plant and equipment—net ..	505.6	46.2	59.4	9.4	620.6
Operating lease right-of-use assets—net	85.6	2.5	2.1	6.4	96.6
Other intangible assets—net	20.9	0.1	0.8	—	21.8
Other long-term assets	66.1	7.2	6.2	0.5	80.0
2022					
Net sales					
Products	\$ 2,076.9	\$ 181.3	\$ 259.6	\$ 10.5	\$ 2,528.3
Services	668.1	20.6	—	—	688.7
Property, plant and equipment—net ..	563.6	51.6	46.9	10.0	672.1
Operating lease right-of-use assets—net	102.6	2.3	3.8	2.4	111.1
Other intangible assets—net	45.2	0.3	1.4	—	46.9
Other long-term assets	67.8	7.4	5.1	0.5	80.8

Note 21. Subsequent Events

Declaration of Quarterly Dividend

On February 15, 2024, the Company declared a quarterly dividend of \$0.05 per share, which will be paid on March 12, 2024, to shareholders of record as of February 27, 2024.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

The Company's management, with the participation of the Company's principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934) as of the end of the period covered by this report and has concluded that, as of the end of such period, the Company's disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

There were no changes in the Company's internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934) that occurred during the fiscal quarter ended December 31, 2023, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

The Company's management, including the Company's Chairman, President and Chief Executive Officer and Chief Financial Officer, is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Securities Exchange Act of 1934. The Company's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of published financial statements in accordance with generally accepted accounting principles.

The Company's management, including the Company's Chairman, President and Chief Executive Officer and Chief Financial Officer, has assessed the effectiveness of the Company's internal control over financial reporting based on the framework in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, the Company's management has concluded that, as of December 31, 2023, the Company's internal control over financial reporting was effective based on that framework.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of the effectiveness to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Ernst & Young LLP (PCAOB ID No. 42) the Company's independent registered public accounting firm, issued an audit report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2023, which is included herein.

Audit Report of Independent Registered Public Accounting Firm

The audit report required under this Item 9A, "Controls and Procedures," is contained in Item 8, "Financial Statements and Supplementary Data," of Part II of this Annual Report on Form 10-K under the heading "Report of Independent Registered Public Accounting Firm."

Item 9B. Other Information

During the quarter ended December 31, 2023, no director or Section 16 officer of the Company adopted or terminated a “Rule 10b5-1 trading arrangement” or “non-Rule 10b5-1 trading arrangement”, as each term is defined in Item 408 of Regulation S-K.

On February 21, 2024, the Board of Directors of the Company approved amendments to the Amended Bylaws of the Company (as amended, the “Bylaws”). The amendments permit the Company to hold meetings of its shareholders by remote communication.

The foregoing description of the changes made to the Bylaws does not purport to be complete and is qualified in its entirety by reference to the full text of the Bylaws, a copy of which is filed as Exhibit 3.3 to this Annual Report on Form 10-K and is incorporated herein by reference.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item is included under the captions “Election of Directors”, “Corporate Governance—Board Committees—Audit Committee” and “Miscellaneous—Delinquent Section 16(a) Reports” in the Company’s definitive Proxy Statement for its 2024 Annual Meeting of Shareholders (“Proxy Statement”) and is hereby incorporated herein by reference. Information with respect to the executive officers of the Company appears in Part I, Item 1, “Business,” of this Annual Report on Form 10-K.

The Company has adopted a Code of Business Conduct that applies to all of the Company’s employees, including the Company’s Chief Executive Officer, Chief Financial Officer, Controller and other persons performing similar functions. The Company has posted a copy of the Code of Business Conduct on its website at quad.com, and such Code of Business Conduct is available in print, without charge, to any shareholder who requests it from the Company’s Secretary. The Company intends to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding amendments to, or waivers from, the Code of Business Conduct by posting such information on its website at quad.com. The Company is not including the information contained on its website as part of, or incorporating it by reference into, this Annual Report on Form 10-K.

Item 11. Executive Compensation

The information required by this Item is included under the captions “Compensation of Executive Officers,” “2023 Summary Compensation Table,” “Grants of Plan Based Awards in 2023,” “Outstanding Equity Awards at December 31, 2023,” “Option Exercises and Stock Vested in 2023,” “2023 Pension Benefits,” “2023 Nonqualified Deferred Compensation,” “Director Compensation,” “Compensation Committee Report,” “Corporate Governance—Board Committees—Compensation Committee Interlocks and Insider Participation,” “Pay Versus Performance,” and “Miscellaneous—Assessment of Compensation-Related Risk,” in the Proxy Statement and is hereby incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item with respect to security ownership of certain beneficial owners and management is included under the caption “Stock Ownership of Management and Others” in the Proxy Statement and is hereby incorporated by reference.

Equity Compensation Plan Information

The following table sets forth information with respect to compensation plans under which equity securities of the Company are authorized for issuance as of December 31, 2023. The table does not include employee benefit plans intended to meet the qualification requirements of Section 401(a) of the Internal Revenue Code. All equity compensation plans are described more fully in Note 16, “Equity Incentive Programs,” to the consolidated financial statements in Part II, Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K.

Plan Category	Number of securities to be issued upon the exercise of outstanding options, warrants and rights	Weighted average exercise price of outstanding options, warrants and rights ⁽²⁾	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in the first column)
Equity compensation plans approved by security holders ⁽¹⁾	5,003,265	\$ —	2,588,136
Equity compensation plans not approved by security holders	—	—	—
Total	5,003,265	\$ —	2,588,136

⁽¹⁾ Consists of the Company’s 2010 Omnibus Incentive Plan and 2020 Omnibus Incentive Plan. Awards under the Omnibus Plans (no new awards can be made under the 2010 plan) may consist of incentive awards, stock options, stock appreciation rights, performance shares, performance share units, shares of class A stock, restricted stock, restricted stock units, deferred stock units or other stock-based awards as determined by the Company’s Board of Directors.

⁽²⁾ The weighted average exercise price of outstanding options, warrants and rights only includes stock options.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item is included under the caption “Corporate Governance” in the Proxy Statement and is hereby incorporated by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item is included under the caption “Miscellaneous—Independent Registered Public Accounting Firm” in the Proxy Statement and is hereby incorporated by reference.

PART IV

Item 15. Exhibit Index and Financial Statement Schedules

1. Consolidated financial statements—The consolidated financial statements listed in the accompanying index to consolidated financial statements are filed as part of this Annual Report on Form 10-K.
2. Financial statement schedule—All financial statement schedules are omitted since the required information is not present or is not present in amounts sufficient to require submission of the schedules, or because the information required is included in the consolidated financial statements and notes thereto.
3. Exhibits—The exhibits listed in the accompanying “Exhibit Index” are filed as part of this Annual Report on Form 10-K.

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EXHIBIT INDEX

The exhibits listed in the exhibit index below are filed as part of this Annual Report on Form 10-K.

Exhibit Number	Exhibit Description
(3.1)	Amended and Restated Articles of Incorporation of Quad/Graphics, Inc., as amended through May 23, 2019 (incorporated by reference to Exhibit 3 to the Company's Current Report on Form 8-K, dated May 20, 2019, and filed on May 24, 2019).
(3.2)	Amendments to the Amended Bylaws of Quad/Graphics, Inc., effective February 21, 2024.
(3.3)	Amended Bylaws of Quad/Graphics, Inc., as amended through February 21, 2024.
(4.1)	Note Agreement, dated September 1, 1995, among Quad/Graphics, Inc., certain subsidiaries of Quad/Graphics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 4.4 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).
(4.2)	First Amendment and Consent, dated June 1, 1996, to the Note Agreement, dated September 1, 1995, among Quad/Graphics, Inc., certain subsidiaries of Quad/Graphics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 4.5 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).
(4.3)	Second Amendment, dated as of March 24, 1998, to the Note Agreement, dated September 1, 1995, among Quad/Graphics, Inc., certain subsidiaries of Quad/Graphics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 4.6 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).
(4.4)	Third Amendment, dated as of January 26, 2006, to the Note Agreement, dated September 1, 1995, among Quad/Graphics, Inc., certain subsidiaries of Quad/Graphics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 4.7 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).
(4.5)	Fourth Amendment, dated as of November 24, 2014, to the Note Agreement, dated September 1, 1995, among Quad/Graphics, Inc., certain subsidiaries of Quad/Graphics, Inc. and the purchasers named therein (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated November 24, 2014 and filed on November 26, 2014).
(4.6)	Amendment No. 8, dated as of January 4, 2024, to Second Amended and Restated Credit Agreement, dated as of April 28, 2014, by and among Quad/Graphics, Inc., as the Borrower, the Lenders party thereto, and JPMorgan Chase Bank, N.A., as Administrative Agent
(4.7)	Quad/Graphics, Inc.'s Description of Securities (incorporated by reference to Exhibit 4.8 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).

Certain other instruments, which would otherwise be required to be listed above, have not been so listed as such instruments do not authorize long-term debt securities in an amount that exceeds 10% of the total assets of Quad/Graphics, Inc. and its subsidiaries on a consolidated basis. Quad/Graphics, Inc. agrees to furnish a copy of any such instrument to the Securities and Exchange Commission upon request.

Exhibit Number	Exhibit Description
<u>(9.1)</u>	<u>Amended and Restated Voting Trust Agreement, dated as of June 25, 2010, by Betty E. Quadracci, J. Joel Quadracci, Elizabeth M. Quadracci-Harned and David A. Blais, as trustees as of the date of the agreement's execution (incorporated by reference to Exhibit 9.1 to the Company's Current Report on Form 8-K dated July 2, 2010 and filed on July 9, 2010).</u>
<u>(9.2)</u>	<u>Amendment to Voting Trust.</u>
<u>(10.1)++</u>	<u>Dividend/Discount Deferred Compensation Plan (incorporated by reference to Exhibit 10.7 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).</u>
<u>(10.2)++</u>	<u>Employment Agreement, effective as of January 1, 2004, by and between Quad/Graphics, Inc. and James Joel Quadracci, as amended (incorporated by reference to Exhibit 10.9 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).</u>
<u>(10.3)++</u>	<u>Form of Amendment, effective as of September 15, 2016, to the Employment Agreements by and between Quad/Graphics, Inc. and J. Joel Quadracci (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 and filed on November 2, 2016).</u>
<u>(10.4)++</u>	<u>Form of Executive Salary Continuation Plan for James Joel Quadracci (incorporated by reference to Exhibit 10.15 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).</u>
<u>(10.5)++</u>	<u>Executive Supplemental Retirement Plan (incorporated by reference to Exhibit 10.16 to the Company's Registration Statement on Form S-4 (Reg. No. 333-165259)).</u>
<u>(10.6)++</u>	<u>Quad/Graphics, Inc. 2010 Omnibus Incentive Plan, as amended through May 20, 2019 (incorporated by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed on April 10, 2019).</u>
<u>(10.7)++</u>	<u>Form of Stock Option Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated December 16, 2010 and filed on December 17, 2010).</u>
<u>(10.8)++</u>	<u>Form of Stock Option and Dividend Equivalent Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012 and filed on May 10, 2012).</u>
<u>(10.9)++</u>	<u>Form of Deferred Stock Unit Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K dated December 16, 2010 and filed on December 17, 2010).</u>
<u>(10.10)++</u>	<u>Form of Restricted Stock Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 and filed on May 7, 2014).</u>
<u>(10.11)++</u>	<u>Form of Restricted Stock Unit Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2014 and filed on May 7, 2014).</u>

Exhibit Number	Exhibit Description
<u>(10.12)++</u>	<u>Form of Performance Share Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2014 and filed on August 7, 2014).</u>
<u>(10.13)++</u>	<u>Form of Performance Unit Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2014 and filed on August 7, 2014).</u>
<u>(10.14)++</u>	<u>Form of Restricted Stock Unit Award Agreement, with full retirement vesting, under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015 and filed on August 5, 2015).</u>
<u>(10.15)++</u>	<u>Quad/Graphics, Inc. Executive Severance Plan, effective as of September 15, 2016 [participants are David Honan, Eric Ashworth, Kelly Vanderboom, Julie Currie, Anthony Staniak, Donald McKenna, Dana Gruen and Robert Quadracci] (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 and filed on November 2, 2016).</u>
<u>(10.16)++</u>	<u>Form of 2020 Cash Long-Term Incentive Plan Net Leverage Ratio Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>
<u>(10.17)++</u>	<u>Form of 2020 Cash Long-Term Incentive Plan Net Sales Wins Award Agreement under the Quad/Graphics, Inc. 2010 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.18 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>
<u>(10.18)++</u>	<u>Quad/Graphics, Inc. 2020 Omnibus Incentive Plan, as amended (incorporated by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed on April 12, 2023).</u>
<u>(10.19)++</u>	<u>Form of Deferred Stock Unit Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.20 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>
<u>(10.20)++</u>	<u>Form of Restricted Stock Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.21 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>
<u>(10.21)++</u>	<u>Form of Restricted Stock Unit Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.22 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>
<u>(10.22)++</u>	<u>Form of 2021 Cash Long-Term Incentive Plan Net Leverage Ratio Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).</u>

Exhibit Number	Exhibit Description
(10.23)++	Form of 2021 Cash Long-Term Incentive Plan Net Sales Wins Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and filed on February 24, 2021).
(10.24)++	Alternative Form of 2021 Cash Long-Term Incentive Plan Net Leverage Ratio Award Agreement under the Quad/Graphics, Inc. 2020 Omnibus Incentive Plan (incorporated by reference to Exhibit 10 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2021 and filed on May 5, 2021).
(21)	Subsidiaries of Quad/Graphics, Inc.
(23)	Consent of Ernst & Young, LLP.
(31.1)	Certification of the Chief Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934.
(31.2)	Certification of the Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934.
(32)	Written Statement of the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350.
(97)	Quad/Graphics, Inc. Compensation Recovery Policy
(99)	Proxy Statement for the 2024 Annual Meeting of Shareholders. [To be filed with the Securities and Exchange Commission under Regulation 14A within 120 days after December 31, 2023; except to the extent specifically incorporated by reference, the Proxy Statement for the 2024 Annual Meeting of Shareholders shall not be deemed to be filed with the Securities and Exchange Commission as part of this Annual Report on Form 10-K.]
(101)	Financial statements from the Annual Report on Form 10-K of Quad/Graphics, Inc. for the year ended December 31, 2023 formatted in Inline eXtensible Business Reporting Language (iXBRL): (i) the Consolidated Statements of Operations, (ii) the Consolidated Statements of Comprehensive Income (Loss), (iii) the Consolidated Balance Sheets, (iv) the Consolidated Statements of Cash Flows, (v) the Consolidated Statements of Shareholders' Equity, (vi) the Notes to Consolidated Financial Statements, and (vii) document and entity information.
(104)	Cover Page Interactive Data File (formatted in iXBRL and contained in Exhibit 101).

++ A management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on this 21st day of February 2024.

QUAD/GRAPHICS, INC.

By: /s/ J. Joel Quadracci

J. Joel Quadracci

Chairman, President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ J. Joel Quadracci</u> J. Joel Quadracci	Chairman, President and Chief Executive Officer (Principal Executive Officer)	February 21, 2024
<u>/s/ Anthony C. Staniak</u> Anthony C. Staniak	Chief Financial Officer (Principal Financial Officer)	February 21, 2024
<u>/s/ Anne M. Bauer</u> Anne M. Bauer	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 21, 2024
<u>/s/ Douglas P. Buth</u> Douglas P. Buth	Director	February 21, 2024
<u>/s/ Beth-Ann Eason</u> Beth-Ann Eason	Director	February 21, 2024
<u>/s/ Kathryn Quadracci Flores</u> Kathryn Quadracci Flores	Director	February 21, 2024
<u>/s/ John C. Fowler</u> John C. Fowler	Director	February 21, 2024
<u>/s/ Stephen M. Fuller</u> Stephen M. Fuller	Director	February 21, 2024
<u>/s/ Christopher B. Harned</u> Christopher B. Harned	Director	February 21, 2024
<u>/s/ Melanie A. Huet</u> Melanie A. Huet	Director	February 21, 2024
<u>/s/ Jay O. Rothman</u> Jay O. Rothman	Director	February 21, 2024
<u>/s/ John S. Shiely</u> John S. Shiely	Director	February 21, 2024