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ANNUAL CONFERENCE ON CONTRACT OPPORTUNITIES

REBUILDING NEW YORK CITY'S BASIC MUNICIPAL INFRASTRUCTURE

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The New York City Department of Design and Construction (DDC) is charged with the mission of coordinating, designing and constructing all capital projects related to New York City's infrastructure needs within the five boroughs.

- A major objective of DDC is the overall coordination of the different project components requested by the various client agencies. This includes all aspects of a project including: public buildings constructions or rehabilitation/upgrade, sewers, (both replacement and relining), water mains (distribution and trunk), utility coordination, curbs, traffic signals, lighting, pedestrian ramps, trees, hydrants, catch basins, Urban landscaping, Plazas, Retaining Walls, Step Streets, complete street reconstruction.



NYC Parks



24 DDC Client Agencies



664

active infrastructure portfolio

641

active public buildings portfolio

4151

projects completed since 1996

1300

consultant workforce

\$15 billion

current portfolio value

\$17 billion

expected by 2020

\$16 billion

completed since 1996

250+

awards won since inception

1321

in-house workforce

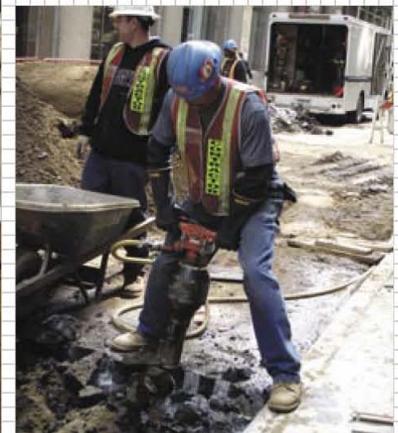
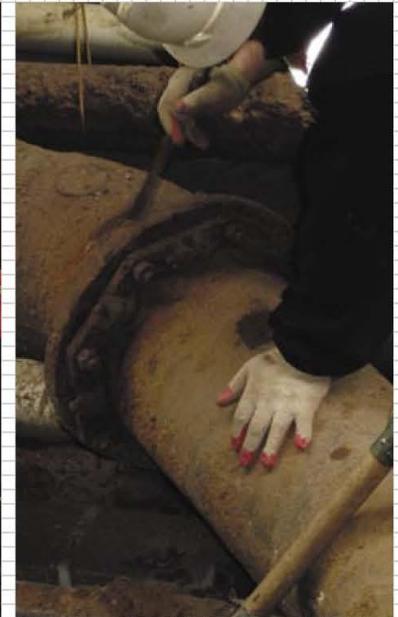
The image shows a wide, paved pedestrian bridge with ornate metal railings and a series of black street lamps. The bridge is set against a backdrop of dense green trees and a city skyline. A prominent, tall, cylindrical tower with a pointed top is the central focus of the background. The entire scene is overlaid with a semi-transparent blue and orange color gradient. The text 'Street Infrastructure Projects Delivery Challenges' is centered in white, bold font.

Street Infrastructure Projects Delivery Challenges



Roadway work supports the very fabric of our city, and yet it is difficult to appreciate. When it is complete, one only sees a street, exactly as expected. When it is underway, one must expect disrupted traffic and interruptions in water service. But the slow and steady course of improving our water mains and sewer mains is done through each inch of pipe, under one block and then the next. This incremental process gradually adds up to make the city fundamentally better: healthier, newer, more able to expand, and more reliable.

Since its inception DDC is proud to have completed approximately 1,952 miles of roadway work.



“Statement of Need:

- The Public is served by a complex infrastructure network beneath the streets and properties of the city. Components of this infrastructure network are independently managed by an array of distinct city agencies, private corporations, and public authorities, each operating within its own legal authority, operational framework and business model.
- Despite having separated responsibility for unrelated utility networks, the network components are yet related by location, and system managers share the same need to access information about the locations to manage components of network infrastructure. These locations typically occupy public space, and host multiple systems in proximity to one another, both below and above ground.
- The historic cities of the world have long employed intricate infrastructure to support dynamic urban environments and New York City is no exception. Long-established traditional methods often impede established cities in their efforts to upgrade to new ways of working. In many ways building a new city from scratch using modern methods is far easier than understanding and upgrading an existing city.”

by Kenneth J. Rozsahegyi, MPA - Deputy Director, CAD-GIS Coordinator (2014)

Water main breaks – Flooding due to poor drainage
Private Utilities failures
Street undermining due to sewer collapse



Statistics of City's Basic Municipal Infrastructure

- Streets – 6,375 miles (or 19,000 lane miles)
 - 1/3 of the streets are rated “fair to poor”
 - Design Life is 40 years vs. replacement cycle 200 years ! (current annual replacement of 25 to 30 miles)
- Sewers (Storm, Sanitary & Combine)
 - 7,500 miles (current annual replacement approx. 30 miles)
 - Size – 6” to over 90” diameter
 - Design Life is 60 years. Age – 66.4 % built prior to 1940
- Water Mains
 - 6,800 miles (current annual replacement approx. 30 miles)
 - Size 6” to over 72” diameter
 - Design Life is 60 years. Age – 59.4% built prior to 1940

1,000 miles (15%) of water mains are in excess of 100 years



HUD - Rebuild by Design



BIG TEAM

NYC CRITICAL INFRASTRUCTURE ASSETS

- 322 square miles - City area
- 6,375 miles of streets
- 7,500 miles of sewers
- 144,000 Catch Basins
- 6,800 miles of water mains
- 14 miles of public Beaches
- 520 miles of water front
- 149 miles of interceptor sewers
- 14,000 acres of Staten Island "Blue Belt" storm water management system (BMP)
- 2,000 square miles of watershed
- 19 Clean Water Reservoirs; 3 controlled lakes
- 580 billion gallons drinking water storage capacity
- 700 miles of subway
- 90,000 miles underground power cables
- 14 Wastewater Treatment Plants
- 2,000 bridges and tunnels
- 5.2 million trees
- 6,000 acres of wetlands



CAUTION AHEAD

Overdue Investments for New York's Aging Infrastructure

While Superstorm Sandy focused much-needed attention on key pieces of New York City's infrastructure, the city faces a number of other infrastructure vulnerabilities that have little to do with storm-preparedness—from aging water mains and deteriorating roads to crumbling public schools. If left unchecked, they could wreak havoc on the city's economy and quality of life.

“...a total cost of \$47.3 billion over the next four to five years. And this only reflects repairing and maintaining current infrastructure—not needed service expansions such as building new sewers or bus rapid transit lines...”.

Status of Design Projects	No. of Projects	Est. Constr. Cost
In-House engineering Design (61%)	194	\$3,500,000,000
Engineering Consultant Design (39%)	124	\$2,000,000,000
TOTAL	318	\$ 5,500,000,000

Status of CM Projects	No. of Projects	Est. Constr. Cost
To Bid	20	\$674,142,417
Awarded	24	\$1,201,282,231
Active Construction	144	\$ 2,377,341,435
Close-Out	158	\$ 1,219,367,789
TOTAL	346	\$ 5,472,133,872

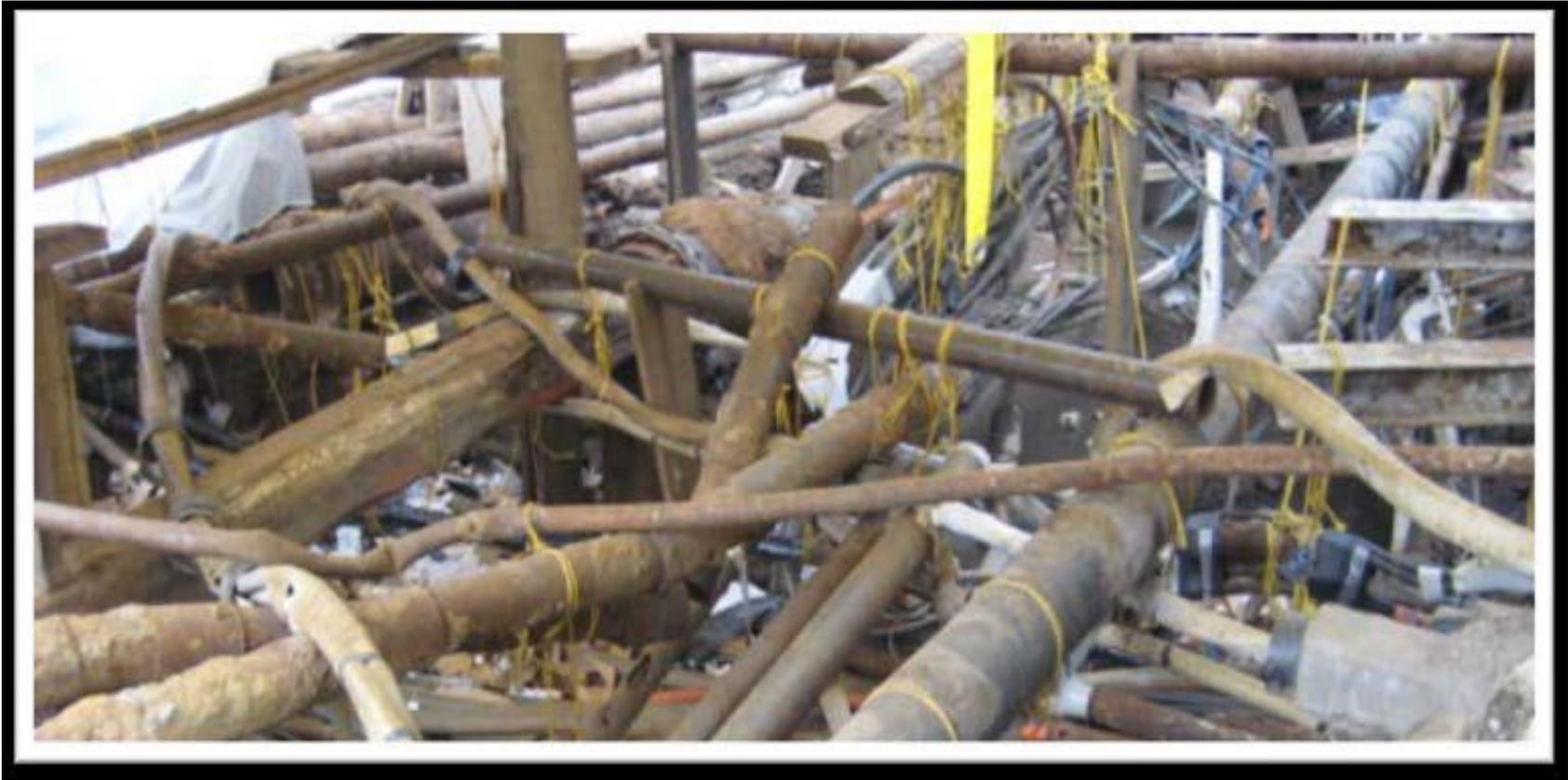
Infrastructure Portfolio 664 Projects
Estimated Construction value \$ 11 billion

Main causes of Projects delays

- Massive private utility facilities network located underground within a public project area.
- Utilities are likely to be interfering with water main and sewer construction and must be relocated/ reconstructed ahead of City projects at significant cost to Utility operators.
- City Schedule is greatly impacted in spite extensive efforts during design to identify these interferences and coordinate new construction.

New Private Utility companies facilities may need to be installed before or after existing facilities are taken out of service to make way for public construction.

- *Relocation of Oil-O-Statics (130 KV Transmission) may take two years to coordinate*
 - *Primary electric (13KV) cannot be done in summer.*
 - *Gas/steam work cannot be done in winter.*
 - *CDOT MPT Stipulations may limit access*



Utility Scope



- Relocate facilities – potentially to other streets
- Remove abandoned and replace deteriorated facilities
- Abate and replace steam flanges with welded fittings
- Prudent added capital work to provide system reliability. It's in everyone's interest to open up the street once.



Private Utility construction

City Utility Scope Comparison

DDC Street Reconstruction Project Labor Breakdown



Scope

Challenges

Recommendations

City Vs Utility scopes determine construction duration

JOINT BIDDING LAWS

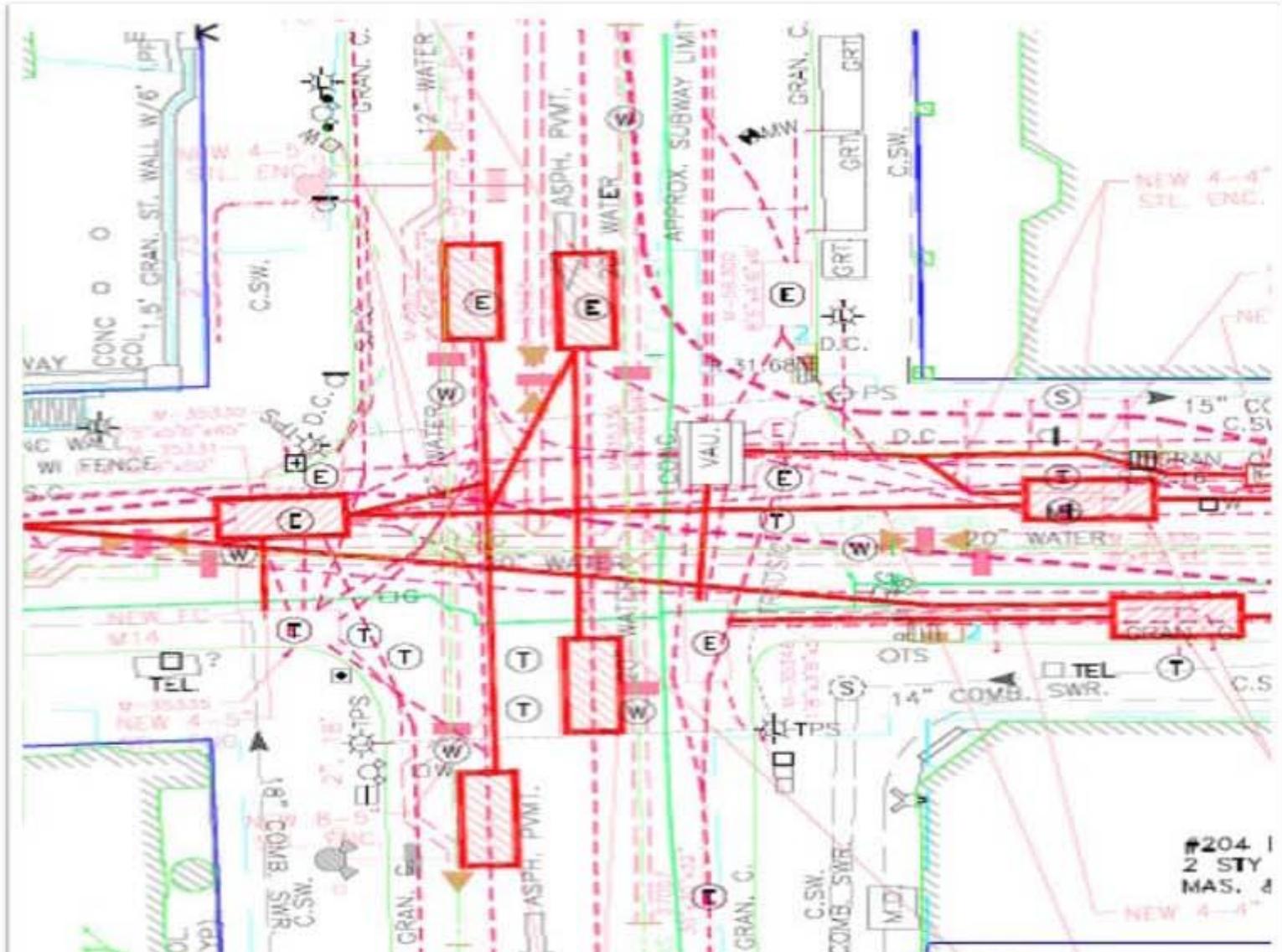
- 2004 – Coordinated Construction Act for Lower Manhattan
- 2014 - S 3. a. Notwithstanding any general, special or local law or rule or regulation to the contrary, the city of New York may include utility interference work in any contract for a public work project

• JOINT BIDDING with Non-City Utilities

- NYCDDC developed two methods to deal with these issues
 - Contract languages (Section U), which specify the interaction between Utility Operators and City Contractors during construction and interference removal process, and
 - Joint Bidding law, which is permits the City to include Privately funded Utility Work in City Work.
- In both cases the key to successfully minimize delays and costs depend on Pre-Engineering and coordination and sharing of data.

Joint Design Includes City and Utility Scope

Scope



Challenges

Recommendations

Design coordination



The Benefits of Coordinated Work

- Digging up the street in New York dense urban environment is a disruptive event that should be carefully considered so that it occurs infrequently. DDC, created in 1996, was given the coordinating role on behalf of all city agencies. Streets are disturbed for public work capital construction only in a carefully planned and scheduled way, and newly paved streets are guaranteed to stay undisturbed for 5 years.

The Benefits of Coordinated Planning

- To achieve even more coordination requires more data to plan farther ahead. Data about services under the street including all the utility and services network systems. Mapping technology today is ready for this data, but the data remains hidden within the private utility and service companies that “own” and manage them.

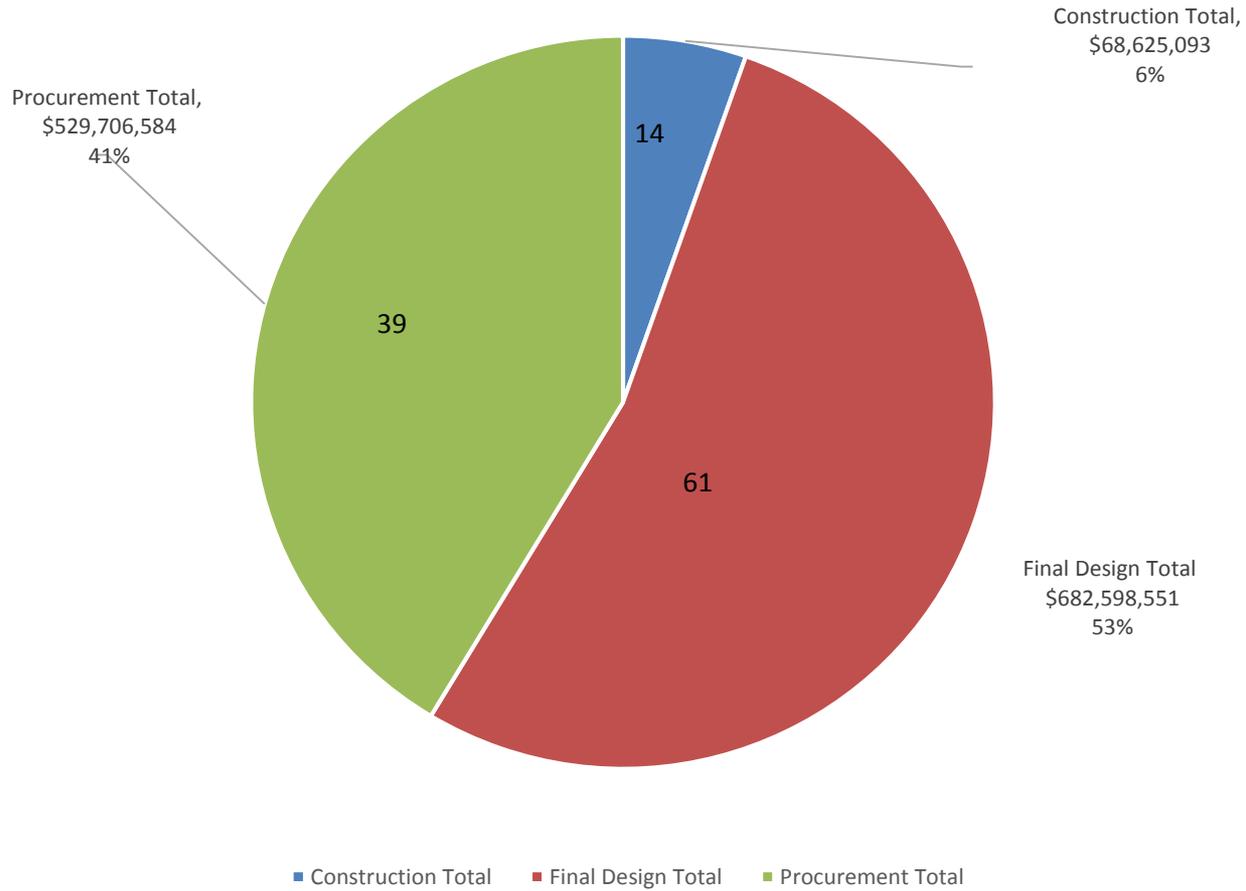
Continuous Daily Use in a Location Awareness Workflow

- Location awareness is the capability that allows workers to proceed safely, in coordination with other asset owners, and with minimal risk of causing damage to the components of other systems. Empowering the field engineers with multisystem awareness enables new workflows to realize process efficiency gains and enjoy the benefits of clash avoidance, providing the public with fewer disruptions to services.

Stability & Reliability

- Upgrade Planning: Cross-system location awareness is an effective tool for long term planning. The characteristics of infrastructure components can be made visible on the map, and the co-location of more than one at-risk component of any system will indicate a priority for street opening and upgrade. This planning tool would promote overall system stability and long-term reliability and avoid catastrophic failure.

FY18 COMMITMENT PLAN
\$1,280,930,229



FY18 COMMITMENT = 114 Projects
Estimated Construction value \$ 1.28 billion



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