Civil & Environmental Engineering Services

market landscape
q2 2019

TABLE OF CONTENTS

foreword

The civil and environmental engineering industries continue to be fueled by positive economic momentum, and a focus on the state of infrastructure in the United States holds promise for future projects. Responding to the challenges posed by trade-related pricing volatility, the demand for talent, and the incorporation of new technology will serve as differentiators among firms going forward.

Technology presents both a challenge and an opportunity, as digital transformation can help firms streamline operations, run more efficient processes, and obtain better margins. This report highlights how the civil and environmental engineering fields are adapting to this transformation and the positive outlook for M&A activity within the space. In addition to the engineering sector, 7MA closely tracks the broader AEC industry and additional research can be found on our website.

| WITHIN THIS ECOSYSTEM WE FOCUS ON

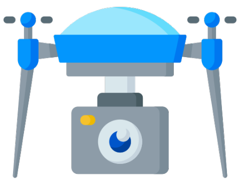
1. Trends
    a. Drones
    b. Cloud Computing
    c. Robotics
    d. 3D Printing
2. Top Players
    a. General Landscape
    b. Technology Vendors
3. M&A Activity
    a. Buyer Trends
    b. Strategic Buyers
    c. Portfolio Companies
    d. Public Multiples Over Time
    e. Recent Transactions

Author:
Brynne Miller
Associate, 7 Mile Advisors

TRENDS

The integration of technology, both in products and processes, is shaping how civil and environmental engineering firms do business every day. While this is not a new phenomenon, several technologies have come to the forefront recently as factors that are helping spur digital transformation in the engineering industry. Below we discuss drones, cloud computing, robotics, and 3D printing as current trends which are embraced with increasing frequency by civil and environmental engineering firms.

Drones



Using unmanned aerial vehicles (commonly known as drones) has been rapidly gaining traction in the construction and engineering industries. Minimizing risk, disruption, and man hours while still providing necessary high quality imagery and detailed information presents an attractive opportunity for engineering firms across a variety of specialties. Equipping drones with a variety of equipment and sensors allows for deployment in the service of a diverse set of goals--think LiDAR in the surveying process for civil/site engineering, developing topographic or hydrographic maps for environmental work, or aerial monitoring for security or project management purposes.

Front-running engineering firms have already incorporated drone technology into their portfolio of services, including aerial mapping services and geospatial engagements. We expect more firms to adopt this technology. Beyond drone data collection, firms are building software applications to process and analyze the acquired data to provide actionable information to clients. As a recent report by Accenture outlines, incorporating drones should revolve around reinventing business processes rather than trying to force their integration into existing operations (1). Furthermore, it is imperative that firms recognize drones represent a tool and the actual value to an engineering firm comes from the data produced. Vendors such as 3DR and Propeller Aerobatics aim to provide end-to-end solutions to help bridge this gap.

Cloud Computing

Cloud computing is a core part of the digital transformation that is changing many industries' landscapes, and engineering is no exception. The ability to utilize off-site storage and computing power presents a transformative opportunity for civil and environmental engineering firms.

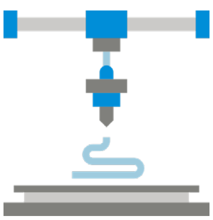
Firstly, being able to harness advanced computing capabilities remotely means that firms no longer have to rely on powerful in-house machines for CAD, or running detailed simulations. This could present an advantage for smaller firms who no longer have to be limited on engagements by the amount of computing power they have readily available (2). For firms of any size, cloud storage can lessen the investment needed to store and manage large data sets, such as the output of LiDAR surveys performed by drones. Additionally, having data, plans, and files in the cloud makes them readily shareable so that all parties can work and collaborate in real time. With accessibility via mobile technology and the cloud, engineers can make changes in the field or on the jobsite. This eliminates the need to be back at the office to log changes, as well as the lag in notifying other stakeholders of updates.

Robotics

The environment and tasks best suited for implementation of robotics are controlled and repetitive, respectively. This continues to present a challenge for applying robotics to the construction industry, especially at construction sites, but the engineering industry that complements construction does not have similar barriers. The less complex tasks of an environmental or civil engineering engagement could represent an opportunity to apply robotic process automation. These tasks could encompass some project-related functions, as well as back office processes, as both types may be undertaken in a much more controlled environment than is found on sometimes chaotic construction sites.

As robotics gains traction in the construction industry itself, there is some evidence that robot-centric construction can allow for later-stage changes by engineers and other design professionals without as much of a chance of incurring construction delays and cost overruns linked to the gap between the design and implementation phases (3). One could imagine an iterative improvement cycle wherein robotics applied to both the engineering and construction processes creates synergies that build upon one another throughout the design and build process.

3D Printing



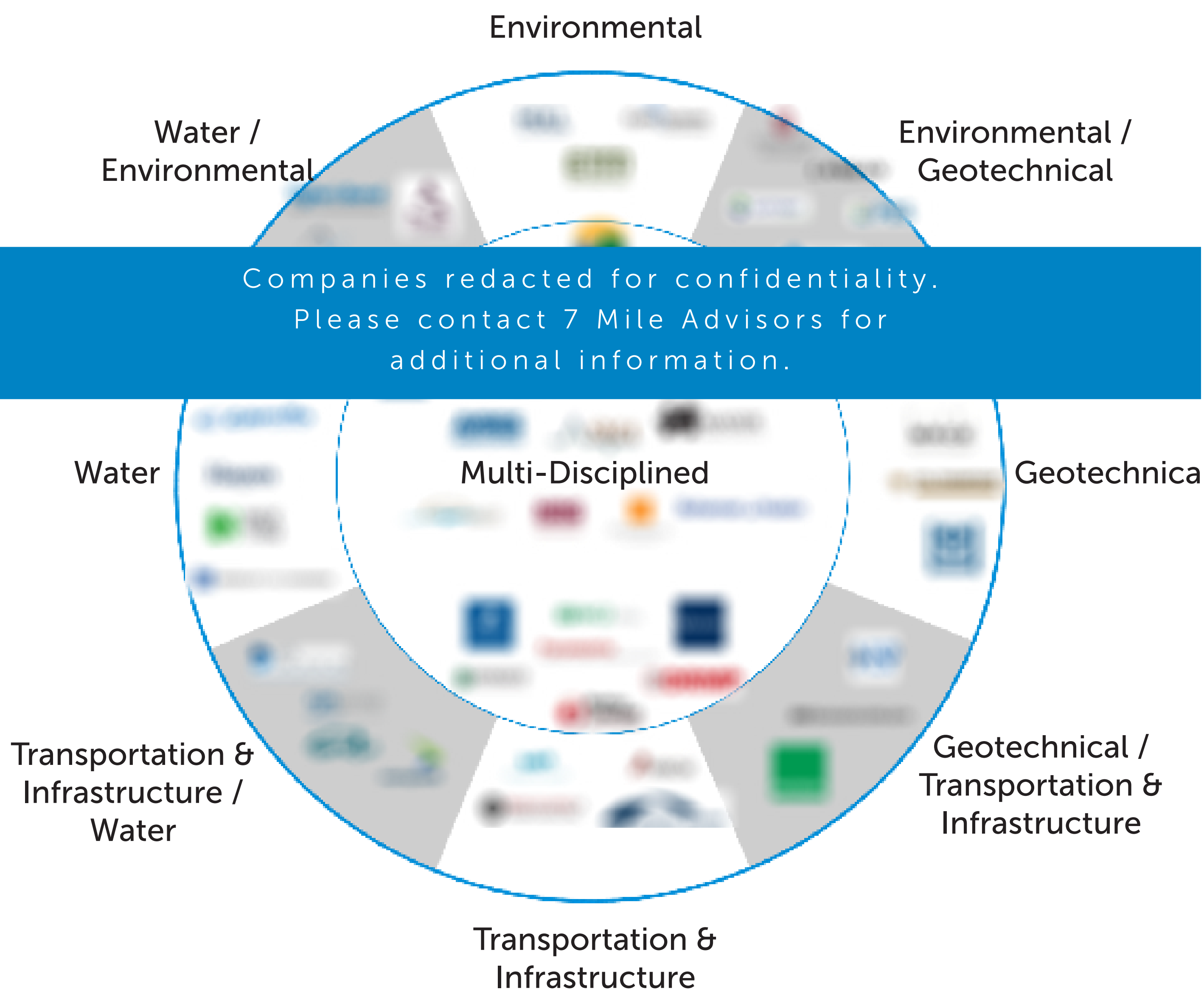
Additive manufacturing, commonly known as 3D printing, has a longer history than many realize, with origins in the 1980s. It has come into its heyday more recently, and its applications in engineering and construction are becoming more tangible as companies undertake projects that source parts of the built environment via 3D printing. A 3D printed pedestrian bridge of micro-reinforced concrete was opened in late 2017 in Spain, along with a span mostly meant for cyclists and made of reinforced, pre-stressed concrete in the Netherlands (4). A Dutch company, MX3D, is 3D printing a fully functional stainless steel bridge meant to span a canal in Amsterdam as part of its proof-of-concept for their method of 3D printing most weldable alloys (steel, aluminium, bronze, etc.) at greater speed and less cost. Interestingly, they have incorporated the previously discussed robotic trend, by using in-situ industrial robots for the printing process (5).

While these may seem modest projects in size, large players in the industry are taking notice of the promise of 3D printing even in the pre-construction engineering and design phase. Ramboll Group, a Danish engineering and consultancy firm and recent acquirer of engineering firm OBG, noted how 3D modeling helps bridge the gap between the spatial thinking of architects and the engineers tasked with making the design a reality (6). The ability to print directly from digital design files created by applications already familiar to workers in the engineering industry, such as software produced by Autodesk and Bentley, creates a streamlined process that can benefit an engineering firm both during a pitch process and once work is won.

TOP PLAYERS

Landscape

Civil and environmental engineering firms continue to experience strong demand for their services based on economic conditions and infrastructure needs. The companies included in the civil and environmental engineering landscape are well positioned players with focus areas that encompass a broad spectrum of engineering services. We have segmented the companies based on multi-disciplined versus more specialized, focusing on environmental, geotechnical, transportation, and water services. Some more specialized firms focus on multiple areas and we have displayed them in accordance with the two areas they seem to serve most. We believe these top companies are equipped with service offerings that will let them meet ongoing demand and meaningfully impact the civil and environmental engineering space.



1. AUTODESK

Autodesk

Autodesk, Inc. operates as a design software and services company worldwide. Among its offerings relevant to the engineering industry are AutoCAD, a professional design, drafting, detailing, and visualization software and Civil 3D, a surveying, design, analysis, and documentation solution for civil engineering, including land development, transportation, and environmental projects. It also provides BIM 360, a construction management cloud-based software, and Revit software for building information modeling. Autodesk, Inc. sells its products and services to customers directly, as well as through distributors and resellers.

2. esri

ESRI

Environmental Systems Research Institute, Inc. develops GIS and mapping software for organizations in commercial, government, natural resources, and utilities industries. The company offers ArcGIS, a mapping software that connects people with maps, data, and apps through geographic information systems. Its solutions include ArcGIS Online, a cloud-based mapping and collaboration platform for organizations, and ArcGIS for Desktop that includes applications for mapping, editing, and analysis. The company's solutions also include ArcGIS Enterprise that includes a range of client apps that provides a dashboard summarizing critical business information, brings maps into mainstream business intelligence software, and helps field crews collect data, as well as to process and analyze datasets.

3. Bentley Advancing Infrastructure

Bentley

Bentley Systems, Incorporated develops software for infrastructure design, construction, and operations. The company serves engineers, architects, geospatial professionals, constructors, and owner-operators in the course of design, construction, and operation of infrastructure. Its OpenRoads and OpenRail products support civil design professionals while its PLAXIS, gINT, and Soilvision products provide support for geotechnical engineering. Among its offerings in the hydraulics and hydrology space are WaterGEMS and WaterCAD.

4. Deltek

Deltek

Deltek, Inc. provides enterprise software and information solutions for the professional services and government contracting markets worldwide. For the engineering industry, its offerings focus on project-based ERP solutions meant to manage the entirety of the project life cycle. Among its solutions are Ajera, targeted to growing firms looking to streamline back office processes and provide real-time reporting; Vantagepoint, putting people and projects at the center of business to maximize productivity and increase profitability; and Vision, tools for greater visibility, real-time information and streamlined processes for front- and back-office workers.

M&A ACTIVITY

The pace of M&A for the engineering and construction industries slowed in Q1 2019 relative to 2018, but underlying fundamentals still remain conducive for deal activity (7). Although economic uncertainty and trade tensions present headwinds, global population growth that will necessitate new infrastructure at the same time existing infrastructure needs upgrades or repairs should create steady demand for engineering services. After heightened M&A activity in 2018 some buyers may pause to digest their recent acquisitions, while others may be spurred on to become acquisitive due to the continued competitive landscape. The economic expansion over the past decade has allowed firms to see positive changes in their balance sheets, providing cash on hand to pursue acquisitions. Industry watchers also see potential for sustained activity on the private equity front, driven by exit activity and growing platforms (8).

Buyer Trends

Looking at buyers active in the civil and environmental engineering space, we see a variety of motivations behind recent acquisitions. A number of buyers cited specific capabilities of the target company as motivation, allowing a firm to branch into a niche area or acquire expertise in a field that complements their existing operations. Geography was also frequently mentioned, with acquired firms serving to further a presence in existing regions served by the buyer or as a platform from which to expand into a new territory. 7 Mile recently advised RS&H on its acquisition of transportation engineering and consulting firm Tsiouvaras Simmons Holderness, which provided RS&H with a substantial presence in the Colorado market. Finally, recent deals also show some interest on the part of engineering services firms in obtaining IT or digital capabilities as technology continues to influence the evolution of the engineering industry and broader business landscape.

Strategic Buyers

NV5

NV5 provides engineering and consulting services to public and private sector clients.
Total Enterprise Value ("TEV"): $1.014b
Employees: 2,153
Recent Acquisitions: J.V. Surveying, LLC (4/2019), The Sextant Group, Inc. (3/2019), Celtic Energy Inc. (1/2019)

Stantec Inc.

International professional services company in the design and consulting industry
TEV: $3.826b | Employees: 22,000
Recent Acquisitions: Wood & Grieve Engineers Limited (3/2019), True Grit Engineering Limited (10/2018), Peter Brett Associates LLP (9/2018), Cegertec Experts Conseils Inc. (5/2018)

WSP Global Inc.

Canadian business providing management and consultancy services to built and natural environment
TEV: $7.367b | Employees: 47,700
Recent Acquisitions: Berger Group Holdings, Inc. (12/2018), Irwinconsult Pty Ltd. (12/2018), Kontigo AB (10/2018)

Tetra Tech, Inc.

Leading provider of consulting, engineering, program management, construction management and technical services worldwide
TEV: $3.848b | Employees: 17,000
Recent Acquisitions: Global Tech Inc. (4/2019), NDY Management Pty Limited (6/2018), Bridgenet International Inc. (1/2018)

Salas O'Brien Engineers, Inc.

Provides facilities engineering, planning, architectural, design, and construction management services

TEV: - | Employees: 300

Recent Acquisitions: WMA Consulting Engineers, Ltd. (2/2019), Technical Roof Services, Inc. (11/2018), Axiom Commissioning Group & T-Squared Professional Engineers Inc. (2/2018)

Arcadis NV

Global design, engineering and management consulting company based in the Zuidas, Amsterdam, Netherlands

TEV: $1.988b | Employees: 26,328

Recent Acquisitions: EAMS Group Ltd. (3/2019), IBUe GmbH (8/2018), Skipworth Engelhardt Asset Management Strategists Limited (1/2018)

Private Equity Backed Companies

A number of companies backed by private equity have been active buyers themselves recently. 7 Mile expects continued M&A activity fueled by both the desire to add portfolio companies and to build out existing platforms.

Ardurra Group, LLC

Multidisciplinary services firm, providing broad-based solutions that are tailored to the specific needs of public and private sector environments

Employees: 350 | Recent Acquisitions: Design South Professional, Inc. (3/2019), Andersonpenna Partners, Inc. (9/2018), PCA Global (8/2018)

Investor: Round Table Capital Management, LLP

Apex Companies, LLC

Provides comprehensive professional and field services to assess, prevent, and cure environmental issues related to water, ground, facilities, and air quality

Employees: 700 | Recent Acquisitions: Design South Professional, Inc. (3/2019), Andersonpenna Partners, Inc. (9/2018), PCA Global (8/2018)

Investors: Sentinel Capital, Yukon Partners

CHA Consulting, Inc.

Diversified, full-service engineering and construction management firm providing a wide range of planning and design services to public, private and institutional clients

Employees: 929 | Recent Acquisitions: Daedalus Projects, Inc. (3/2019)

Investor: First Reserve Corporation

Consor

Unified, full-service engineering firm

Employees: 650 | Recent Acquisitions: Structural Grace (5/2019), Infrastructure Engineers (2018), Johnson-Adams & Associates (2018), AIA Engineers (2017), Target Engineering Group (2016)

Investors: Keystone Capital

ERM

Global provider of environmental, health, safety, risk, and social consulting services

Employees: 4,900 | Acquisitions: Kathy Jones and Associates Pty Ltd (11/2018)

Investor: OMERS Private Equity

Trinity Consultants, Inc.

Provides EHS regulatory compliance assistance to regulated entities with a focus on air quality permitting

Employees: 700 | Acquisitions: ASK Consulting Engineers (2/2019), The Redstone Group (1/2019), Advent Engineering Services, Inc. (7/2018)

Investor: Levine Leichtman Capital Partners, Barings BDC, Inc.

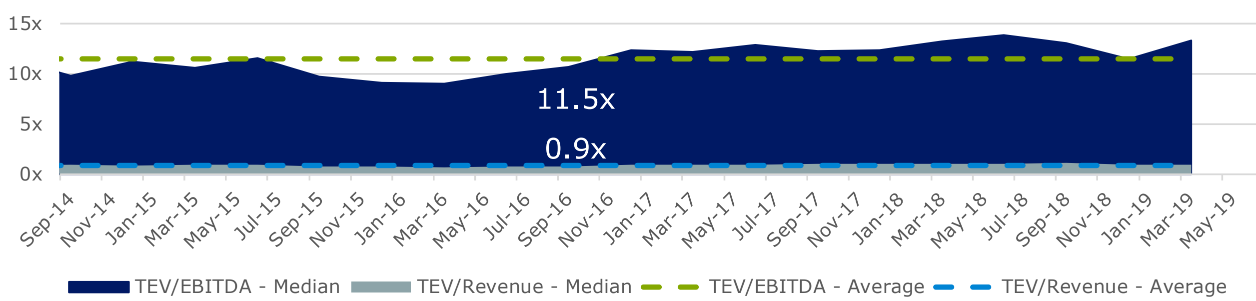
Public Multiples Over Time

To benchmark financial performance and multiples across the engineering sector, 7MA has developed a public basket comparison showing LTM financial performance of public AEC services firms.

Company	TEV $m	LTM Rev $m	Rev Growth YoY	GP %	EBITDA %	TEV / Rev X	TEV / EBITDA X	# FTEs	Rev / FTE $k
Willdan Group, Inc.	433	309	19%	32%	7%	1.4	21.5	927	334
RPS Group plc	585	812	1%	24%	10%	0.7	7.5	5,556	146
NV5 Global, Inc.	1,014	441	21%	48%	13%	2.3	17.4	2,153	205
Arcadis NV	1,988	3,727	1%	17%	6%	0.5	9.6	26,328	142
Stantec Inc.	3,826	2,582	11%	53%	11%	1.5	14.1	22,000	117
Tetra Tech, Inc.	3,848	2,262	7%	17%	11%	1.7	16.1	17,000	133
SNC-Lavalin Group Inc.	5,943	7,494	1%	4%	4%	0.8	17.9	52,435	143
WSP Global Inc.	7,367	6,113	13%	18%	8%	1.2	15.5	47,700	128
AECOM	8,279	20,531	7%	4%	4%	0.4	9.0	87,000	236
Jacobs Engineering Group Inc.	12,542	16,506	68%	19%	6%	0.8	12.1	74,400	222
Average	4,583	6,078	15%	24%	8%	1.1	14.1	33,550	181
Median	3,837	3,155	9%	18%	7%	1.0	14.8	24,164	145

share price as of 03Jun19

- The historical chart depicts TEV / EBITDA and TEV / REV multiples in this sector. After a dip in late 2015, EBITDA multiples have risen over the last few years, and revenue multiples have followed a similar path, which indicates market value growth momentum.



Recent Transactions

Date	Target	Buyer / Investor	Total Transaction Value (m)	Target Rev (m)	TEV / Rev
May-23-2019	Cambridge Construction	Anser Advisory	-	-	-
May-22-2019	Geomatics Data Solutions	Woolpert, Inc.	-	-	-
May-21-2019	AM Engineering, Inc.	Fremont-Wright, LLC	-	-	-
May-20-2019	WYG PLC	Tetra Tech UK	192.8	81.8	0.4x
May-17-2019	asys, Inc.	RTM Engineering Consult.	-	-	-
May-17-2019	STS Group	Dussmann Stiftung & Co.	167.9	-	-
May-15-2019	The Lemoine Company	Bernhard Capital Partners	-	-	-
May-14-2019	Infrastructure & Energy Alt.	Oaktree Capital, Ares	920.0	50.0	-
May-13-2019	Calthorpe Associates, Inc.	HDR, Inc.	-	-	-
May-13-2019	Quincy Engineering	Murraysmith, Inc.	-	-	-
May-10-2019	Target Emission Services	Montrose Environmental	-	-	-
May-9-2019	Structural Grace, Inc.	CONSOR	-	-	-
May-7-2019	MLM Group Ltd.	Sweco AB	-	-	-
May-7-2019	OMB Electrical Engineers	Salas O'Brien Engineers	-	-	-
May-6-2019	Hutchinson, Moore & Rauch	Goodwyn, Mills and Cawood	-	-	-
May-1-2019	GFA International Inc.	Palm Beach Capital	-	-	-
May-1-2019	Leach Wallace Associates	WSP Global Inc.	-	-	-
Apr-30-2019	Design Alliance, Inc.	Farnsworth Group	-	-	-
Apr-30-2019	OMB Electrical Engineers	Salas O'Brien Engineers	-	-	-
Apr-25-2019	Hoahn Landscape Arch.	KCI Technologies Inc.	-	-	-
Apr-25-2019	JEWELL Eng. Consultants	LJB Inc.	-	-	-
Apr-22-2019	All Traffic Data Services	Seaport Capital	-	-	-
Apr-21-2019	The KeyW Holding Corp.	Jacobs Engineering Group	494.9	946.3	1.9x
Apr-18-2019	Hillard Heintze, LLC	Jensen Hughes, Inc.	-	-	-
Apr-16-2019	Fratto Engineering Inc.	Kennedy Associates	-	-	-
Apr-10-2019	Blue Cottage Consulting	Cannon Design, Inc.	-	-	-
Apr-8-2019	J.V. Surveying, LLC	NV5 Global, Inc.	-	-	-
Apr-3-2019	Global Tech Inc.	Tetra Tech, Inc.	-	-	-
Apr-2-2019	WMA Consulting Engineers	Salas O'Brien Engineers	-	-	-
Apr-1-2019	Sage Engineers Inc.	Gannett Fleming, Inc.	-	-	-
Apr-1-2019	The Cardinal Group, Inc.	Ips-Integrated Project Services	-	-	-
Apr-1-2019	Becker Structural Engineers	Thornton Tomasetti, Inc.	-	-	-
Mar-29-2019	Kontigo AB	WSP Global Inc.	-	-	-
Mar-28-2019	EAMS Group Ltd.	Arcadis NV	-	-	-
Mar-27-2019	Paulien & Associates, Inc.	SmithGroupJJR LLC	-	-	-
Mar-27-2019	Indigo Planning Ltd.	WSP Global Inc.	-	-	-
Mar-26-2019	Advanced Land and Water	Barton & Loguidice, P.C.	-	-	-
Mar-25-2019	The Sextant Group, Inc.	NV5 Global, Inc.	-	-	-
Mar-25-2019	Design South Professionals	Ardurra Group, LLC	-	-	-
Mar-20-2019	Green Environment, Inc.	Corporate Environmental Advisors Inc.	-	-	-
Mar-19-2019	Fleming, Andre & Assoc.	CBS Squared, Inc	-	-	-
Mar-15-2019	The Johnson Company	Vanasse Hangen Brustlin	-	-	-
Mar-12-2019	Engineered Solutions, Inc.	CMTA, Inc.	-	-	-
Mar-11-2019	Pfau Long Architecture, Ltd.	Perkins+Will, Inc.	-	-	-
Mar-11-2019	APEM Limited	WestBridge Capital Partners	-	13.1	-
Mar-7-2019	Phoenix Engineering, Inc.	DLZ Corporation	-	5	-
Mar-7-2019	Daedalus Projects, Inc.	CHA Consulting, Inc.	-	-	-

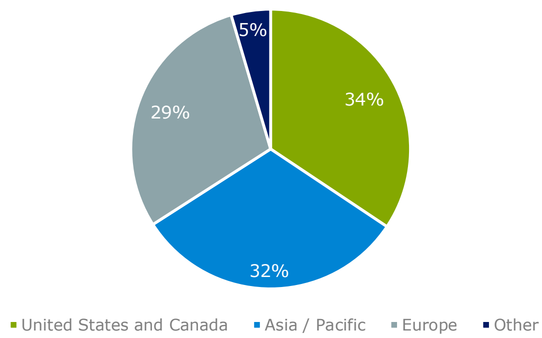
Transaction Analysis

7 Mile Advisors tracked 2,718 transactions in the engineering sector for a total deal value of $74.1 billion during the period from June 2016 to June 2019. The majority of the deals took place in the United States and Canada, 934 ; followed by Asia / Pacific, 858; Europe, 802; and finally other locations, 124.

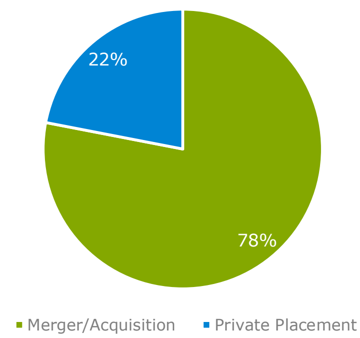
Average TEV / Revenue - 1.66x
Average TEV / EBITDA - 15.53x
Average Deal Value - $116

Source: CapitalIQ

Deals by Location



Deals by Type



7 Mile Transactions In The Space

RS&H
HAS ACQUIRED
Tsiouvaras Simmons Holderness

- Transportation design and CE&I services, with strength in Alternative Delivery
- Extended RS&H's geographic presence in Colorado

Ajax Building Corporation
ACQUIRED BY
Structure Tone
IN PARTNERSHIP WITH
GLOBAL INFRASTRUCTURE SOLUTIONS

- CM-at-Risk and Design-Build Capabilities
- Expanded STO's market reach to education, healthcare, and public sector facilities, as well as geographically into the Southeast

TEC, Inc.
HAS ACQUIRED
Taylor Associates, Inc.

- Tuck-in acquisition
- Advanced TEC's water resources capabilities ahead of sale to Cardno

TEC, Inc.
ACQUIRED BY
Cardno Limited

- Cross-border transaction with publicly traded buyer
- Established Cardno's U.S. environmental presence
- Focus on Federal sector with strength in EIS permitting and remediation

OBG (O'Brien and Gere)
HAS ACQUIRED
Natural Resource Technology, Inc. *

- Strategic acquisition that enhanced OBG's capabilities in contaminated sediment analysis and remediation
- Strengthened OBG's geographic presence in the Midwest

Mayes Testing Engineers, Inc.
ACQUIRED BY
Terracon *

- Construction quality assurance and testing
- Expanded Terracon's CMET offerings to the Pacific Northwest

Lindbergh Associates
a subsidiary of
OBG (O'Brien & Gere)
ACQUIRED BY
T.Y. Lin International *

- Divestiture of wholly-owned A/E subsidiary
- Focus on Federal market
- Created win-win for buyer and seller

VOA Associates, Inc.
ACQUIRED BY
Stantec *

- ENR Top 250 architecture and planning firm
- Enhanced Stantec's portfolio in healthcare, hospitality, entertainment, commercial, and government sectors

* *Deal executed by 7 Mile Advisor Principal while in another firm*

CONFERENCES

1. DBIA Federal Design-Build Symposium | August 7, 2019 | Arlington, VA
2. WEFTEC | September 21 - 25, 2019 | Chicago, IL
3. AASHTO Annual Meeting | October 5, 2019 | St. Louis, MO
4. ACEC's Fall Conference | October 13 - 16, 2019 | Chicago, IL
5. 7 Mile Advisors ACCESS Conference | October 15 - 16, 2019 | Charlotte, NC
6. DBIA Design-Build Conference & Expo | November 6 - 8, 2019 | Las Vegas, NV
7. Environmental Business International Summit | March 2020 | San Diego, CA

CONCLUSION

This report examined the civil and environmental engineering space, what is driving its growth, and M&A activity in the sector. While aging infrastructure and growing populations present societal challenges, they also present opportunity for engineering firms to realize continued demand for their services, particularly in the light of recently favorable economic conditions. Those same economic conditions have created positive balance sheet situations wherein companies have cash on hand and are seeking acquisitions for a variety of reasons in an increasingly competitive engineering landscape. 7MA sees these factors combining to continue driving M&A activity in the civil and environmental engineering space.

CONTACT

headquarters
508 W. 5th St. | Ste. 225
Charlotte, NC 28202

www.7mileadvisors.com

Sources

1. https://www.accenture.com/_acnmedia/PDF-24/Accenture-Drones-Construction-Service.pdf
2. https://blogs.autodesk.com/inventor/2017/03/07/cloud-computing-changing-engineering/
3. https://www.wired.com/story/the-construction-industry-needs-a-robot-revolution/
4. https://www.theguardian.com/technology/2017/oct/18/world-first-3d-printed-bridge-cyclists-netherlands
5. www.mx3d.com
6. https://www.3dsystems.com/learning-center/case-studies/full-color-3d-printing-helps-nordic-civil-engineering-giant-ramboll
7. https://www.pwc.com/us/en/industries/industrial-products/library/engineering-construction-quarterly-deals-insights.
8. FMI Report