


preserving America's infrastructure -
water, wastewater, light rail

 **V&A**
consulting engineers

WOSB | WBE | SBE | DBE



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Debra Kaye
President & CEO



“I was recently asked what differentiates V&A Consulting Engineers? What makes us unique? My logical response to that question was to dive into the technical services that we offer and how specialized we are in what we do. I also included some statistics about aging infrastructure and the daunting issues that our clients face. But that doesn’t touch on why people want to work with us. It is the employees at V&A and the core values we all share:

Integrity, Respect, Commitment, Loyalty, Honesty, & Quality

We recently celebrated 40 years in business and that is a direct result of the character of our team and our commitment to our clients.”



Over 40 years

V&A has extensive hands-on experience and strong working knowledge of the industry's latest tools and technologies. Under our specialized service lines centered around infrastructure preservation, V&A provides field service capabilities and data science services to support our clients.

We are MORE than engineers, however. Our team fully understands the impact of our work on the communities these facilities serve. We are committed to providing sustainable solutions that improve and enhance the quality of life for people and the safety of our environment. You can count on V&A to always be focused on giving you more by applying our skills to meet your needs.

counting

Our Strength

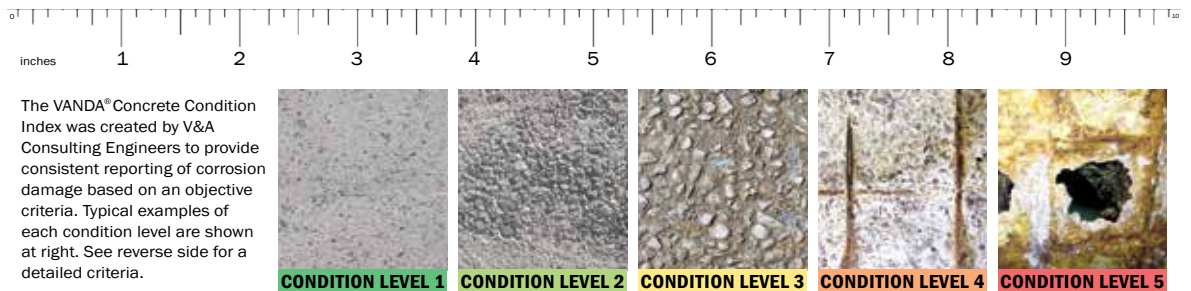
Our team consists of a diverse workforce of seasoned engineers with decades of experience and younger innovation-driven engineers, creating a synergy of practical knowledge with new technology and enthusiasm.

V&A advises our clients on new and existing infrastructure, using data-driven guidance on how to mitigate corrosion to extend the life of valuable assets. From field verifying pipe condition to determining the true remaining life of treatment plants, structures, and facilities—we are dedicated to helping maintain, repair, and enhance America’s infrastructure through V&A’s trusted strategies for improvement.

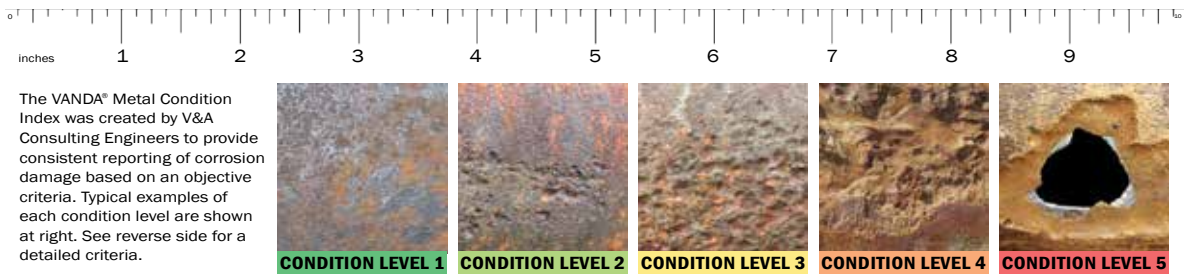
What are VANDA® Indexes?

Exclusively from V&A! Our trademarked VANDA® Indexes are a condition assessment rating system for both metallic and concrete assets. VANDA® is based on our extensive experience in condition assessments and provides our clients with a consistent way of rating the condition of their assets.

VANDA® Concrete Condition Index



VANDA® Metal Condition Index



Our Field Service Capabilities

CORROSION ENGINEERING	CONDITION ASSESSMENT	COATING SYSTEMS	FLOW MONITORING	ODOR CONTROL
Soil resistivity testing	Visual investigation with photographic and video documentation (drone and 360-camera)	Coating thickness measurements	Sanitary sewer flow monitoring	Hydrogen sulfide and differential pressure monitoring
Soil and water corrosivity analysis	Dimensional measurements	Coating integrity per ASTM standards	Rainfall monitoring	(liquid and gas phase)
Cathodic Protection (CP) system design (drawings, specifications, and calculations)	Concrete delamination survey (sounding)	Adhesion tests	Storm event classification	Odor sampling
Current requirement testing	Concrete surface pH	Hazardous paint sample analysis	Infiltration/Inflow (I/I) analysis, design storm analysis	Field olfactometry
CP system commissioning	Concrete penetration	Coatings and linings systems drawings and specifications	Flow isolation system I/I tracking and detection	Fan testing
AC and DC stray current interference testing and analysis	Surface penetrating radar for reinforced concrete	Technical review of existing systems	Open stream flow monitoring	Performance testing
Rectifier testing, repair, and adjustments	Ultrasonic thickness testing on metals		Storm system flow monitoring	Odor control design
CP system surveys (polarized potential, native, close interval surveys, DCVG, ACVG, cell-to-cell, over-the-line)	Broadband electromagnetic scanning of metals		Sanitary sewer smoke testing	
External corrosion direct assessment	VANDA® concrete and metal ratings		Sanitary sewer wastewater Sampling collection	
	Half-cell potential		Dye testing	
			Salinity sampling/monitoring	

Corrosion Engineering

Municipal agencies across the United States bring us their projects to **advise on corrosion mitigation during the design of new infrastructure and to protect existing assets from the damaging effects of corrosion.**

Our customers count on us to pinpoint corrosion and its cause, whether atmospheric, immersed, or buried, and recommend solutions for mitigation. Using modern testing technologies, our in-field engineers evaluate environmental conditions to recommend the most effective corrosion protection needed to maximize the life of municipal assets. We focus on the **planning, evaluation, and design** of both new and existing corrosion control systems for **water, wastewater, and transit infrastructure.**



The V&A team evaluates the condition of existing **cathodic protection systems** to identify opportunities for design improvements. We perform field testing to verify the proper operation of existing corrosion control measures, evaluate the extent of existing corrosion damage (if any), and develop feasible solutions to protect critical infrastructure and extend its useful life.

Through field testing and data collection, V&A assists clients with the selection of materials that will perform in corrosive environments, including **coatings, linings, and cathodic protection systems.** Our team uses project-specific information to evaluate and design cathodic protection systems that are the appropriate solution for each project. V&A's experience and expertise are centered around corrosion protection for new and **existing water or wastewater treatment plants, pump stations, tanks, or buried infrastructure.**

The V&A team assists clients with the development and implementation of corrosion control management plans and programs. Our **team identifies data gaps and staffing needs, develops operation and maintenance standard operating procedure manuals, and prepares implementable strategies** supported by all levels of agency and/or municipality management. Through data collection and in-depth analysis, we provide the information needed to make intelligent decisions for both immediate needs and future challenges.

V&A's in-house corrosion engineering capabilities and specialized services include:

- Soil resistivity testing
- Soil and water corrosivity analysis
- Cathodic Protection (CP) system design (drawings, specifications, and calculations)
- Current requirement testing
- CP system commissioning
- AC and DC stray current interference testing and analysis
- Rectifier testing, repair, and adjustments
- CP System surveys (polarized potential, native, close interval surveys, DCVG, ACVG, cell-to-cell, over-the-line)
- External corrosion direct assessment



Condition Assessment

Since 1979, V&A has conducted condition assessments of coated and uncoated steel and concrete structures. V&A's unique expertise with materials, their properties and how the environment affects them differentiates us from traditional engineering firms. This expertise results in valuable recommendations and design services for infrastructure rehabilitation or replacements. Our typical projects include pipelines, tunnels, tanks, digesters, outfall pipelines, water treatment plants, wastewater treatment plants, and pump stations.

V&A's clients value our unique approach of deploying registered engineers to manage the technical quality of our condition assessment data and rehabilitation and response recommendations. We understand that decisions regarding future multi-million-dollar capital improvements are often based on our collected data, analysis, and recommended solutions. Our approach to all condition assessment projects is to be cost-efficient while meeting project objectives and providing the needed data.

V&A's engineers and field technicians are confined space trained and certified, and we are committed to safety. Our team members are certified through the Association of Materials Protection and Performance (AMPP; formerly NACE and SSPC). Our clients are confident that the data collected and recommendations provided meet the rigorous quality standards expected.

V&A's in-house condition assessment capabilities and specialized services include:

- Visual investigation with photographic and video documentation (drone and 360-camera)
- Dimensional measurements
- Concrete delamination survey (sounding)
- Concrete surface pH
- Concrete penetration
- Surface penetrating radar for reinforced concrete
- Ultrasonic thickness testing on metals
- Broadband electromagnetic scanning of metals
- VANDA[®] concrete and metal ratings
- Half-cell potential



Coating Systems

Coatings and lining systems are the first line of defense against deterioration by water, reclaimed water, wastewater, corrosive soils, and chemical exposure. V&A helps clients with coating assessments, coating selection, specifications, third-party evaluations, and ongoing maintenance.

Our approach to coating systems management involves structure assessments (including confined-space entries) meeting American Society for Testing and Materials (ASTM), International Concrete Repair Institute (ICRI), and Association of Materials Protection and Performance (AMPP; formerly NACE and SSPC) standards; selecting and specifying appropriate coatings options; as well as inspections during construction and third-party evaluation while monitoring the coating process in its entirety from surface preparation to curing.

V&A constantly explores new products and meets with coating manufacturers. We recommend contractors qualified for new and reapplied coatings, and assist the client with requests for information, submittals, and change order requests. We are proponents of third-party inspections and team up with local coating inspection companies to monitor the entire process. Coatings are a significant part of the budget of an infrastructure corrosion protection system. It can also greatly extend the life of the system when applied correctly and maintained over time. We provide you with expert data and recommendations to ensure that your system has a long service life and maximum value.

V&A's in-house coating systems management capabilities and specialized services include:

- Coating thickness measurements
- Coating integrity per ASTM standards
- Adhesion tests
- Hazardous paint sample analysis
- Coating and lining systems drawings and specifications
- Technical review of existing systems

Flow Monitoring

Since 1998, V&A has supported municipalities and agencies in managing their water and wastewater collection systems and mitigating sanitary system overflows. By collecting timely, accurate data about wastewater flows, we can predict peak flows for a given segment of the system. In addition, V&A helps clients understand the condition of their system and can determine best practices and solutions to avoid overflows.

V&A incorporates the latest data collection techniques and metering technologies and conducts a wide-range of inflow and infiltration (I/I) analysis for municipalities and master-planning consultants. We specialize in rain-dependent, groundwater and tidal I/I. We also perform reconnaissance to provide clear pictures of system conditions.



When selecting V&A for a flow monitoring study, you are selecting a firm with several unique and differentiating features:

- **Quality Personnel:** Our engineers are “hands-on.” V&A’s engineers are confined-space trained and spend much of their time in the field. V&A believes this provides better continuity, from the field to data analysis to final report deliverables. There are fewer mistakes and miscommunications.
- **Quality Data:** The expertise of V&A’s flow monitoring team stands out in the marketplace because the work is directed by engineers and data integrity is always of paramount importance. Good, accurate data allows for pinpoint predictions of peak flows for a given segment of the system and a useful hydraulic model.
- **Equipment Diversity:** V&A is not affiliated with any meter type, manufacturer, or vendor. Equipment diversity allows V&A a meaningful advantage in determining the proper flow metering technology to match project-specific hydraulic conditions.
- **Quality Reports:** V&A provides professional and quality deliverables. Our team understands that

decisions regarding multi-million-dollar capital improvement projects are often based on our flow monitoring data and system capacity analysis.

V&A’s in-house flow monitoring capabilities and specialized services include:

- Sanitary sewer flow monitoring
- Rainfall monitoring
- Event classification
- Infiltration/Inflow (I/I) analysis, design storm analysis
- Flow isolation
- System I/I tracking & detection
- Open stream flow monitoring storm system flow monitoring
- Sanitary sewer smoke testing
- Sanitary sewer wastewater sampling collection
- Dye testing
- Salinity sampling/monitoring

Odor Control

Odor issues are multifaceted. At V&A, our experience in solving corrosion issues ensures comprehensive mitigation plans that cost effectively address the three critical issues related to odor control for wastewater treatment facilities. Our comprehensive odor mitigation approach:

1. Prevents Community

Complaints: We understand municipalities want to be good neighbors by being proactive in responding to odor

concerns from the public. Through our analysis and proven mitigation solutions that target the biological chemical, and physical conditions that contribute to odor generation, we ensure both the immediate odor concerns and long-term odor causing conditions are addressed.

2. Extends Infrastructure Life: Covering up odor issues will not be an effective use of budget and resources over the life of a facility. At V&A, we know corrosion, often a more costly impact of hydrogen sulfide (H_2S) production and release than odor complaints. By leveraging our deep knowledge of corrosion, we mitigate the cause of the H_2S generation and thereby address the odor and corrosion problems. By addressing corrosion, we provide a more effective long-term solution to odor issues for wastewater facilities.

3. Supports Safe Conditions: Our engineers understand that the health and safety of municipal personnel are paramount. V&A is skilled in developing and implementing safety plans for the presence of H_2S . Our holistic approach to H_2S treatment ensures worker safety.



Odor Control Innovations and Accomplishments Unique to V&A

Our investment in superior odor control technology and systems is evident in our project experience:

- V&A successfully developed innovative odor control solutions, including custom designed biological odor control systems.
- We pioneered and refined monitoring of headspace air pressure in sewers to identify areas prone to positive pressure and odor release.
- We created a computer-based sewer ventilation model to calculate the volume of air released from a collection system and identify locations prone to odor release.

V&A's in-house odor control capabilities and specialized services include:

- H_2S and corrosion mitigation plans
- Hydrogen sulfide and differential pressure monitoring
- Liquid and gas phase odor sampling
- Field olfactometry
- Fan testing
- Performance testing
- Comprehensive odor control design

Data Science

Connecting your data makes gravity main cleaning efforts more effective

Giving our customers more includes our data science services. Our investment and work in this area **help our customers harness the power of data to optimize their work in the field.** V&A's data analytics propels pipeline cleaning forward by capturing critical cleaning crew insights.



PROBLEM

V&A SOLUTION

Stubborn SSO rate	Incremental addition of data science
Dependence on cleaning crew institutional knowledge	Data science captures and builds on crew knowledge and theories-of-causation
Siloed data (GIS, CCTV, cleaning records, SmartCover data)	Joining of all relevant data and addition of best practice data collection methods

Our process provides the solution and can be delivered to you at a basic or advanced level based on your needs. Each step in our process **brings you closer to more informed cleaning decisions.**

1 DATA

2 ANALYSIS

3 APPLICATION

Basic:	<ul style="list-style-type: none"> Analytics readiness assessment of relevant Utility Data from GIS, CMMS, CCTV, SSO's and other data sources 	<ul style="list-style-type: none"> Visualizing data Historical cleaning trends and statistics Condition assessment summaries 	<ul style="list-style-type: none"> Data-driven recommendations for cleaning frequency Benchmarking and best practice recommendations
Advanced:	<ul style="list-style-type: none"> Programmatic improvement of data Joining relevant utility data and external data (trees, population, buildings, etc.) 	<ul style="list-style-type: none"> Likelihood calculations with Machine Learning Variable correlation analysis Pipe segment level degradation curves 	<ul style="list-style-type: none"> Regular progress reviews to proactively adapt schedules CIP planning recommendations Risk-based maintenance plans
Results:	<ul style="list-style-type: none"> High quality, complete, joined, deep rich data sets ready for OPEX/ CAPEX planning analytics 	<ul style="list-style-type: none"> Data-driven opinions to enable more efficient gravity main cleaning schedules 	<ul style="list-style-type: none"> Implemented and maintain best practices for maintenance

The V&A Delivery



Management Practice

V&A understands agency funding and operating challenges, and before any work begins, our project managers ask detailed questions to determine operating and budgetary constraints as well as short- and long-term goals.

V&A manages its work for our clients by adhering to the proposed schedule and staying within the proposed budget for each project task. V&A maintains close working relationships with our clients throughout the duration of a project through verbal and written communication to ensure all work is performed as required.

Quality Assurance/ Quality Control (QA/QC)

V&A manages risk by requiring a mandatory review of all data, reports, plans, and specifications entailing proper formatting, correct grammar, and technical information reviews. V&A ensures plans and specifications are in accordance with regulatory laws and meet agency and client guidelines.

Our comprehensive QA/QC program addresses not only design work, but field activities as well. V&A believes quality is only achieved when work is adequately planned, assigned, executed, and checked.


Safety

Safety is one of our top priorities and integral to our work. V&A has developed an independent Health and Safety Program, which complies with Federal and California Occupational Safety and Health Administration (OSHA) regulations. V&A has performed over 25,000-confined space entries and we take great pride in our exemplary safety record.



maximizing the service life of your most valuable assets



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