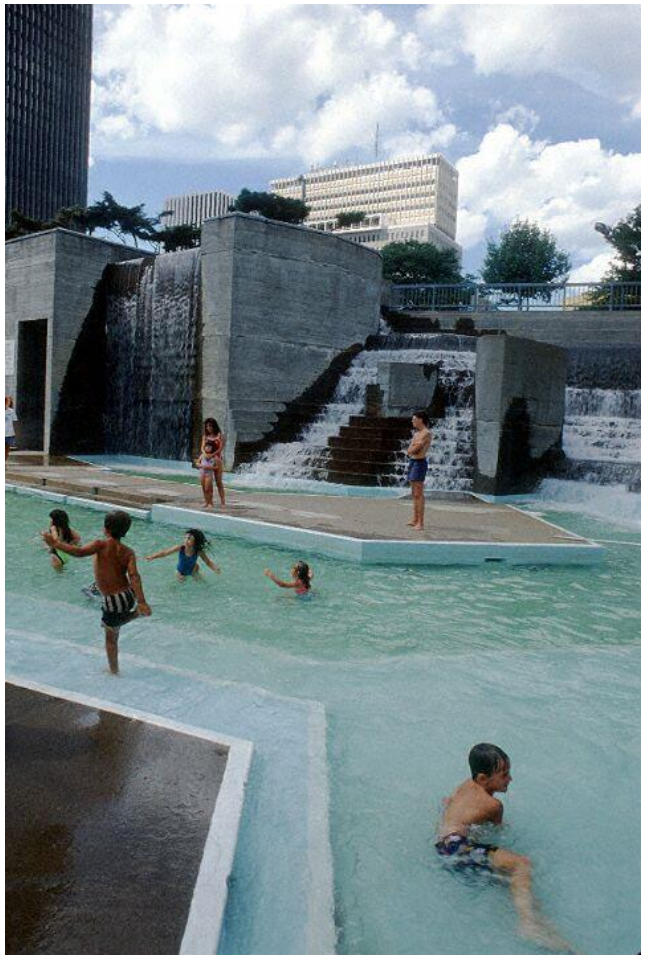
Rev. Martin Luther King Jr. Memorial Park Restoration

Safety Moment

Water Fall Pool Area – Double Layer of Grating Added to Reduce Water Depth

Stantec

Prior Swimming Use



Agenda

1 Planning History

2 Design of Original Manhattan Square Park

3 Masterplan Process for Park Rebirth

4 to 8 Improvements Phases 1,2,3a,3b,3c

Stantec

Dwight Harrienger, P.E. Resume

Civil / Environmental Engineer

M.S. Civil Engineering – 1983

B.S. Civil Engineering – 1980

B.S. Forest Engineering – 1979

LEED BD+C – 2008

Engineers Without Borders

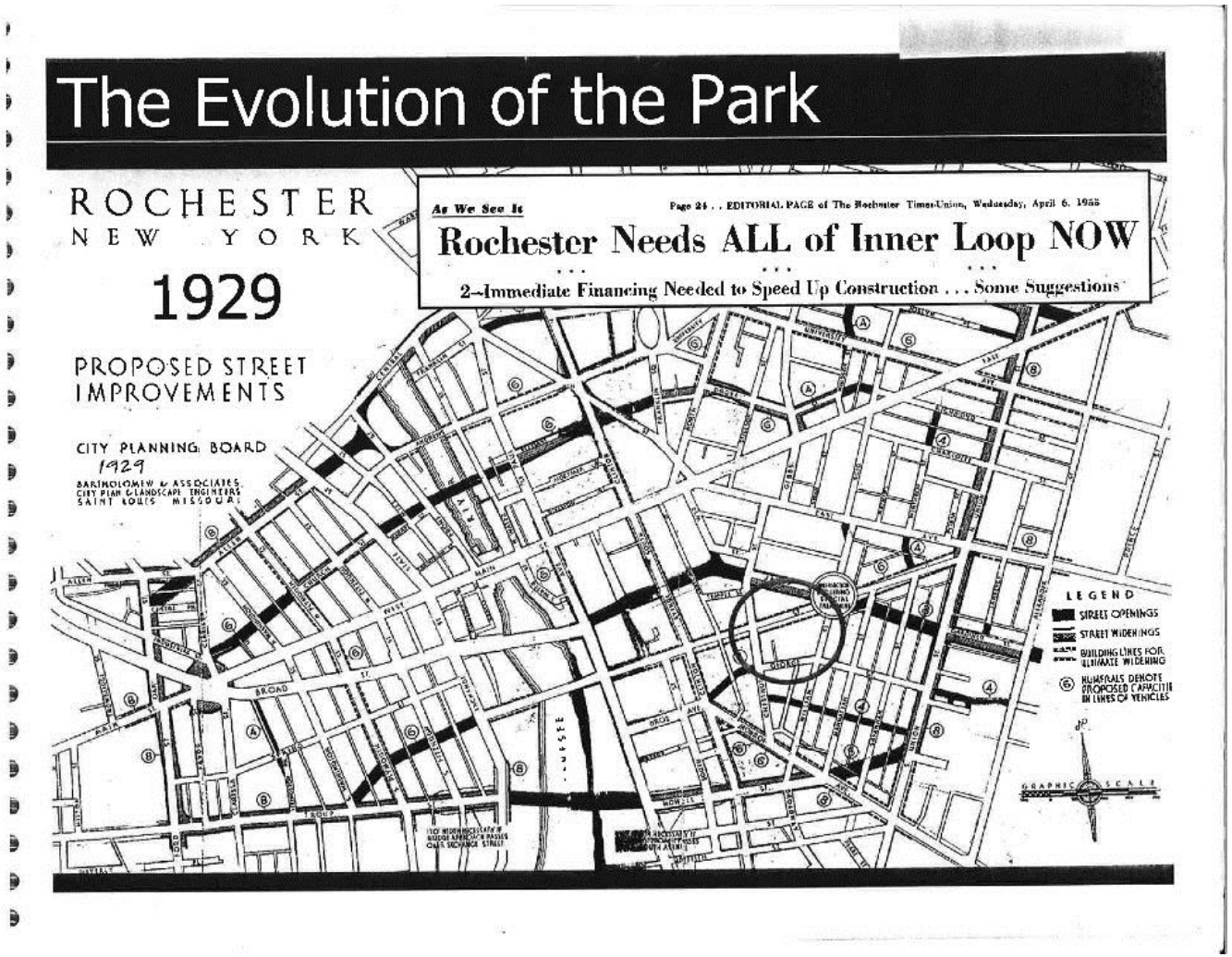
- 37 years practicing multidiscipline engineering in the Greater Rochester area.
- Projects have included the management of teams from different offices and subconsultants.
- Work has included being the project manager for the Rev. Martin Luther King Park Renovation Project for over 16 years.

Stantec

1 Planning History

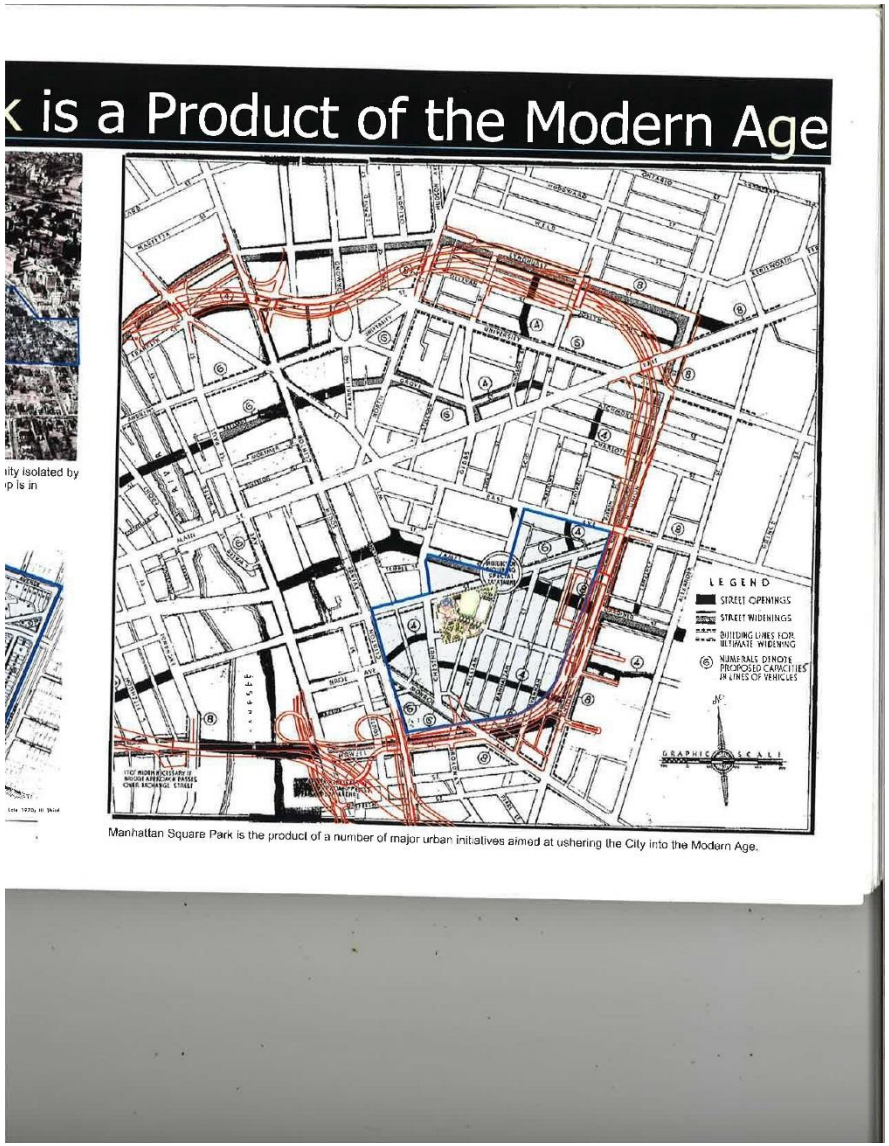
Stantec

Inner Loop Construction



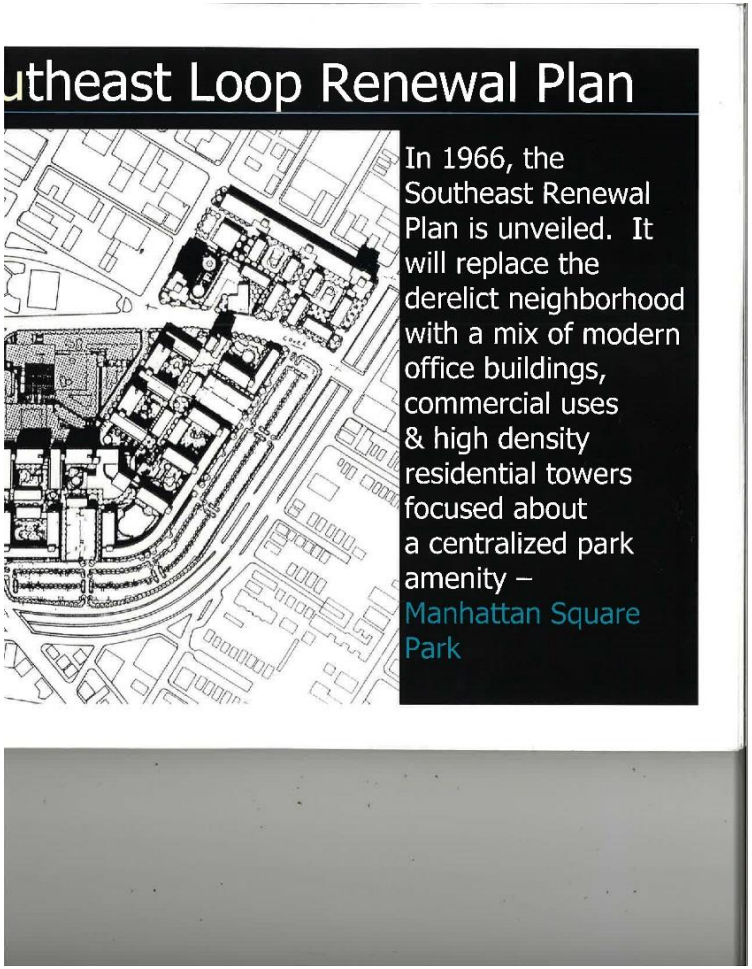
Stantec

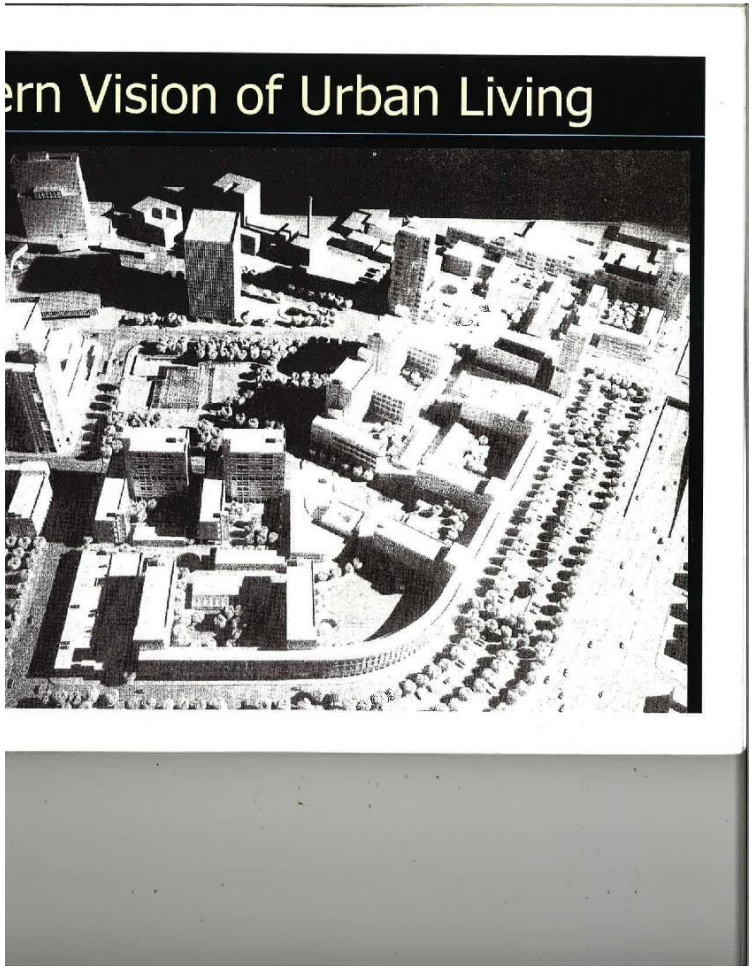
Inner Loop Construction



Stantec

Southeast Loop Renewal Plan





Stantec

2 Original Design Manhattan Square Park

Stantec

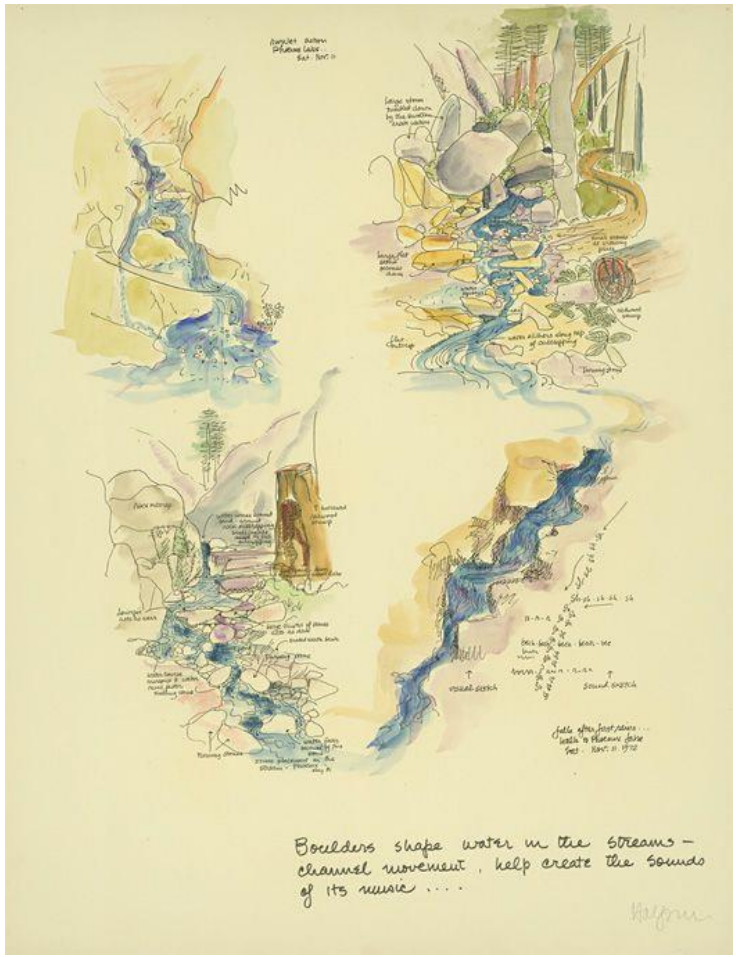
Original Park Program

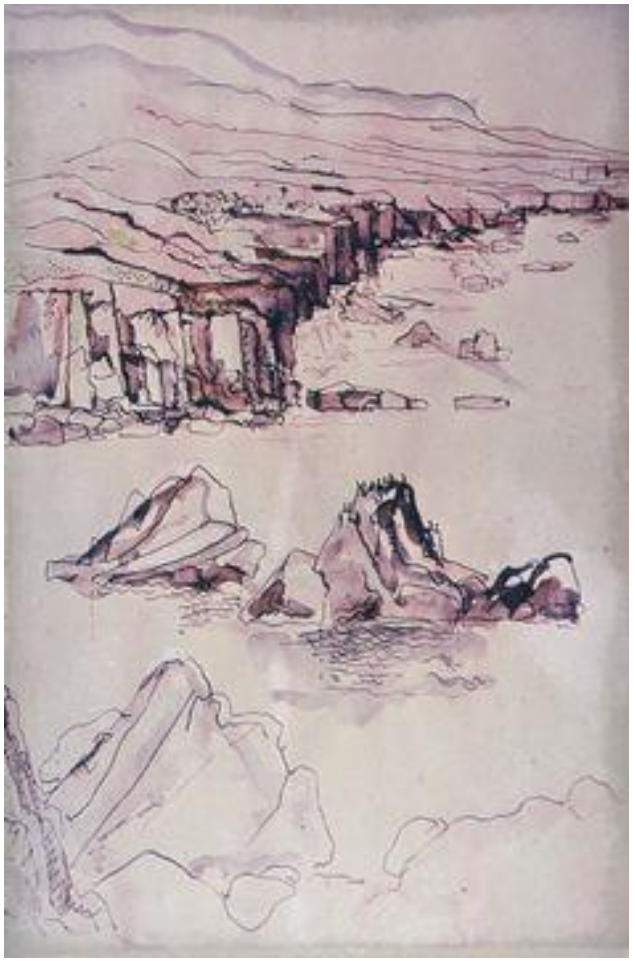
Park Program:

- Plaza: Fountain and Amphitheater
  - Wading / Splashing
  - Rendezvous
  - Theater / Concerts
  - Participation
  - Lunch / Dinner
  - Observation
  - Gathering
  - Events
  - Exhibits
- Intensive Play Area
  - Climbing
  - Sliding
  - Construction
  - Exploration
  - Creative Play
  - Friends
- Court Games and Ice Rink
  - Bleacher Viewing
  - Basketball
  - Handball
  - Ice Skating
  - Ice Hockey
- Meadow
  - Catch / Frisbee
  - Touch Football
  - Running
  - Jumping
  - Sledding
  - Picnics
  - Kites
- Promenade
- Space Frame and Observation Tower
- Restaurant
- Garden
  - Botany
  - Reading
  - Strolls
  - Sitting
  - Thinking
  - Conversation

Stantec

Theme – Mountain Streams





Stantec

Lawrence Halprin Design Sketches

Figure 4

These early design sketches illustrate the transformation of the space frame feature.

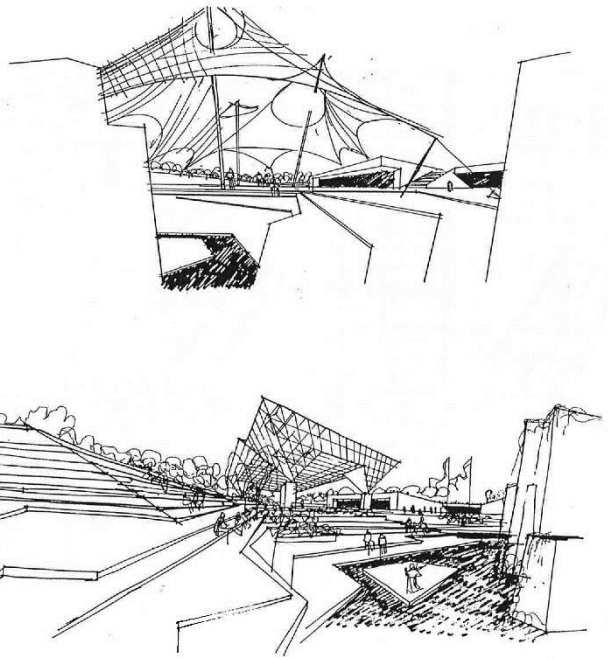
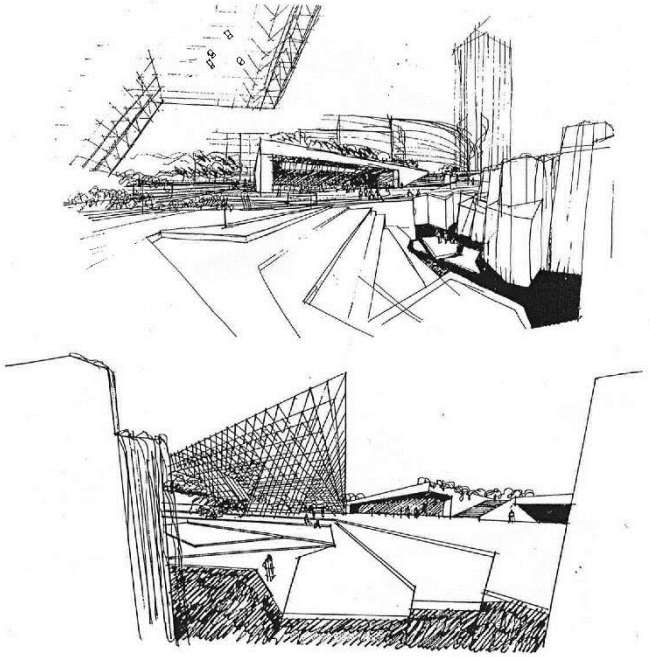


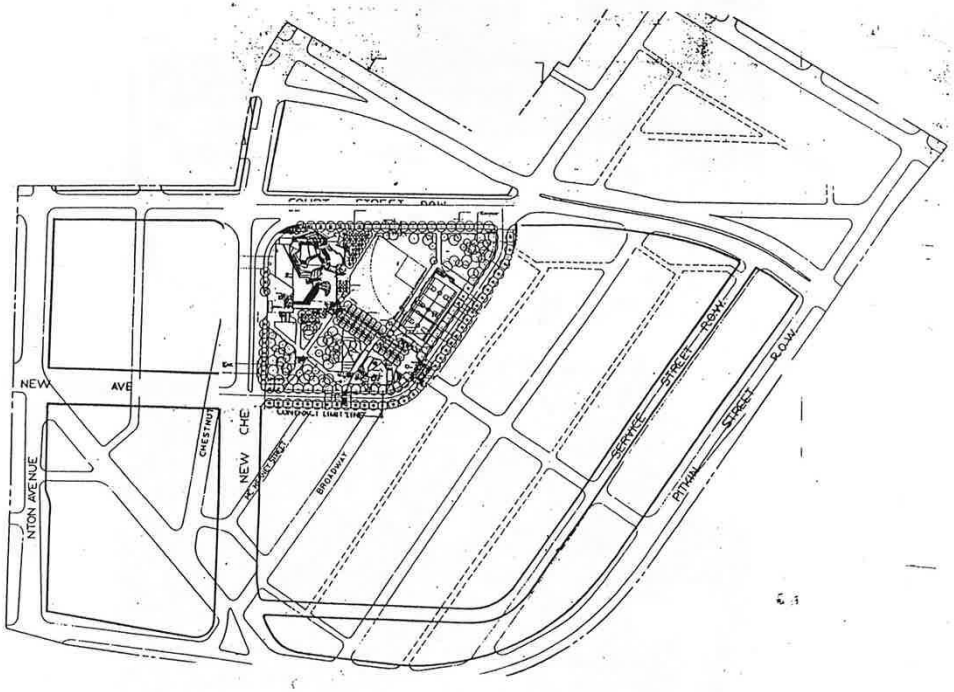
Figure 3

These early design sketches from the Halprin office show formative design intentions for the park. Note the rather grand stair connection between the fountain plaza area and Chestnut Street. While deleted from the final plan this intended feature illustrates Halprin's concern for creating strong connections between the neighborhood and the central area of the park.



Stantec

This overlay of the park design on the historic street pattern of the area illustrates Halprin's intention of contextualizing the park with the historic fabric of the city. Note the alignment of the dominant 45 degree angles in the park with the alignments of historic McNerney Street and Broadway. Also note the alignment of the park's promenade with the historic George Street corridor.



Grand Opening – September 1975

We're Opening Manhattan Square Park, And You're Invited!

(September 7-14)

e-acre green area and recreational right in the heart of Downtown er, developed by the City for people es who live, shop, or work here. words, it's been designed for you want you there to help us open an Square Park in the right spirit.

an a full week of events for the mily has been planned, with s scheduled to show off its flexibility ppeal for anyone with fun in mind.

We want to show that Manhattan Square Park can provide the right background for every recreational activity you could want. But you'll see for yourself that the Park's unique facilities alone can provide hours of entertainment with your participation.

There's the Space Frame observation tower; concrete terraces set off with fountains and pools; waterfalls that hide a quiet grotto;

and an indoor restaurant offering patio dining and a view of the plaza. There's a playground stocked with discoveries for youngsters and a court games area which converts into a regulation hockey rink. There's even a meadow for field games, romping around, or picnicking, and promenades through landscaped gardens for enjoying quieter moments.

Discover the possibilities at Manhattan Square Park. Discover them with us!

Manhattan Square Park
Opening Events
(Court and Chestnut Streets)
September 7— 14, 1975

Sunday, September 7th

n. Chessmen Color Guard

n. Monroe County Park Band Concert

n. The New Whirl Winds—Gospel Music

2:00 p.m. Clowns and Jugglers

7:30 p.m. Barley School Jazz Ensemble

8:30 p.m. Golden Link Folk Singing Society

Wednesday, September 10th

8:00 p.m. Mitzie Collins and American Folk Dancers

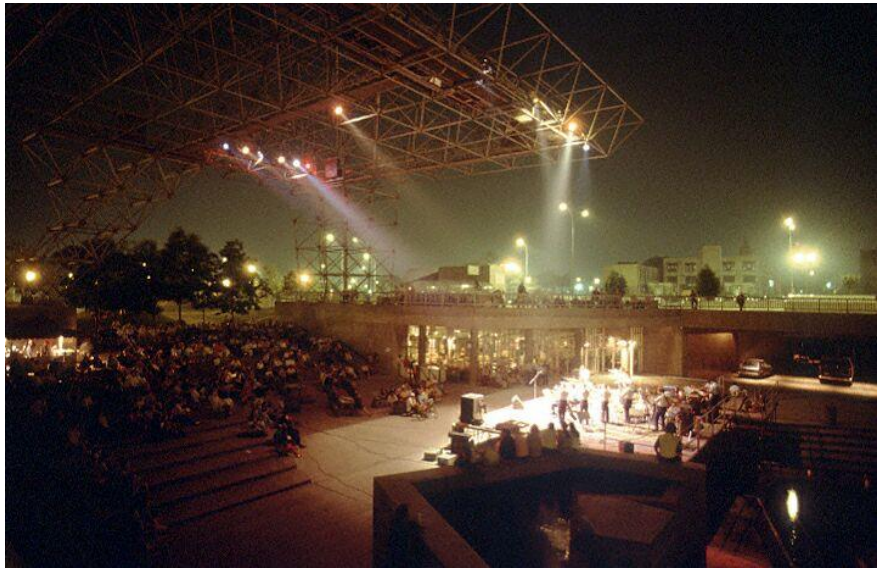
Friday, September 12th

12:15 p.m. Mime Show with "Zarcone"

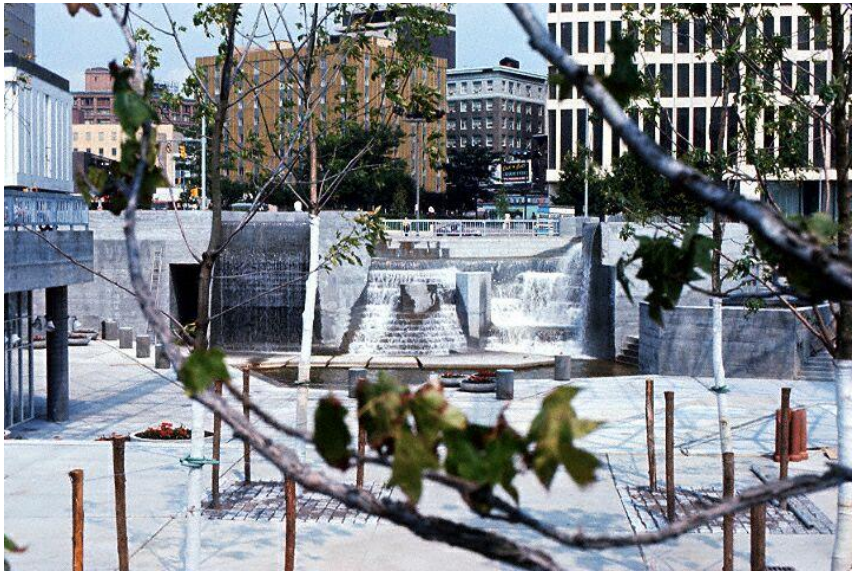
2:00 p.m. Clowns and Jugglers

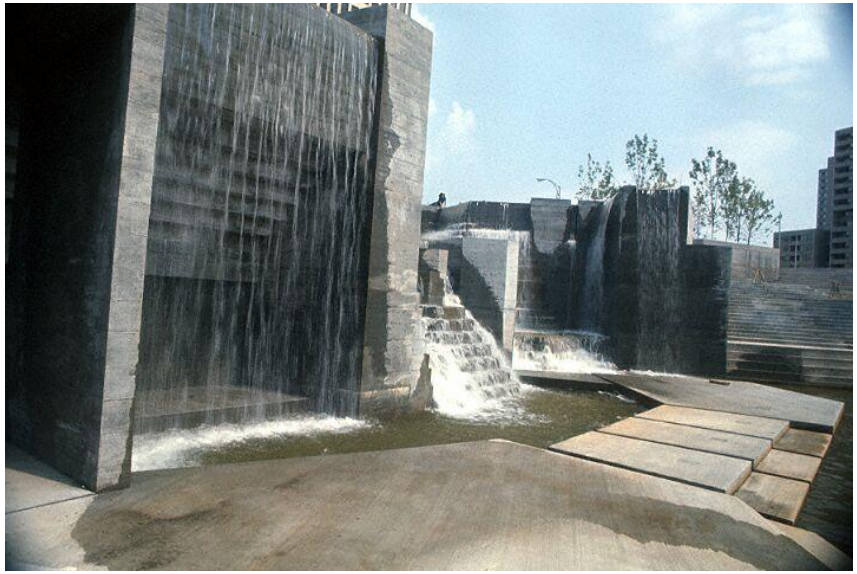
Stantec

Active Thriving Park



Stantec





Stantec

Who designed Manhattan Square Park?

- **Frank Lloyd Wright**
- **Frederick Law Olmstead**
- **I.M. Pei**
- **Lawrence Halprin Associates**

Stantec

Who designed Manhattan Square Park?

- Frank Lloyd Wright
- Frederick Law Olmstead
- I.M. Pei
- **Lawrence Halprin Associates**

Stantec

Time for a Rebirth

Stantec

3 Masterplan Process for Park Rebirth

Stantec

Design Process - Initial Step:

Community Workshop Led by Urban Strategies (Toronto)–March 2001

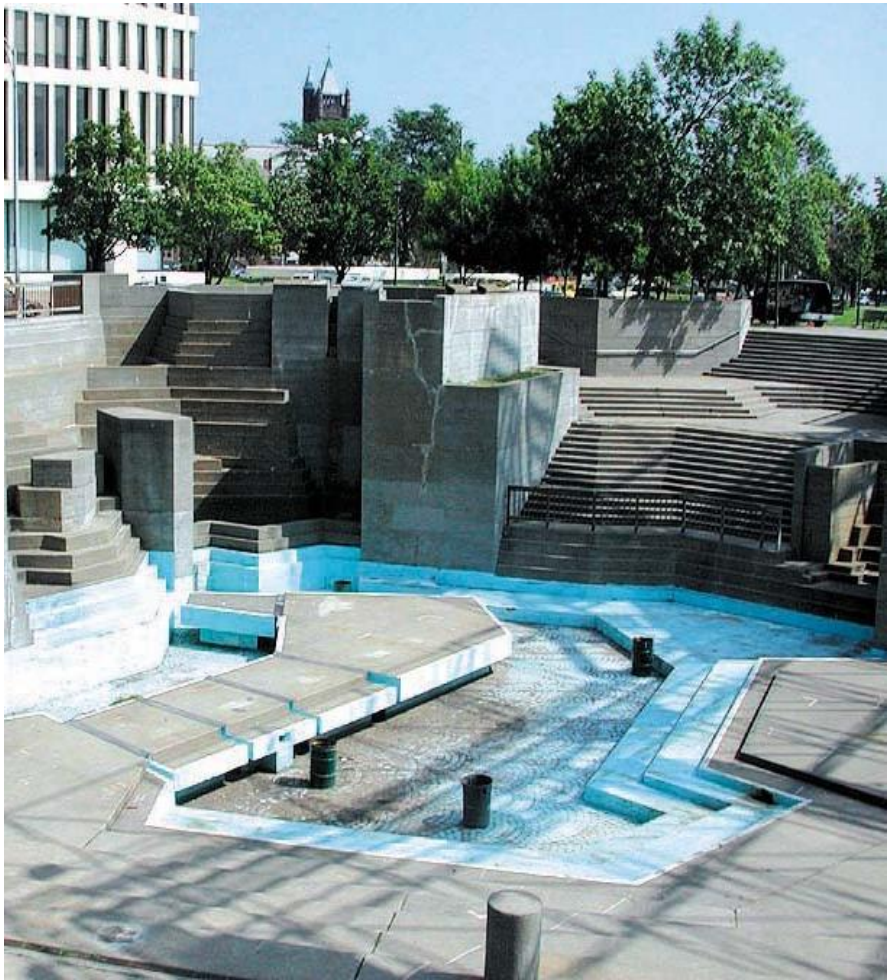
Team Members:

- City of Rochester
- Local Stakeholders
- Public
- Ken Smith LA
- Dufresne Henry (Now Stantec)

Goals:

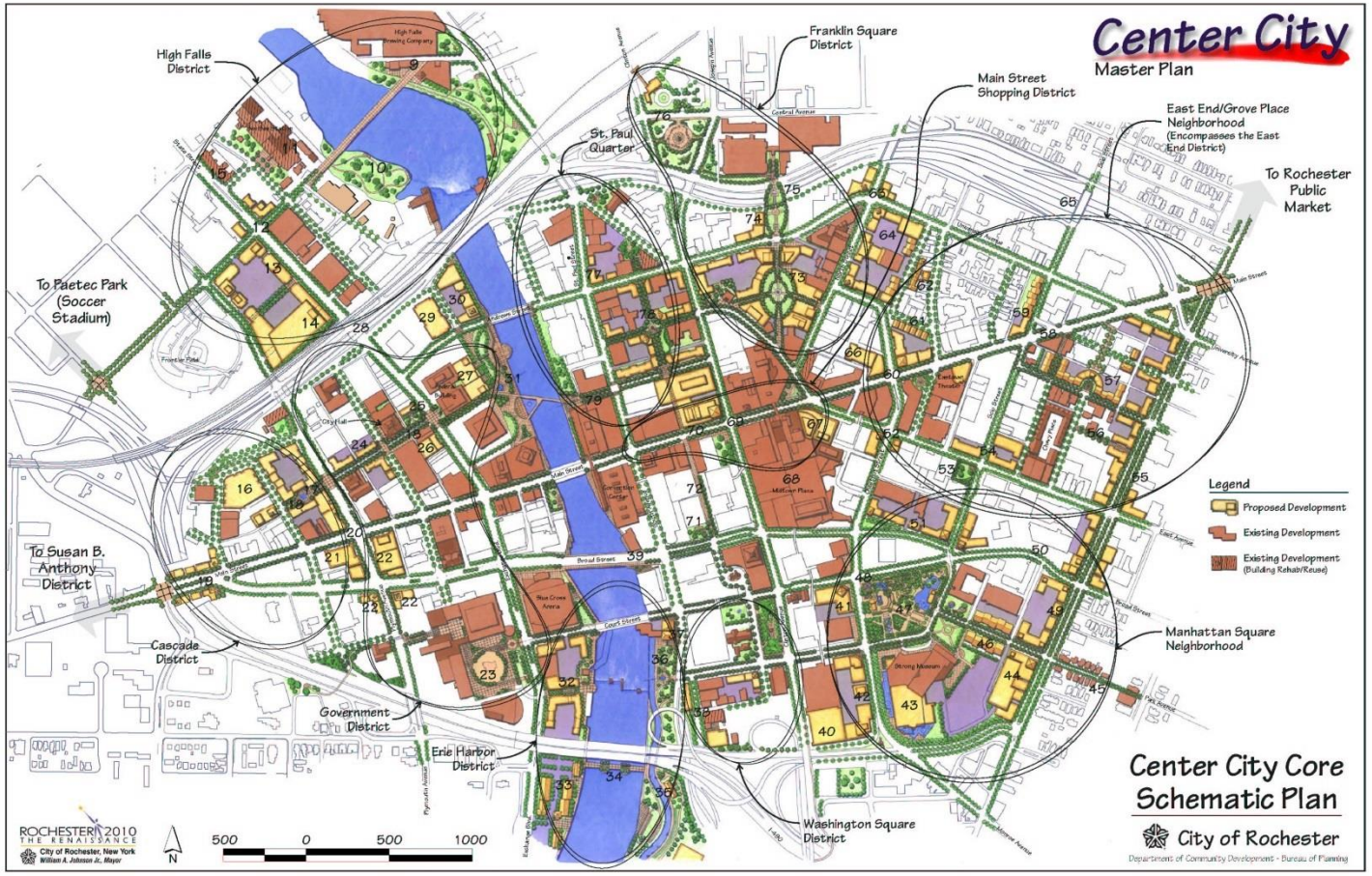
- Find Out What Portions of the Park that People Want to Keep
- Facilitate Four Groups to Sketch Alternate Plans
- Assemble Stakeholder Comments
- Create a New Masterplan

Keeping and improving what's good.



Alteration / Adaptation

Modifying and changing what could be better.


Center City
Master Plan
High Falls District
Franklin Square District
Main Street Shopping District
East End/Grove Place Neighborhood
(Encompasses the East End District)
St. Paul Quarter
To Rochester Public Market
To Paetec Park (Soccer Stadium)
To Susan B. Anthony District
Cascade District
Government District
Erie Harbor District
Washington Square District
Manhattan Square Neighborhood
Legend
Proposed Development
Existing Development
Existing Development (Building Rehab/Reuse)
Center City Core Schematic Plan
City of Rochester
Department of Community Development - Bureau of Planning
ROCHESTER 2010 THE RENAISSANCE
City of Rochester, New York
William A. Johnson Jr., Mayor
N
500 0 500 1000

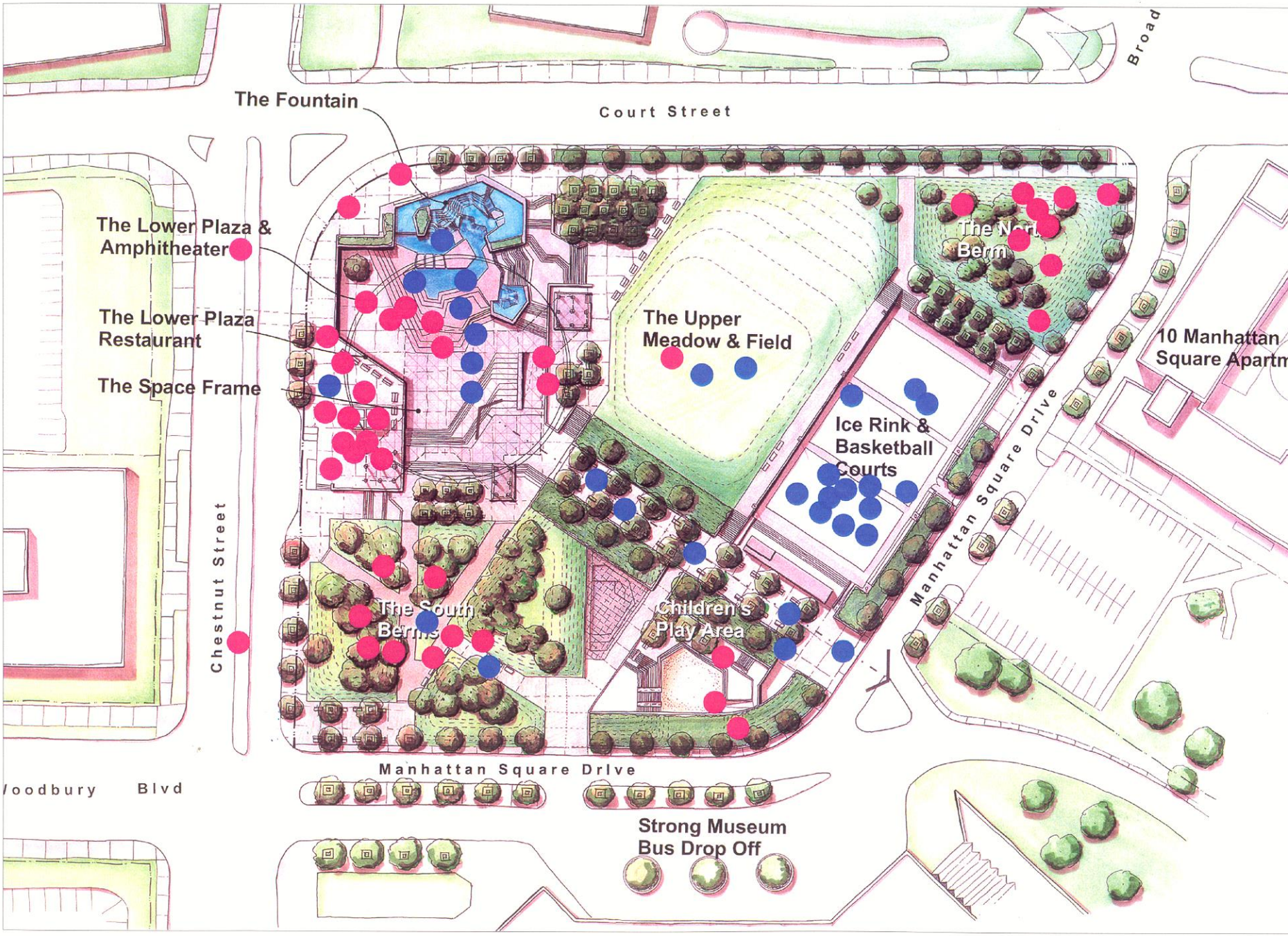
BLUE TEAM
3.28.2001
HSBC
10 Manhattan Square Apartments
BLUE TEAM
COMMUNITY WORKSHOP
MARCH 2001
DESIGN PRINCIPLES:
Rochester Center
STREET FOOD COURT
Strong Museum
AXIS
The Park in its Immediate Context
Manhattan Square Park

HSBC
10 Manhattan Square Apartments
SKATING POND/ WATER FEATURE
MAJOR CONCERT AREA
STAGE
MAIN ACCESS FROM CITY
GREEN EDGE
MAIN PAVILION CAFE
CONNECTION TO NEIGHBORHOOD
RED TEAM
COMMUNITY WORKSHOP
MARCH 2001
Rochester Tel Center
CHILDREN'S PLAY AND THEATRE AREA
Strong Museum
The Park in its Immediate Context
Manhattan Square Park

The Fountain
Court Street
The Lower Plaza Amphitheater
The Lower Plaza
The Space Frame
TERRACES
The Upper Meadow & Field
POND
Ice Rink & Basketball Courts
10 Manhattan Square Apartments
GREEN TEAM
COMMUNITY WORKSHOP
MARCH 2001
Manhattan Square Drive
Strong Museum Bus Drop Off
Woodbury Blvd
Park Elements
Manhattan Square Park

HSBC
LINK TO NEW DEVELOPMENT
10 Manhattan Square Apartments
STAGE
GRASS THEATER
MANHATTAN SQUARE PLAY GARDEN
10 MANHATTAN SQUARE
YELLOW TEAM
COMMUNITY WORKSHOP
MARCH 2001
PEDESTRIAN LINK
FUTURE DEVELOPMENT SITE
NATURALISTIC POND/ SKATING AREA WITH COLORFUL SEASONAL VEGETATION - GRASSES, PERENNIALS
Rochester Tel Center
Woodbury Blvd
NEW PARKING IN THE WORKS
SCULPTURE/ PLAY WALK WITH SEATING AREAS (ELEMENTS LIKE BUCHAN'S SOUND PERISCOPE)
The Park in its Immediate Context
Manhattan Square Park

The stakeholders were presented with the following diagram and were asked to identify a park or contextual element that contributed positively o
negatively to their experience of the park and its surrounds. Positive features are identified in blue and negative features are identified in red.



Overall Masterplan Findings:

- Improve sight lines into the park
- Improve connections to adjacent neighborhoods
- Restore water to park
- Renovate ice skating rink
- Restore playground area
- Maintain continuity with City Masterplan

4

Phase 1 Improvements

Phase 1 Elements:

- Restore former slides
- Add children's tower
- Add unique interactive sound elements
- Separate into two areas (2 to 5 yr. old & 5 to 12 yr. old.)
- Brighten the area

Challenge 1:

How do you decrease the slope on the existing concrete structure without increasing weight?

Stantec

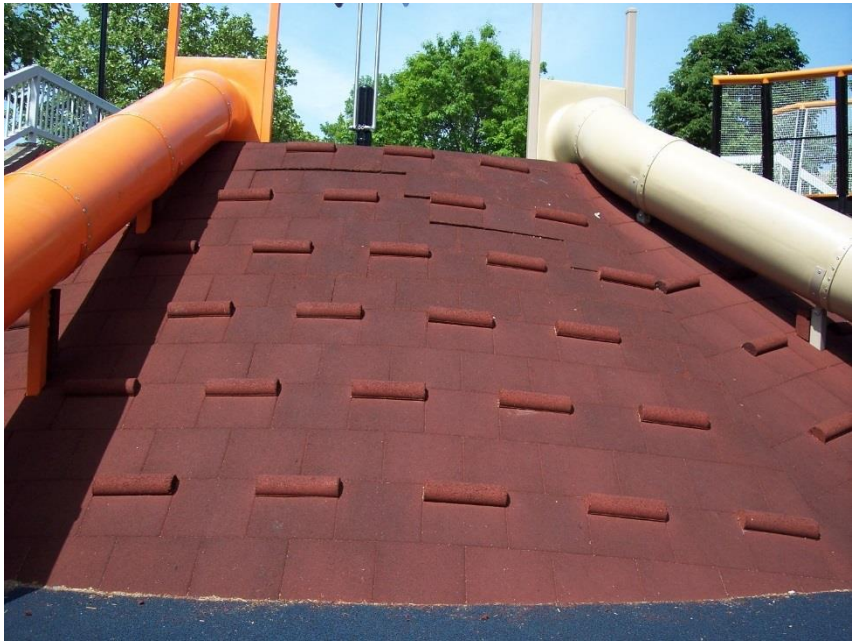
Existing Creosote Timbers

Stantec

Foam Block Support

Stantec

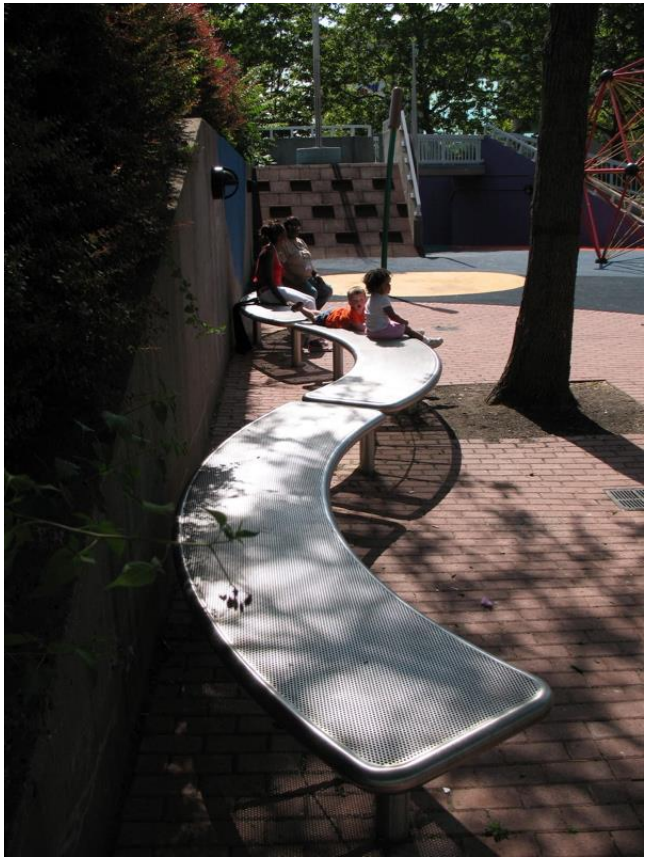
New Surface



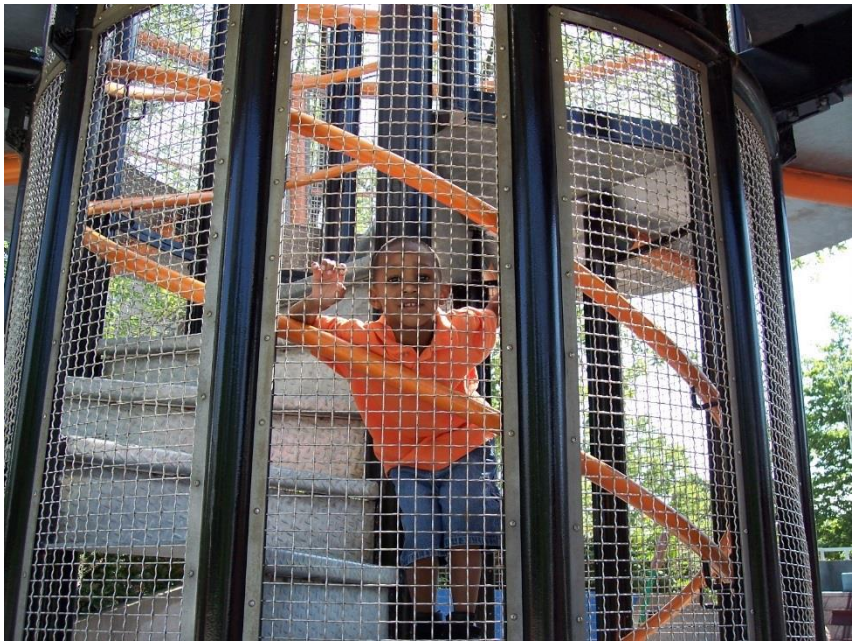
Stantec

Interactive Sculptures

Stantec

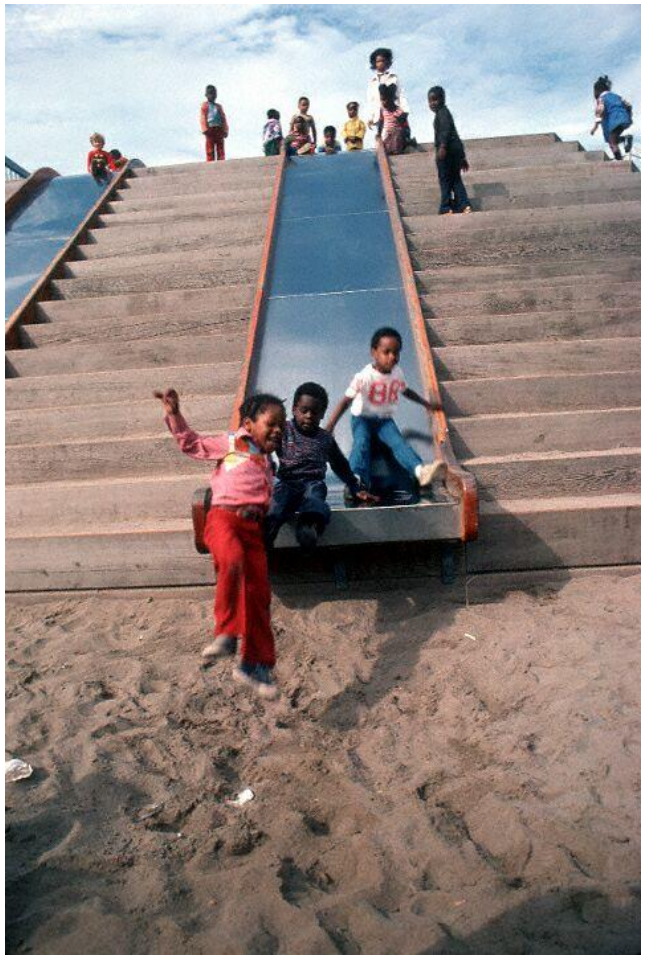


Stantec



Stantec

Slide Material Changed



Stantec

Demonstration of Interactive Sculptures by Bill Buchen (Co-artist with Mary Buchen)

Stantec

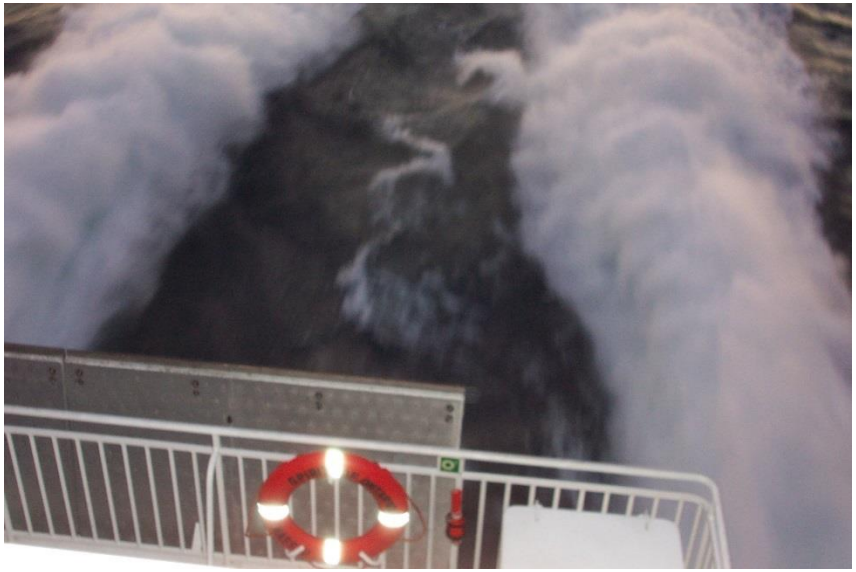
5

Phase 2 Improvements

Phase 2 Elements:

- Replace ice rink using a natural shape
- Replace cooling equipment
- Raise ice rink to improve visibility
- Enlarge multipurpose building and add plaza
- Replace Lighting
- Increase visual appeal and use

Toronto Visit with City to Research Similar Rinks

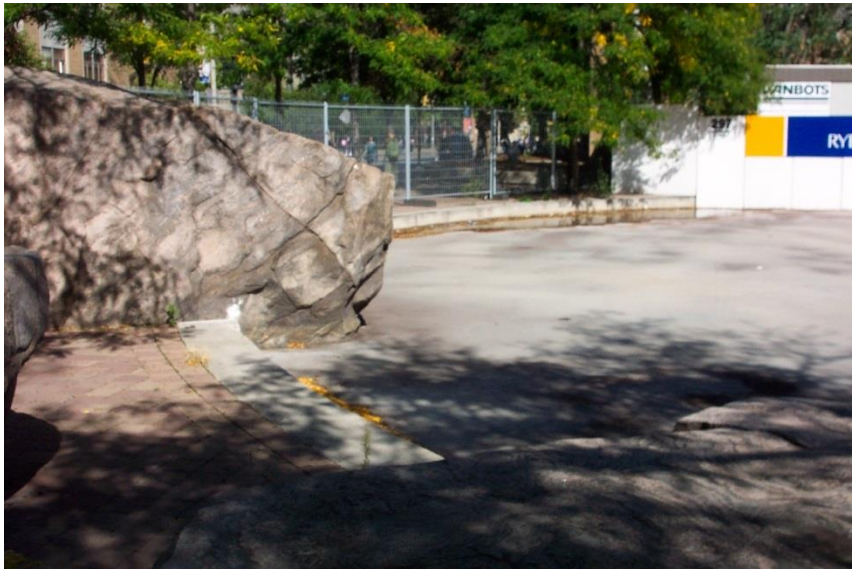


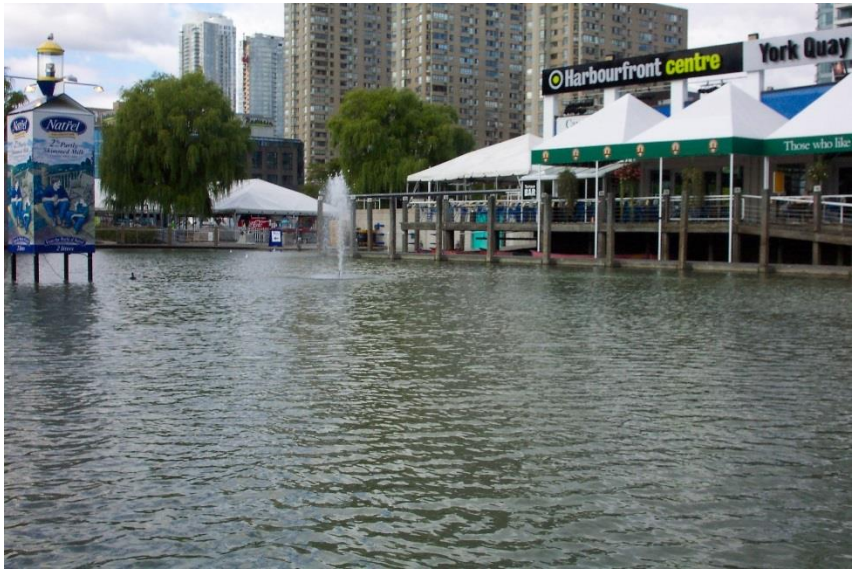
Stantec

Similar Reflecting Pool / Ice Rinks That Have Multi-Seasonal Use

Stantec

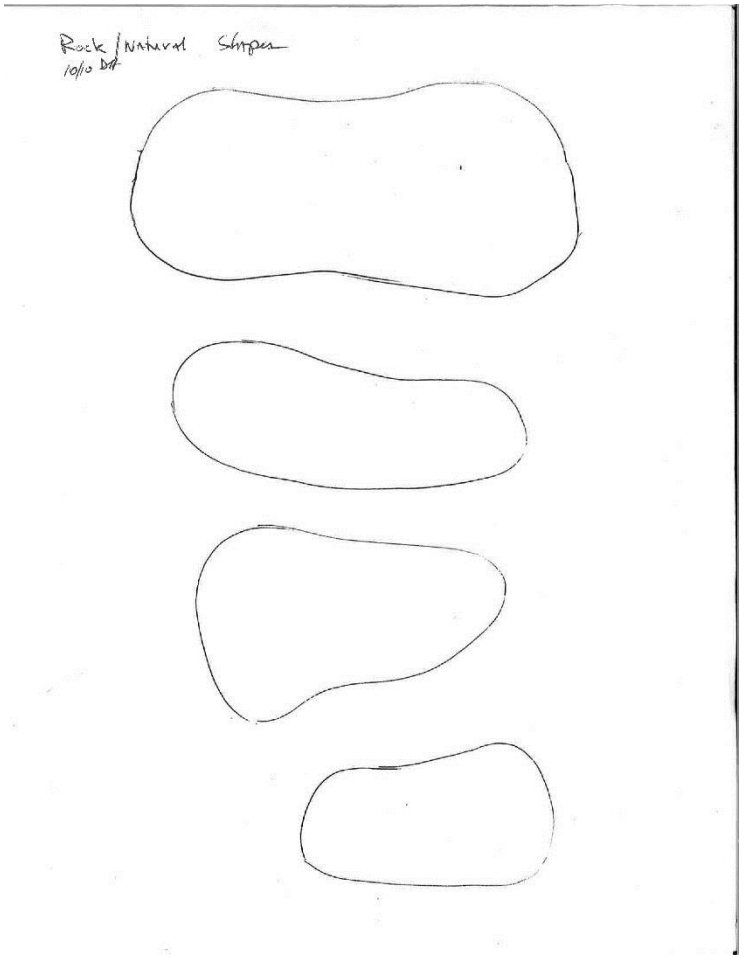
Geometry and Edge Choices





Stantec

Stones Promoting Non Standard Rink Shape



Stantec

Simulations of Natural Shape

Stantec

Challenge 2: Choosing Refrigerants For the New Ice Rink

- **Thermal Efficiency**
- **Safety For Environment**
- **Impact during Leaks**
- **Cost**

Stantec

Freon:

- Original Refrigerant
- Not an Approved Refrigerant
- Impact on Environment in the Event of Leaks

Ammonia:

- Efficient
- Dangerous Fumes - Proximity to Apartments with Respect to Potential Leaks

Calcium Chloride:

- Efficient thermal transfer
- Corrosion Concerns for Equipment
- Corrosion Inhibitor Chemicals Can Create Environmental impact if there is a leak.

HFC 134a:

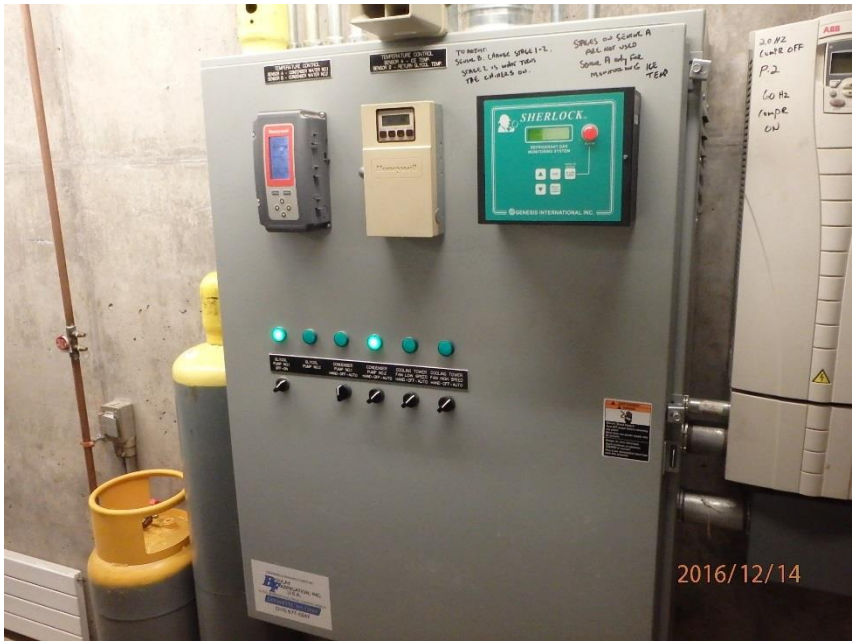
- Efficient Thermal Transfer
- Common Refrigerant of Automobile Air Conditioning System
- Typical for Use as a Primary Refrigerant (Which keeps the Refrigerant Within the Compressors Inside Structure)

Propylene Glycol:

- Modest Thermal Efficiency
- Food Grade
- Will Not Cause Environmental Issue if There is a Leak
- Common for Use as a Secondary Refrigerant

Final Choice of Refrigerants:
Primary: HFC-134a
Secondary: Propylene Glycol

Stantec



Stantec

20,000 linear feet of
refrigerant piping.

Zamboni Access Ramp

Stantec

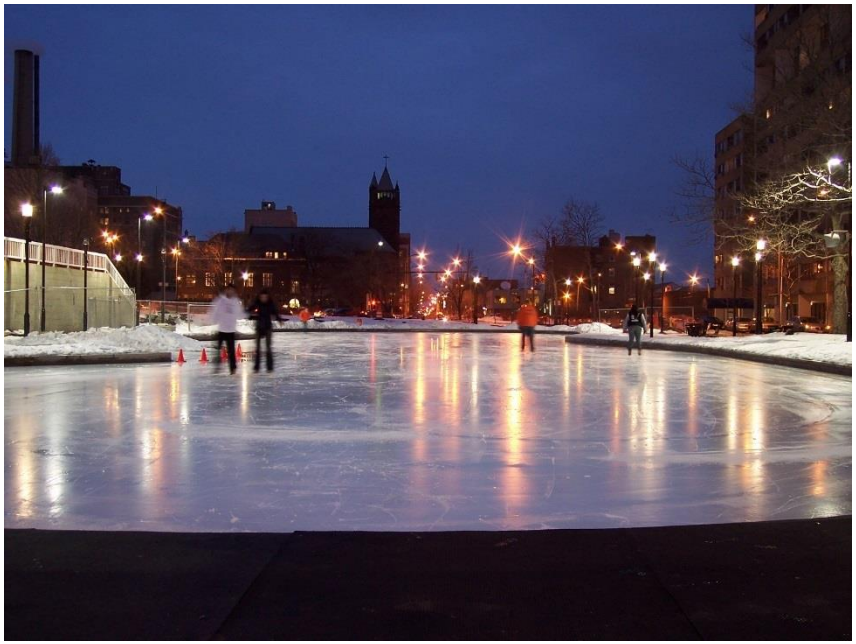
Reflecting Pool

Stantec

Renovated Lodge

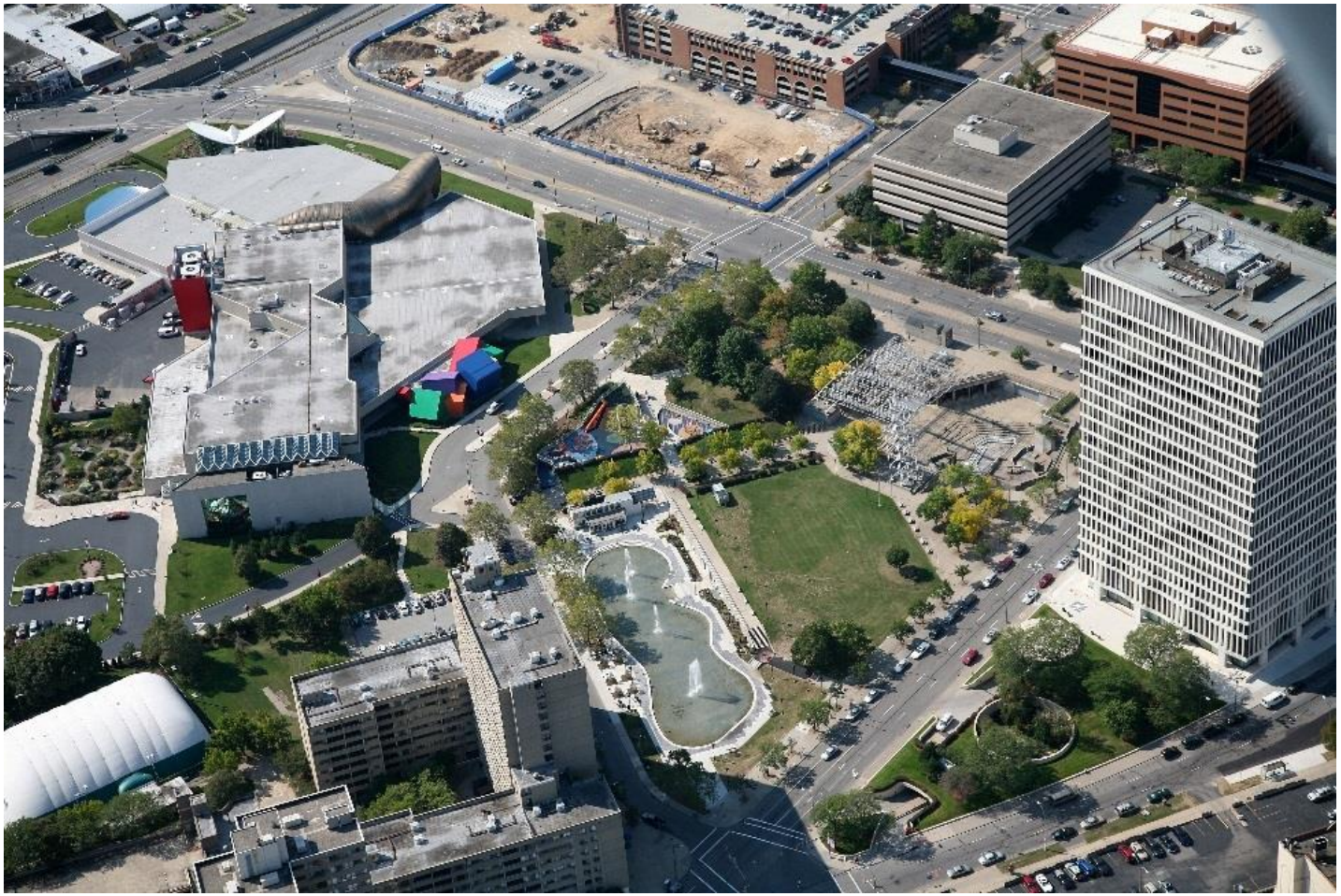
Stantec

Lighting was Added For Night Skating



Stantec

Phases 1 and 2 Complete



Stantec

What are the main factors to consider when selecting a refrigerant for an ice rink?

- **Safety (fumes during leaks)**
- **Corrosion**
- **Conductivity (thermal transfer)**
- **Energy Use**
- **Potential of Environmental Spill**
- **All of above**

Stantec

What are the main factors to consider when selecting a refrigerant for an ice rink?

- **Safety (fumes during leaks)**
- **Corrosion**
- **Conductivity (thermal transfer)**
- **Energy Use**
- **Potential of an Environmental Spill**
- **All of above**

Stantec

6

Phase 3a Improvements

Phase 3A Elements:

- Gut multipurpose space
- Treat walls and entire space for mold
- Replace hatch for RG&E vault, Improve safety and security of transformer room
- Remove universal waste

Corrosion in Mechanical Room

Stantec

Mold – Removal

Stantec

Challenge 3: Mold Remediation

Stantec

Mold Removal Process Followed:

- Obtained samples of materials and air space
- Samples taken of representative material types and all rooms
- Analyzed spore samples
- Presented summary report to client
- Note: All projects have different requirements

Mold Removal Plan Followed:

- Isolated work spaces
- Removed any surfaces that can not be cleaned effectively
- Cleaned all remaining surfaces
- Took confirmatory samples to assure removal
- Installed temporary dehumidification to operate until new HVAC system was installed.

What building components were removed as part of the mold removal work?

- **All non concrete walls**
- **Entire HVAC system including ductwork**
- **All carpeting and fixtures**
- **All of above**

Stantec

What building components were removed as part of the mold removal work?

- **All non concrete walls**
- **Entire HVAC system including ductwork**
- **All carpeting and fixtures**
- **All of above**

Stantec

7

Phase 3B Improvements

Stantec

Phase 3B Elements:

- Replace Interior Mechanical, Electrical and Plumbing Systems in multipurpose space.
- Replace window wall and doors
- Install kitchen

Renovated Lodge

Stantec

Renovated Interior and HVAC

Stantec

8

Phase 3c Improvements

Phase 3C Elements:

- Remove existing fountain pumps, piping and valves.
- Replace fountain pump system
- Add Ultra-violet disinfection
- Add exterior grating
- Enlarge interior space by adding grating floor
- Add lighting of fountain

Existing Vertical Turbine Pumps – Change In Pump Locations

Stantec

Challenge 4: Simplifying the Feature Fountain Pumps and Controls

Stantec

Pump Location / Piping Revisions (Cont.):

- Distribution System was Divided Into Two Separate Systems:
  - One For Two (2) - High Elevation Basins
  - Second For Two (2) - Low Elevation Basins

- New Floor With Grating was Added to Provide Space for the Filter Pump, Filter, UV unit and Improved Access to the RPZ.

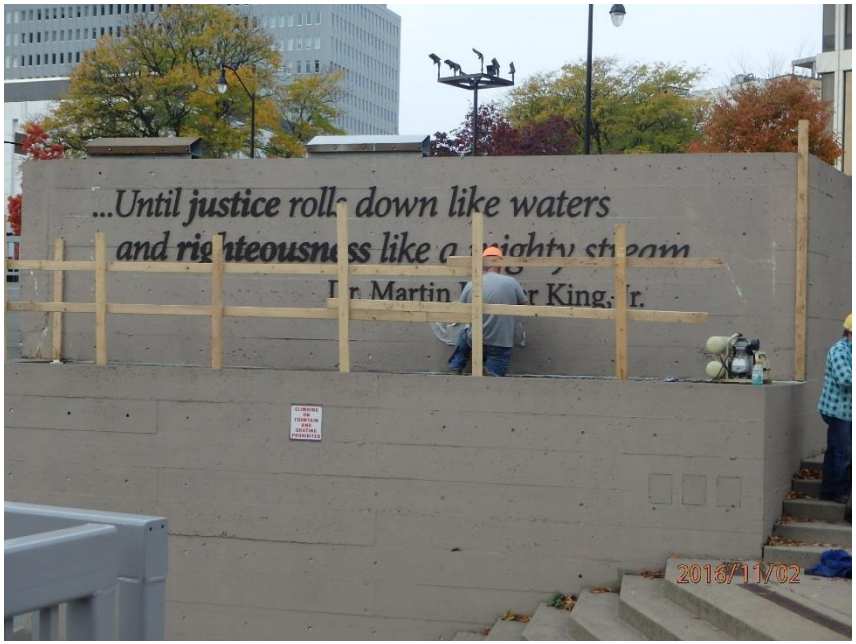
Pump Location / Piping Revisions:

- Relocated Pumps Up to Main Floor to Improve Access For Maintenance
- Due to Past Flooding, System was Redesigned to Remove Electronic Valves in Lower Vault Areas
- Former Pumps both joined to a common header which had them fighting during “two pump on” use periods.

Distribution Piping to Four Discharge Basins

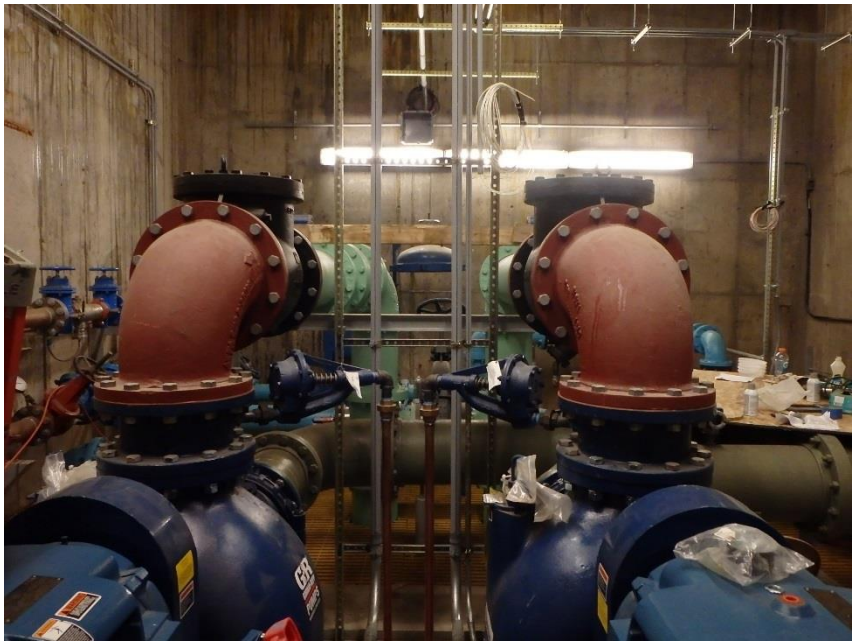
Stantec

Stantec



Stantec

Variable Speed Drives Were Added for the Fountain Pumps



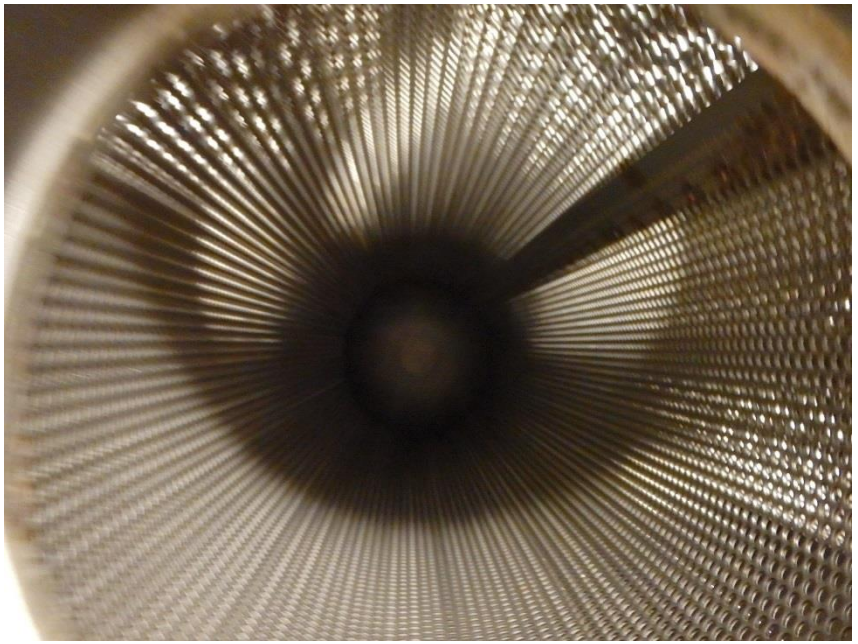
Stantec

Stantec

New Lead Free Back Flow Prevention Device and Increased Water Service Size

Stantec

Bag Filter Tubes



Stantec

Return Water Distribution

Stantec

Disinfection of Fountain Water Choices Evaluated:

- Hand Applied Chemicals
- Ultraviolet
- Chemical Feed Systems

Disinfection of Fountain Water Decision Parameters:

- Safety / Ease of Handling
- Impact to Remainder of the Fountain
- Costs: Initial / Annual O & M Costs
- Chemical Feed Systems

Hand Applied Chemicals:

- Bromine or Chlorine Tablets
- Employee Chemical Contact Required
- Oxidizers can Corrode Existing Steel Piping Buried Within Concrete Fountain

Ultraviolet Disinfection:

- No Chemicals
- Higher Costs
- Requires Prior Filtering
- No Employee Contact With Chemicals
- Will not Cause Further Corrosion of Steel Piping

Chemical Feed Systems:

- Bromine or Chlorine Can Be Tablet Fed Into Devices
- Gas or Liquid Feed – Not Considered For Safety Reasons
- Oxidizers can Corrode Existing Buried Steel Fountain Distribution Piping

Disinfection Method Chosen by Client:

Ultraviolet Disinfection

New UV System

Stantec

What is the most important criteria for choosing an ultra-violet disinfection system?

- **Cost (Initial and O&M)**
- **Safety / Ease of Handling**
- **Impact to System Piping**
- **All of above**

Stantec

What is the most important criteria for choosing an ultra-violet disinfection system?

- **Cost (initial and o&m)**
- **Safety / Ease of Handling**
- **Impact to System Piping**
- **All of above**

Stantec

Fountain Restoration Day

Stantec

Stantec

Stantec

Questions?

Dwight Harrienger, P.E.
Stantec Consulting Services, Inc.
dwight.harrienger@Stantec.com
(585)-413-5273

Stantec