The capability to prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to public safety and health, the economy, and security of a given urban area.
About STV

• Full-service A/E, Environmental & CM firm
• Serving New York since 1912
• Employee-Owned
• 1,800 staff in 40+ offices nationwide
  ▪ Nearly 1,000 professionals in the greater New York region
• Over 70 storm resiliency projects with 23 clients since Sandy ($1.5B construction value)
Collaborative Team

STV Incorporated
Prime Consultant

Project Management
Infrastructure & Resilience Engineering

Yu & Associates
Geotechnical Engineering

Invictus Engineering
Estimating and Scheduling

Naik Consulting Group
Topographic & Utility Surveys

InGroup Inc.
Community Outreach

SiteWorks
Landscape Architecture
STV - Extensive High-profile NYC Experience

WTC TRANSPORTATION HUB

GOVERNORS ISLAND REDEVELOPMENT

ROUTE 9A & LOWER MANHATTAN STREETS RECONSTRUCTION

WTC SITE REDEVELOPMENT PROGRAM MANAGEMENT
SiteWorks – Sustainable Landscape Solutions

• Passion for creating durable outdoor urban environments through careful engagement of design, technology, science & building craft

• Envision comprehensive solutions that maximize a site’s social, ecological & aesthetic potential
Background
Climate Change

**Temperature Anomaly (°C)**
(Difference from 1980-2015 annual mean)

Record Years

![Graph showing temperature anomaly over months with a peak in 1880.](image-url)
Sea Level Projections

Relative Sea Level Change Projections - Gauge: 8518750, The Battery, NY (05/01/2014)

- USACE/NOAA Low Rate
- USACE Int, NOAA Int Low
- NOAA Int High Rate
- USACE High Rate
- NOAA High Rate

Year vs. Feet

- 2020
- 2030
- 2040
- 2050
- 2060
- 2070
- 2080
- 2090
- 2100
Heavy Rainfall

![Graph showing percent of land area affected by heavy rainfall over time.](image-url)
Influence of Flooding
Hurricane Sandy

Storm Surge Inundation Elevation
Urban Development

40% evapotranspiration
10% runoff
25% shallow infiltration
25% deep infiltration
Natural Ground Cover

38% evapotranspiration
20% runoff
21% shallow infiltration
21% deep infiltration
10%-20% Impervious Surface

35% evapotranspiration
30% runoff
20% shallow infiltration
15% deep infiltration
35%-50% Impervious Surface

30% evapotranspiration
55% runoff
10% shallow infiltration
5% deep infiltration
75%-100% Impervious Surface

Source: Adapted from Arnolds and Gibbons
Community + Open Space + Resilience
Integrate systems seamlessly with architecture and functional requirements to ensure the safety and purpose of the open and building spaces.
Integrated Approach
Integrated Approach – Subsurface
Integrated Approach - Geometries
Integrated Approach – Accessibility
Integrated Approach – Open Space
Integrated Approach – Visibility
Integrated Approach – Softscape
Integrated Approach – Hardscape
Deliver a world-class public realm design for Wagner Park – beloved by the community – that protects from future storms

Questions and Comments