

Utility Detection and Mapping using GPR

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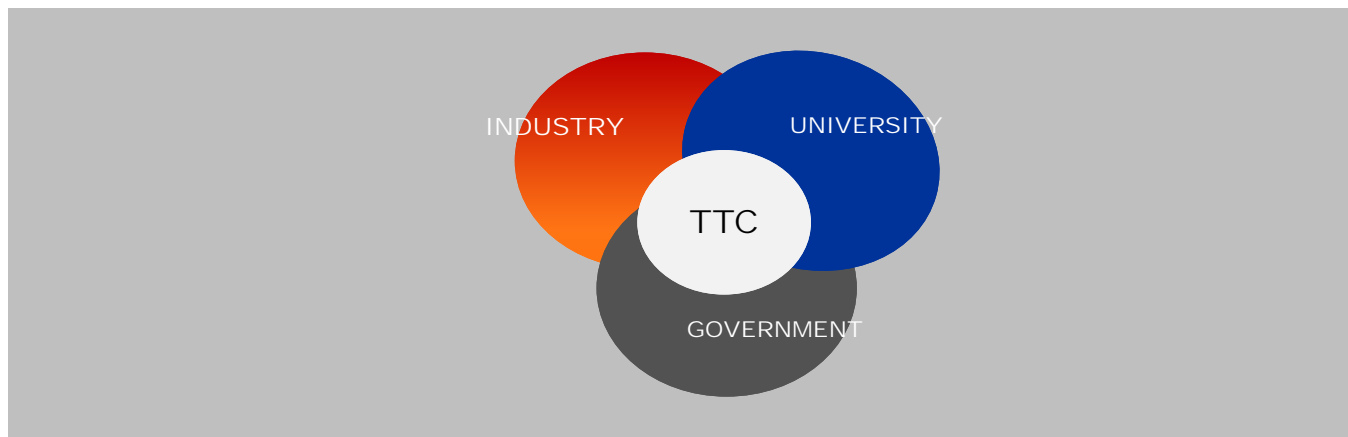


Overview of TTC



TTC is expanding the research focus on integration of trenchless technology into asset management and continues to grow research programs to further increase understanding of the fundamental performance issues associated with various trenchless methods.

Louisiana Tech University
Trenchless Technology Center
From 1989-2017



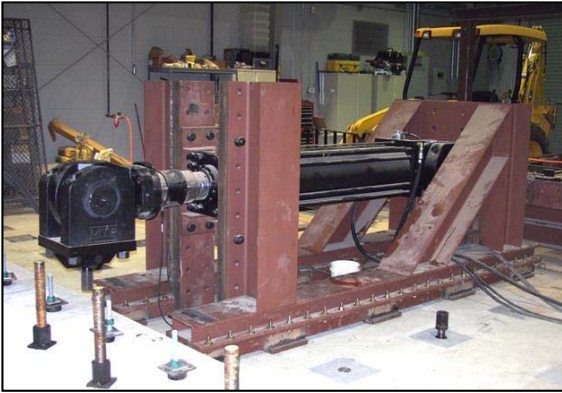
• **Research** • **Education** • **Technology Transfer**

National Trenchless Technology Research Facility (NTTRF)



Facilities

Inside NTTRF



Servo-controlled hydraulic ram, large



Soil box (small 12'x6'x6', large 10'x20'x11')



Extruder for cementitious samples



Liner Inversion Chamber

Field Testing Site



Approximately 70,000 sq. ft. for a variety of field tests related to HDD, pipe bursting or other trenchless method research

TTC Auger Boring School



The 3rd Annual TTC

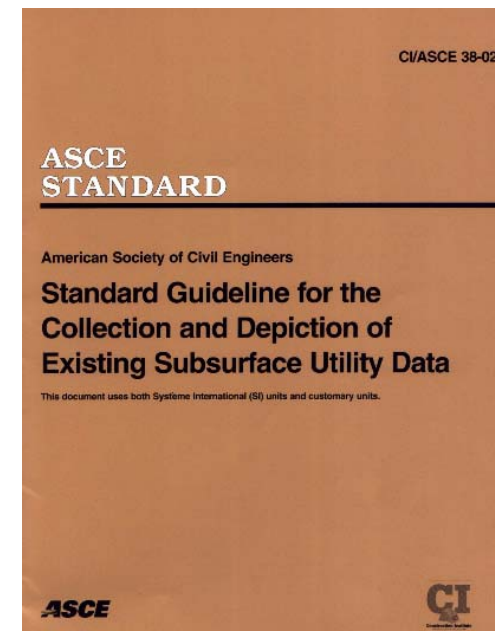
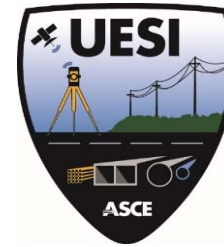
Auger Boring (AB), Pipe Jacking (PJ) &

Pilot Tube Microtunneling (PTMT) School

Feb 5-9, 2018

The 2nd TTC Utility Investigations School (UIS)

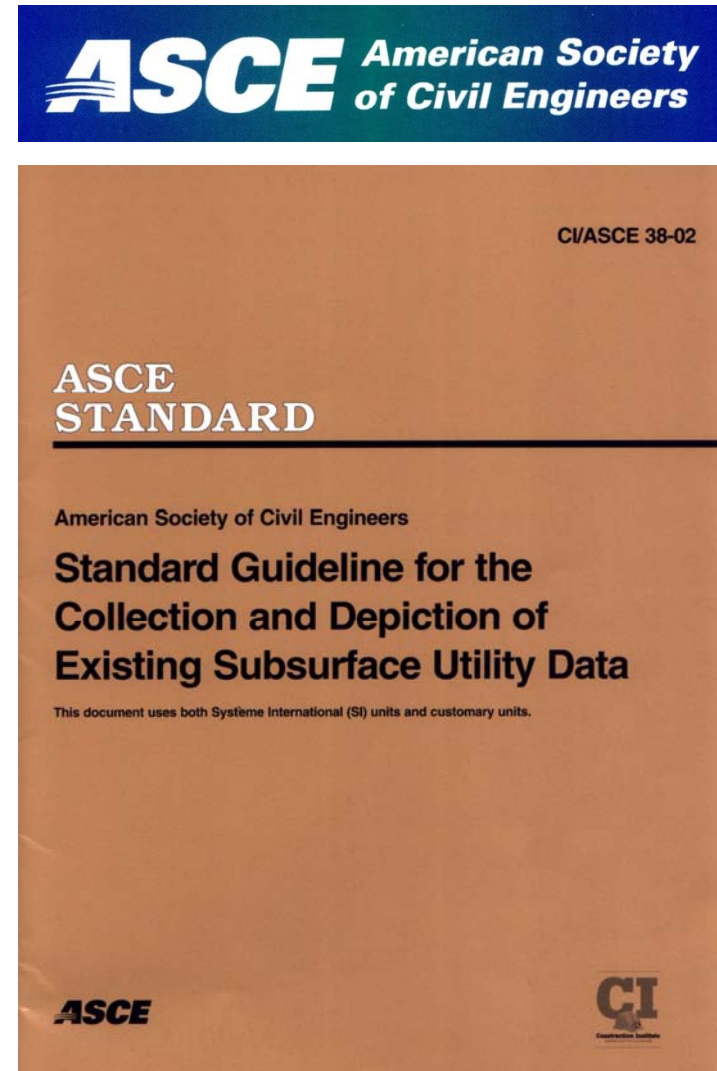
February 26-March 2, 2018



No Dig Medellin 2017



- Outlines specific steps for the engineer / surveyor to take that result in increasingly better utility mapping.
- Utilities as mapped are shown according to their “Utility Quality Level” which allows all parties to make better risk decisions.
- Use of Utility Quality Levels protects engineers and surveyors
- Requires all utility mapping to be performed under the direct responsible charge of a registered professional, experienced in utility issues, surface geophysics, survey, and depiction methods
- Increasing usage across the country is increasing its importance in cases where standard of care is an issue.



ASCE 38

- Now referenced routinely in 40+ State DOTs
- Best practice (FHWA, APWA, CGA, FAA, National Academy of Science, and others)
- Case Law increasing
- Referenced as part of state statute in PA, MN
- 2nd Best selling ACSE standard behind ASCE 7
- Update imminent
- Used as basis for new standards in UK, NZ, Malaysia, Canada, Australia, and Ecuador (pending).
- **JUST IN: ASCE 38 NOW MANDATED IN EJCDC ENG. DOCS**

TTC Subsurface Utility Locating with GPR

August 23, 2017



Common Ground Alliance (CGA)

March 6-8, 2018



- The **CGA 811 Excavation Safety Conference & Expo** is the premiere international event dedicated to providing educational content and resources to help protect buried assets.
- The Conference, owned and produced by [Infrastructure Resources, LLC](#), is the largest event in the underground damage prevention industry, drawing almost 2,000 participants and offering over 60 educational sessions, comprehensive workshops, numerous networking events, and over 100 exhibitors.
- The Common Ground Alliance (CGA) also holds their annual meeting at this event.

Pipe Breaks



AM Water & Sewer

Definition

Address customers' immediate service requirements while managing the system assets to meet long-term requirements reliably & cost effectively

Long-term AM results in:

- **Increased Asset Life**
- **Decreased Maintenance Costs**
- **Decreased Capital Costs**
- **Permits planned spending based on critical needs.**
- **Allows scarce financial resources to be effectively used.**
- **Potentially increases revenues by revealing opportunities to sell or lease land or retired assets, sell excess capacity, provide outside services, or initiate new business.**

Asset Management Strategies

Asset Management:

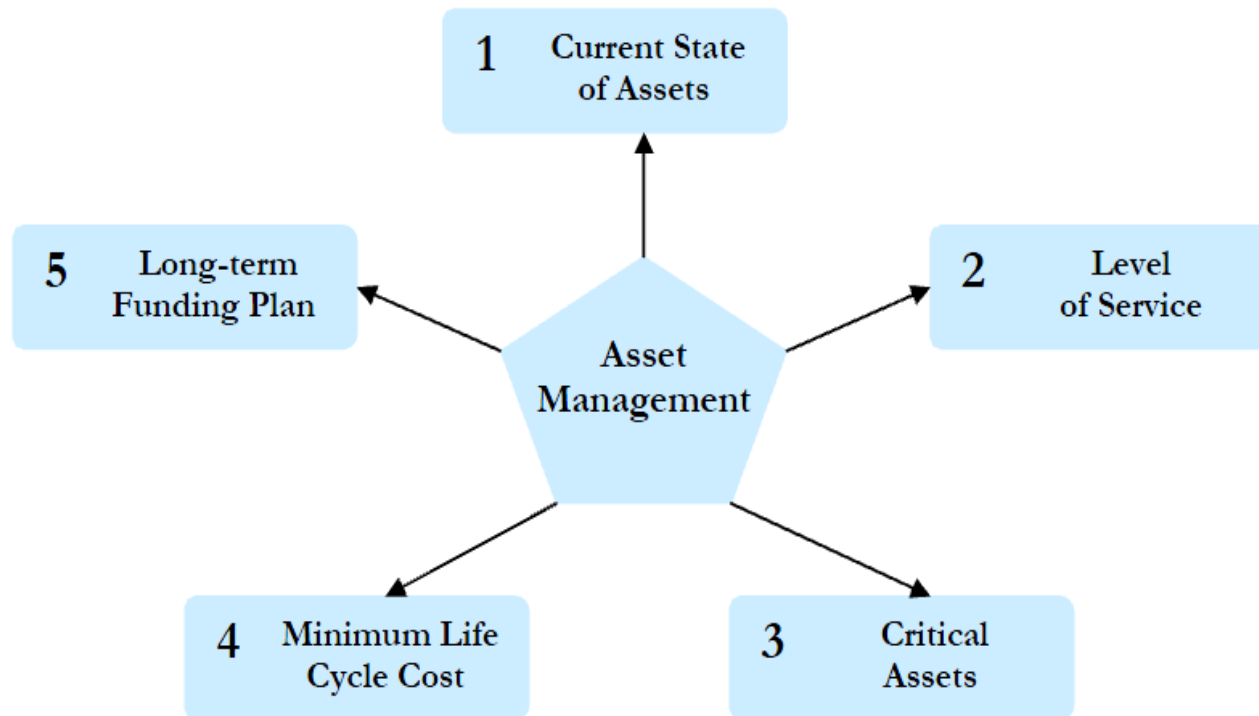
It is maintaining a desired level of service for what you want your assets to provide at the lowest life cycle cost. Lowest Life cycle cost refers to the best appropriate cost for rehabilitating, repairing or replacing an asset.



Resource: EPA Asset Management Best Practices

Asset Management Strategies

Five Core Questions of Asset Management Framework



Resource: EPA Asset Management Best Practices

Asset Management Strategies

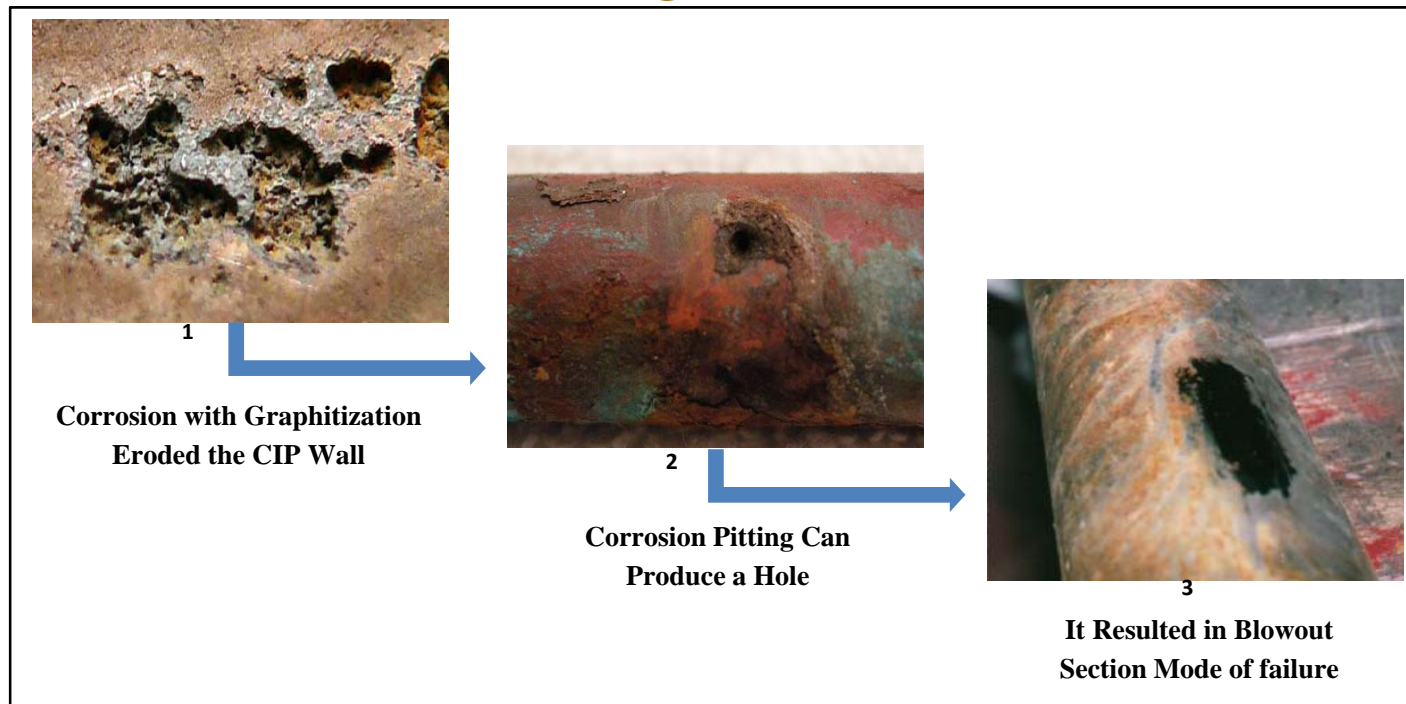
1- What is current state of my assets?

- What assets do we have – Inventory
- Where are they located - Mapping
- What are their condition - PCA
- Determine remaining life
- Determine renewal/replacement cost & date



Asset Management Strategies

Asset Manager Needs to Know





The Cost of Water

Let's Compare: Monthly Bills in the USA.....

Description	Monthly Bill	Source
Average Water & Sewer (2017 \$)	\$85	AWWA
Average cell phone (2009 \$)	\$71 adjusted to 2017= \$85	J.D. Power & Assoc.
Average cell phone (2015 \$)	\$110 adjusted to 2017 = \$115	Gazelle News
Average Cable TV (2016 \$)	\$103	Fortune 500



The Cost of Water

- ASCE Estimates it will cost about \$1.3 trillion to upgrade our water and wastewater infrastructure over the next few decades
- And, this really does not include everything
- ASCE Average Report Card Grade for Water and Wastewater over the last 15 years = D
- Reason: Delayed Maintenance and underinvestment
- ***The Average American is willing to pay more for their cell phone or cable TV than safe drinking water and proper sanitation***



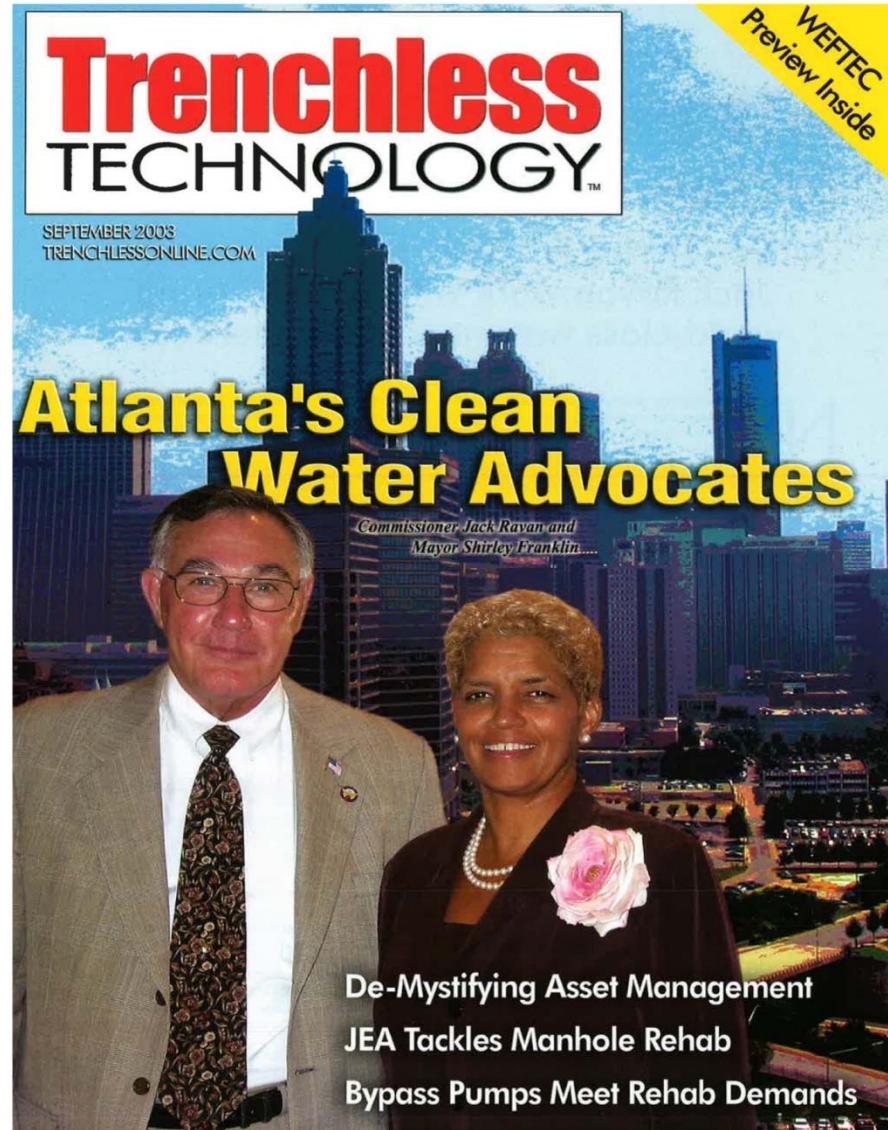
AM: Origins in the Utility Industry

- 1972 Clean Water Act (*PL 92-500*)

- Launched NPDES (*National Pollutant Discharge Elimination System*)
- First steps towards SSES (*Sewer System Evaluation Survey*)

- AM Continued Advancement

- CMOM (*Capacity, Management, Operation, Maintenance Program*)
- GASB 34 (*General Accounting Standards Board*) - requirements



Water & Sewer Champion

Mayor Shirley Franklin – Atlanta’s Sewer Mayor

- Atlanta Journal-Constitution – July 15, 2002

Atlanta eager to develop world-class sewer system

- People worldwide dream of living in a community with clean water, plentiful jobs and affordable housing. Over the Next 12 years, Atlanta will make its largest investment ever in such a dream. To assure high water quality and long-term economic stability for ourselves, our children and grandchildren, we are embarking on a \$3B sewer improvement program.
- Most of this investment is required under a federal court order --- **it is our opportunity to develop a world-class sewer system (water program)**

The Roadmap to Accomplish the Challenges of Water Utilities Requires AM for Assuring Sustainability

Requires:

- Innovation
- Validation
- Education

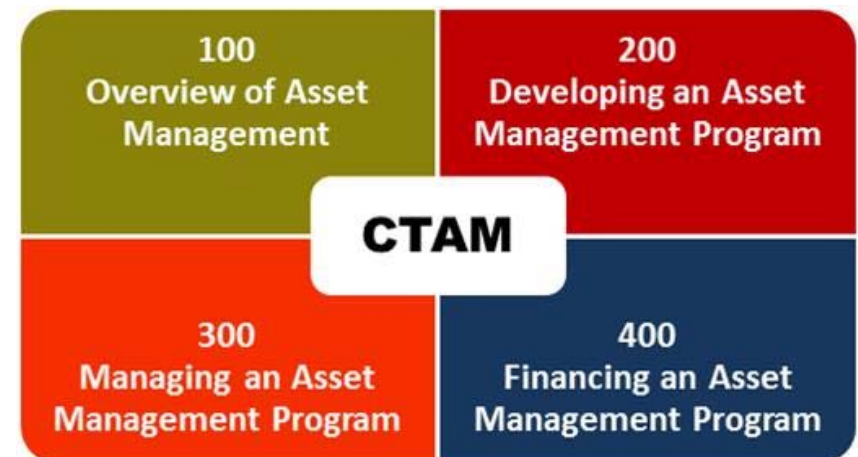
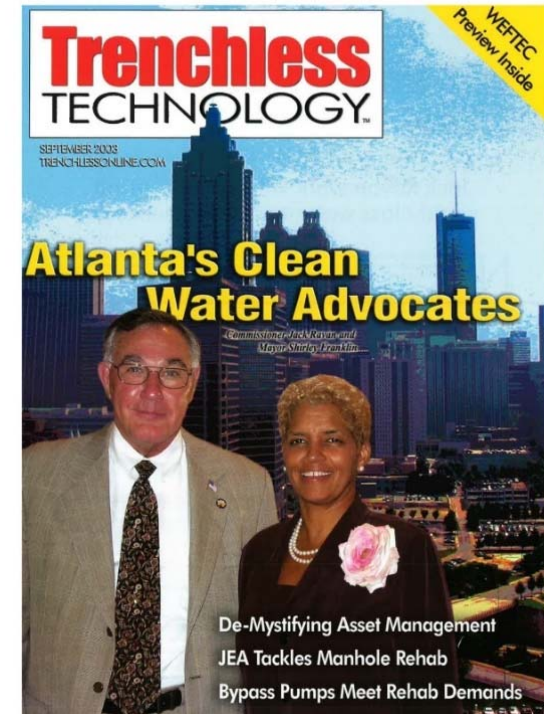


What is CTAM?

- Certification of Training in Asset Management
- Exclusive four-part series training

Levels of Certification

- Associate Water Asset Manager (AWAM)
- Professional Water Asset Manager (PWAM)



Online Asset Management Training for Water Utility Professionals

Exclusive Four-Part Series in Asset Management Certification

CTAM-100 – Overview of Asset Management

1

CTAM-200 – Developing an Asset Management Program

2

CTAM-300 – Managing an Asset Management Program

3

CTAM-400 – Financing an Asset Management Program

4

Why offer courses in Asset Management?

The Buried Asset Management Institute-International (BAMI-I) created the Certification of Training in Asset Management (CTAM) program to increase awareness and train utility personnel on the best way to implement and use asset management to extend the life and efficiency of their water and wastewater systems. CTAM is an online educational series for obtaining certification of training in management of underground asset infrastructure.

Levels of Certification

- I. Certificate of Completion – requires completion of each course
- II. Associate Water Asset Manager (AWAM) – requires completion of CTAM 100-400 and an application submitted to BAMI-I Asset Management Certification Board
- III. Professional Water Asset Manager (PWAM) – requires completion of CTAM 100-400, four years of relevant asset management experience and an application submitted to BAMI-I Asset Management Certification Board

Benefits of the CTAM Series

Expand your knowledge and access to resources to enable you to initiate, continue or improve your own asset management program

Earn Internationally recognized certification in the field of asset management

Earn 1 CBU / 10 PDHs for each course



CTAM-100 At-a-Glance:

- Sharing Asset Management Knowledge Globally
- Asset Management Overview & Technologies
- Introduction to Appropriate Websites & Tools
- Risk Management
- Government Regulations
- Case Study Examples

CTAM-200 At-a-Glance:

- Underground Infrastructure Asset Management
- Advantages, Rewards, Obstacles & Planning
- Asset Inventory, Organization Strategies & Tools
- Water & Wastewater Condition Assessment
- Data Content, Analysis, Sharing & Distribution

CTAM-300 At-a-Glance:

- Organizational, Legal & Budgeting Considerations
- Developing Priorities & Key Performance Indicators
- Infrastructure Inspection, Mapping & Rehab Methods
- Capacity, Management, Operation & Maintenance
- Asset Worth Value & Life-Cycle Analysis
- Risk-Based Budgeting

CTAM-400 At-a-Glance:

- Financial Challenges & Developing Strategies
- Accounting Principles, Reporting & Budgeting
- Strategic Internal & External Financing Tools
- Public-Private Partnerships and Design-Build
- Level of Service and Capital Improvement Plans
- Life-Cycle Costing
- Case Study Examples



The CTAM program was developed by BAMI-I (Buried Asset Management Institute International) in conjunction with the Trenchless Technology Center at Louisiana Tech and Indiana University-Purdue University at Indianapolis, in partnership with UIM: Water Utility Infrastructure Management, and is hosted by the Trenchless Technology Center at Louisiana Tech.

For more information and to register, call 330.467.7588, or e-mail vmirer@benjaminmedia.com

Conference.com/Benjamin/CTAM/CTAM_Home.html



Highlights

- **CTAM-100** has 510 registrants from 15 countries;
- **CTAM-200** has 185 Registrants
- **CTAM-300** has 145 Registrants
- **CTAM-400** has 130 Registrants



Highlights

- **AWAM Certificates**

101 Issued

- **PWAM Certificates**

12 Issued

Thanks for your attention!

Questions?

Contact information

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