Mill Pond Park

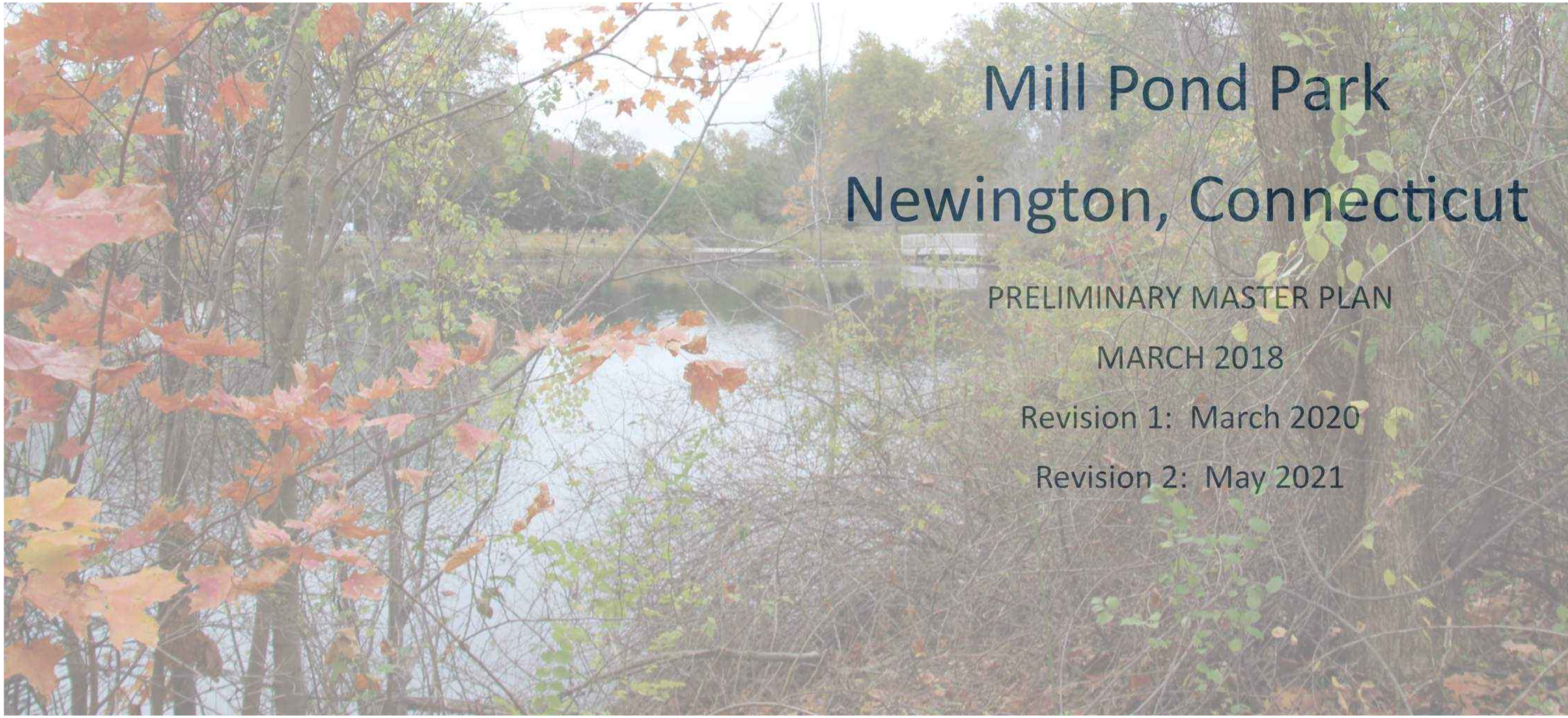
Newington, Connecticut

PRELIMINARY MASTER PLAN

MARCH 2018

Revision 1: March 2020

Revision 2: May 2021



TLB Architecture

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Introduction

Introduction:

In the Fall of 2017, TLB Architecture was retained by the Town of Newington, Department of Parks and Recreation to evaluate Mill Pond Park and prepare a Preliminary Master Plan to help guide the future development of the Park. Particular emphasis was to be placed on the swimming pool and bathhouse, as they are known to be in failing condition and in need of substantial renovation or complete replacement. Over the course of several walk-throughs of the Park and meetings with Town Staff, we completed a conditions assessment of existing park amenities and structures, developed a program of requirements and provided several options for potential renovations.

After much discussion, an option was selected and further developed to present to the Town, along with Probable Project Costs. As with any master Plan, it is a living document and has been updated twice since the original issuance. Most recently the plan was updated based on additional survey, utility and geotechnical data that was developed early in 2021.

Early in the planning process, the town approved a referendum for a Town Hall and Community Center project across the street from the park. This approval played a factor in the selection of the preferred option, as it provided synergies for recreation programs, pedestrian patterns and vehicle parking.

On the following pages, we've included the analysis and the options, followed by the selected approach. The Executive Summary provides an overview of the proposed plan and the associated costs.

Process:

In addition to the site visits and meetings previously mentioned, we reviewed all available information including, but not limited to the following:

1. Newington Strategic Park Master Plan, prepared by CEHP, Inc. and Leisure Lifestyle Consulting, Inc. and adopted November 13, 2007.
2. Town mapping of known site utilities in the Park.
3. Mill Pond Park Pool Evaluation, prepared by Aquatics Group, dated March 2013.
4. Concept Design Presentation of Town Hall & Community Center, prepared by QA Architects, dated June 14, 2017 and approved at referendum in November 2017.
5. Available aerial and GIS Mapping

For the purposes of this Preliminary Master Plan, no site survey was available, nor was information on soil types and bearing capacities or groundwater levels.

Hazardous materials in the existing buildings, pools or ground have also not been identified. For planning purposes, it is assumed that hazardous materials are not present, though confirmation in subsequent design phases will be required.

Goals, Objectives and Limitations:

The planning effort undertaken herein addresses all current and anticipated needs. It was made clear at the onset of the project that the Swimming Pool is priority one, with the primary goal of ensuring the Swimming Pool is placed in the most advantageous location on the site, and it's ultimate construction would not preclude or adversely effect future improvements.

Hence, the Preliminary Master Plan addresses the potential build-out of the site, developing the Swimming Pool in more detail, to ensure consensus and proper allocation of resources.

The goal of the Preliminary Master Plan is not necessarily for the Town to "approve" the Plan, but to accept the Plan as a living document to guide development. As needs and priorities change, so too must the Plan. Approval of the location and general configuration of the Swimming Pool would allow its construction as the First Phase, should funds not be available for the full build-out, as shown.

Synergies are possible with regard to the Town Hall and Community Center project, but obstacles may also be presented if a portion of the park is utilized for temporary facilities or parking during its construction. Coordination between the Park Design team and the Town Hall / Community Center Design Team can identify and resolve potential issues.

Project Team and Participants:

As with any significant undertaking, success is dependent upon the contributions of many individuals and firms. This effort is no exception and has benefited from the energy and expertise of Town and Parks & Recreation administrators and staff. Public input will be a key component of any subsequent planning and design phases, in order to hear from all project stakeholders. The following have been and will continue to be instrumental in seeing the Preliminary Master Plan move into the implementation phase:

Town Staff:

Keith Chapman —Town Manager
William DeMaio, CPRP—Superintendent of Parks and Recreation
Hadeel Majdoub—Recreation Supervisor
Karen Gallicchio—Recreation Supervisor
Joe Harvey—Recreation Specialist
Clay Pedigo—Park Supervisor
Gary J. Fuerstenberg, P.E.—Town Engineer

Design Team:

TLB Architecture, LLC	Architecture and Planning
Richter & Cegan	Landscape Architecture
Martinez & Couch Associates	Survey
GNCB Consulting Engineers	Geotechnical Engineering

Executive Summary

Executive Summary:

The Preliminary Master Plan, herein presented, reflects best available information at the time. Additional information prepared inj early 2021, including A2/T2 Survey, Utility mapping, Wetlands Identification and Geotechnical Analysis, confirmed the general approach originally presented, but relocated elements to avoid utility conflicts and reduce groundwater impacts.

The goal of this plan is to evaluate opportunities to address priorities as defined by the Town and suggest an approach to phase such improvements, ultimately leading to the optimal build-out of the Park.

All parties agreed that the highest priority is the reconstruction of the swimming pool facility, which was a significant driver in the proposed Park Plan.

The placement of the pool near the street has significant advantages when it's complete, but during construction has the advantage of allowing the continuous use of the existing pool, without risk of losing a season due to weather or funding related issues.

Other elements of the Park can be renovated or constructed over time and as funding allows.

Opinion of Cost:

The Opinions of Probable Construction Cost on the following pages are broken down by specific area of the Park, and do not necessarily relate to individual Phases of the Work.

Factors affecting costs of any defined phase of work include economies of scale, temporary protection and controls, access to the site, escalation and labor & material costs at the time of the Work.

Included in the Opinions of Probable Construction Cost are the following multipliers:

General Conditions:	8%
Overhead and Profit:	8%
Design Contingency:	10%

All costs are in 2021 dollars. An escalation factor has been added at the bottom of the estimate to correct costs to the mid-point of construction anticipated in mid-2023. If construction begins later than Spring of 2022, additional escalation of 4—5% per year should be factored in to the overall cost.

Probable Phasing:

Phase 1:

A. Swimming Pool and Splash Pad
B. Soft-pave Play Surface
C. Remove Baseball Field and Develop Open Space, Northeast

Phase 2:

A. Court Spaces
B. Area Adjacent to Mill Pond

Development Common to, and Distributed Between Both Phases:

A. Walking Trails
B. Parking

Note: See Appendix 4 for additional explanation of potential phasing.

Item	Unit	Quantity	Unit Cost	Item Cost	Total Cost
A. Baseball Field Removal					
1. Demo and Regrade Baseball Field, Backstop, Fencing	Each	1	22000	22000	31,670
SUB-TOTAL:					31,670
B. Field Sports					
1. Grading, Drainage and Seeding with Field Mix	SF	120000	1.25	150000	215,929
2. Layout and Striping	Allow	1	12000	12000	17,274
SUB-TOTAL:					233,203
C. Aquatics					
1. Bathhouse	SF	4750	300	1425000	2,051,325
2. Swimming Pool < 5-feet deep	SF	9000	200	1800000	2,591,147
2. Swimming Pool = or > 5-feet deep	SF	2105	300	631500	909,061
3. Pool Decks	SF	10200	18	183600	264,297
4. Waterslide	Each	1	125000	125000	179,941
5. Diving Board	Each	1	18500	18500	26,631
6. Climbing Wall	Each	2	26500	53000	76,295
7. Lawns	SF	13000	2	26000	37,428
8. Fencing - 8-foot at pool	LF	625	27	16875	24,292
8. Fencing - 4-foot at splash pad	LF	410	18	7380	10,624
9. Splash Pad - Deck Level Recirc and Recycle	SF	4000	125	500000	719,763
10. Shade Structure	Each	2	20000	40000	57,581
SUB-TOTAL:					6,948,383
D. Soft Play Area					
1. Soft Play Area	SF	2700	68	183600	264,297
2. Fencing - 4-foot CL	LF	200	18	3600	5,182
SUB-TOTAL:					269,479
E. Bandshell, Overlook and Pond Access					
1. Demolish Pool Facility (no hazmats)	Allow	1	135000	135000	194,336
2. Regrade and Ampitheater Terraces	SF	48000	4	192000	276,389
3. Bandshell	SF	1800	130	234000	336,849
4. Overlook Deck and Railings	SF	1800	82	147600	212,474
5. Pond Access Dock	SF	400	125	50000	71,976
SUB-TOTAL:					1,092,024
E. Concessions / Toilet Building (Existing Building)					
1. Miscellaneous Improvements	Allow	1	25000	25000	35,988
2. Sitework	Allow	1	25000	25000	35,988
SUB-TOTAL:					71,976
F. Playgrounds and Sensory Garden (Existing)					
1. Fencing (4-foot chain link)	LF	680	18	12240	17,620
SUB-TOTAL:					17,620
G. Court Sports					
1. Tennis Court (60 x 120)	Each	4	125000	500000	719,763
2. Basketball - Standard	Each	1	160000	160000	230,324
3. Basketball - Ollie	Each	1	185000	185000	266,312
4. Pickle Ball (30 x 60)	Each	2	62000	124000	178,501
5. Bocce	Each	2	5000	10000	14,395
6. Sand Volleyball	Each	2	115000	230000	331,091
7. Soft-Pave Fitness Surface	SF	1200	68	81600	117,465
8. Concrete Fitness Surface	SF	1200	28	33600	48,368
9. Storage Building	SF	800	128	102400	147,407
SUB-TOTAL:					2,053,628
H. Soccer Field Improvements					
1. Irrigation	Allow	1	32000	32000	46,065
2. Shade Pavilion 30 x 50	SF	1500	80	120000	172,743
SUB-TOTAL:					218,808
I Picnic Area					
1. Pavion-Two at 20 x40 (no power or water)	SF	1600	80	128000	184,259
2. Pavilion one at 20x40 (with power & water)	SF	800	105	84000	120,920
SUB-TOTAL:					305,180
J. Walking Trails					
1. Concrete Walks -8-feet wide, vehicle rated	LF	475	65	30875	44,445
2. Concrete Walks -5-feet wide, pedestrian rated	LF	1400	36	50400	72,552
3. Crushed Stone Walks - 4-feet wide	LF	5000	17	85000	122,360
4. Bridges (Short-span vehicle rated)	Each	2	36000	72000	103,646
5. Bridges (Short-span pedestrian rated)	Each	1	16500	16500	23,752
SUB-TOTAL:					366,755
K. Parking Improvements					
1. Hillcrest and Browning	SY	1050	84	88200	126,966
2. Hillcrest and Browning (Existing Lot-Repairs)	Allow	1	12000	12000	17,274
3. Brookdale	SY	850	84	71400	102,782
4. Wilson and Brookdale	SY	1070	84	89880	129,385
5. Moreland and Cross (Existing Lot-Repairs)	Allow	1	9500	9500	13,675
6. Falls Overlook	SY	1070	84	89880	129,385
SUB-TOTAL:					519,467
L. Streetscape Improvements					
1. Crosswalks	Each	4	3500	14000	20,153
2. Solar Lighted Crossing Signals	Each	4	1200	4800	6,910
3. Street Trees	Each	32	400	12800	18,426
4. Park Entrance Signs	Each	3	2000	6000	8,637
5. Light Poles	Each	18	2000	36000	51,823
					105,949
M. Miscellaneous					
1. Relocate Fitness Equipment	Allow	1	7500	7500	10,796
2. Relocate Memorial Drinking Fountain	Allow	1	1200	1200	1,727
3. Landscaping	Allow	1	40000	40000	57,581
4. Safety Railings (south of pond)	LF	300	55	16500	23,752
5. Security Lighting	Allow	1	12500	12500	17,994
6. Security Cameras	Allow	1	17500	17500	25,192
7. Lightning Prediction System	Allow	1	5000	5000	7,198
8. Site Benches (4-foot)	Each	4	6500	26000	37,428
9. Bike Racks	Each	4	9500	38000	54,702
10. Waste Receptacles	Each	4	3500	14000	20,153
SUB-TOTAL:					256,524
TOTAL PROBABLE CONSTRUCTION COST					12,490,666
N. Other Costs					
1. Site Survey	Allow	1			0
2. Architectural and Engineering Services	Allow	1			1,249,067
3. Geotechnical Analysis and Engineering	Allow	1			15,000
4. Utility Marking	Allow	1			0
5. Wetlands Flagging	Allow	1			5,000
6. FEMA Flood Map Review	Allow	1			2,500
7. Phase I and II Environmental Analysis	Allow	1			30,000
SUB-TOTAL:					1,301,567
TOTAL PROBABLE PROJECT COST:					13,792,233

NOTES:

1. Total cost includes General Conditions (8%), Contractor's Overhead and Profit (8%) and a 10% Design Contingency in 2021 Dollars. Escalation is included to June of 2023.
2. Hazardous Materials Assessment, Abatement or Remediation is not included in this Estimate.
3. Survey, Geotechnical Analysis, and Utility Marking have been excluded, as those were provided in the Winter/Spring 2021. An allowance for additional Geotechnical Analysis is included for more targeted evaluation as the design is developed.

Opinion of Probable Cost

Existing Conditions Analysis

Town of Newington Quick Facts

sourced from CT Economic Research Center (CERC)

Information on this page is provided as background information to put Mill Pond Park in the context of the overall Newington park system.

Population:

2000	29,306
2010	30,562
2011-15	30,638
2020	31,185

Land Area: 13 square miles

Median Age: 44 years

Age Distribution (2011—2015):

0-4	1,375	4%
5-14	3,035	10%
15-24	3,690	12%
25-44	7,545	25%
45-64	9,137	30%
65+	5,856	19%

Households: 12,649

Strategic Park Master Plan (2007)Takeaways:

Town-Wide

- Increased sense of community and community pride.
- Healthy and active residents
- Worthy title of "Lifetime Sports Community".
- Sustainable recreational resources.
- Green spaces and trails throughout the community.
- Future economic viability.

Newington Extravaganza at Mill Pond Park

Park Sites Maintained in Newington (Total 226.14 acres):

PARK	ACRES
Beacon Park	8.32
Little Brook Park	8.58
Churchill Park	16.80
Clem Lemire	6.93
Clem Lemire	53.17
Seymour Park	3.98
Badger Field	4.29
Mill Pond Park	***33.32***
Mary Welles Park	2.12
Candlewyck Park	4.90
Starr Park	3.96
Millbrook Park	15.10
Eagle Park	6.00
Beechwood Park	4.39
Young Farm	54.29

The extents of Mill Pond Park are indicated by the yellow line at the perimeter of the Park. The most prominent natural feature of the Park is Mill Pond and Mill Brook. These features run nearly the entire length of the Park from north to south.

The site is bound to the east, south and southwest, by residential neighborhoods. To the north, the Park is bound by Garfield Street, with the current Town hall, Community Center, Library and Police facilities across the street, along with public parking. To the northwest is the Town school bus yard.

The Park is a very active community park, serving a variety of citizens of all ages with many different active and passive recreational opportunities.

While the Park is an open perimeter, there are three main access locations, including the park access road, accessed from Garfield Street to the north; the corner of Browning and Hillcrest, near the tennis courts and the corner of Moreland and Cross, near the soccer fields.

(Refer to Page 12 for Location Plan)

Park Map

NORTH

Existing Conditions Analysis

The Park currently accommodates the following programs, features and site amenities:

A. Playgrounds & Playscape
B. Sensory garden
C. Pond and Brook
D. Walkways.
E. Waterfall and Overlook.
F. Toilet Building and Snack Bar.
G. Pool and Bathhouse
H. Tennis Courts and Sheds
I. Foot Bridges
J. Basketball court
K. Baseball field
L. Soccer fields
M. Town Hall and Community Center
N. Bus Yard

Location Map

NORTH

Existing Conditions Analysis

The Park is bisected by Mill Pond and Mill Brook. As a result, there is a significant swath of land that contains 100-year and 500-year floodplains, as well as a Regulated Floodway. Development in these areas should be avoided, as they would be subject to significant reviews and approvals, as well as added development costs to comply with necessary requirements.

A significant MDC Right of Way and Sewer main runs north/south through the Park, approximately following the park Road. No development is allowed in this R.O.W.

Cross-Sections
Coastal Transects
Limit of Moderate Wave Action
Coastal Barrier Resources System Area
Base Flood Elevations
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
Special Floodway
Area of Undetermined Flood Hazard
0.2% Annual Chance Flood Hazard
Future Conditions 1% Annual Chance Flood
Area with Reduced Risk Due to Levee

NORTH

Existing Conditions Analysis

The baseball field currently occupies a significant portion of the Park's open space, east of the pond. It is used by Newington High School Baseball Team as well as other youth and adult recreational teams. The field is in generally good condition, requiring typical maintenance to the pitcher's mound and the lip between the infield and outfield.

The backstop and team benches are reaching the end of their useful life and replacement should be planned for player safety and functionality.

The open space between the baseball field and Garfield Street is used for unprogrammed activities much of the year, but is also the space occupied by events such as The Newington Extravaganza, Motorcycle Madness and similar community organized events.

In the photo to the left, the worn grass pattern delineates the layout of the Extravaganza.

Baseball Field and Open Space, Northeast

Existing Conditions Analysis

The playgrounds and play areas within the Park provide a variety of activities for a range of age groups, including traditional playscapes and swing sets, as well as a water-play activity table and a large sand box.

These playgrounds are a heavily used asset within the Park , are in good condition and appear well-maintained. Qualified Town staff should perform safety inspection and make necessary repairs. The need to separate the toddler play area from visible water at the pond should be evaluated further, and fencing added as may be necessary. No work is required as part of this long-range planning effort, except as required for continued safety.

A sensory touch garden is provided to the east of the playgrounds. The Town has on-going improvements planned for this area.

Playgrounds and Sensory Garden

Existing Conditions Analysis

The tennis facility, inclusive of the courts, fencing and storage buildings is in very poor condition and in need of complete replacement.

The basketball court suffers from cracks, broken edges and uneven pavement and is also in need of replacement.

Tennis Courts and Basketball Court

Existing Conditions Analysis

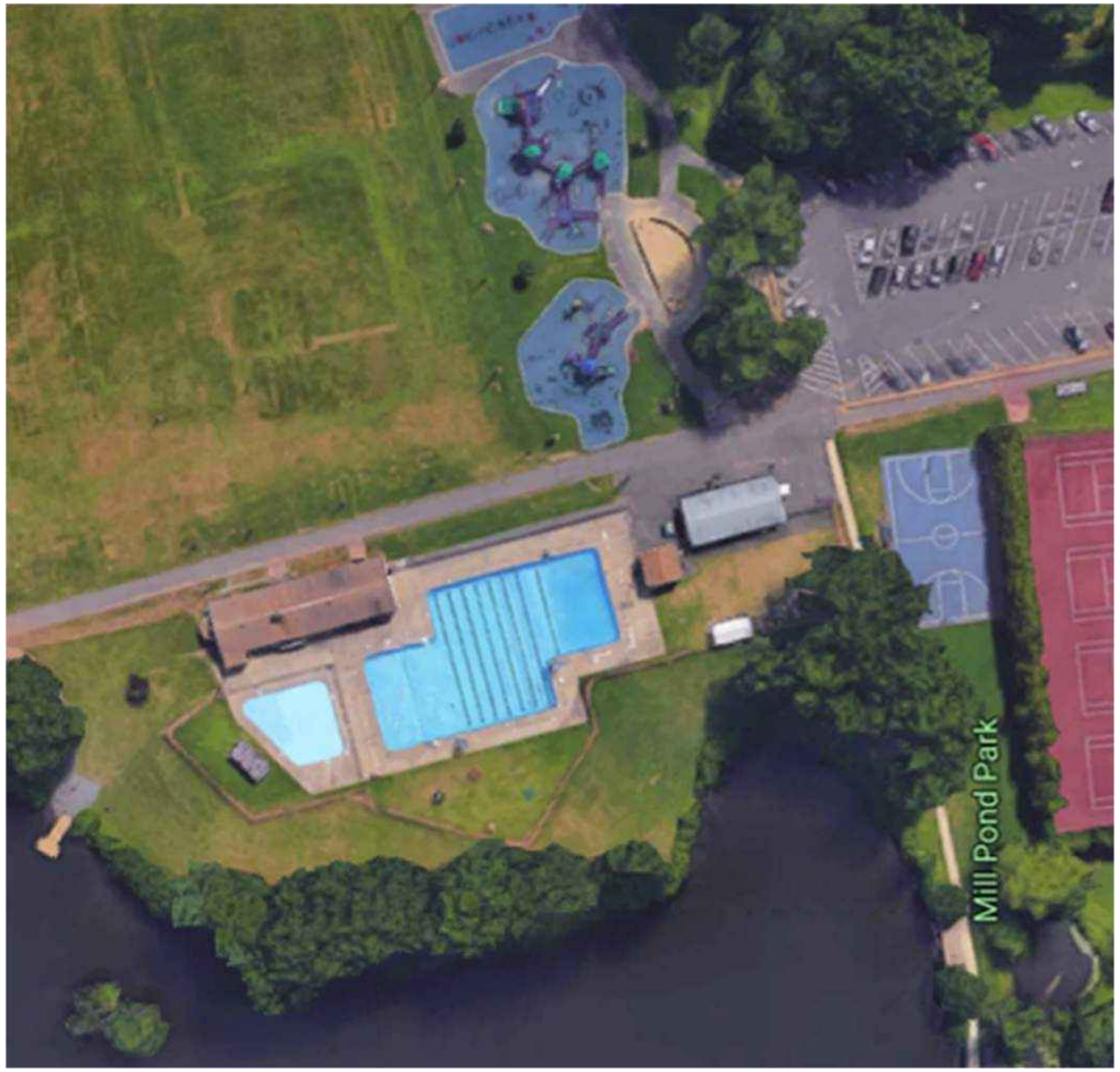
The walkways within the Park are limited to a linear path running from Garfield Street to the parking lot on Browning Street near the Tennis courts, and a loop around the Pond. These walks are bituminous concrete and are many areas are in poor condition. The Pond loop includes pedestrian bridges, which appear functional but are not rated for vehicle traffic, limiting emergency and maintenance access to areas of the Park.

There are areas at the west side of the Pond where significant grade changes pose a risk to pedestrians, including a significant drop-off in the area behind the Bus Garage. There is also a risk at the end of the smaller bridge at the south side of the Pond, where guardrails to protect the edge of the walkway, near the culvert.

There are no sidewalks on the Park side of Garfield Street. Sidewalks across Garfield connect the parking areas and Town Hall Complex, with two crosswalks to the Park.

Walking Trails and Bridges

Existing Conditions Analysis



The swimming pool complex consists of a six-lane lap pool with an attached shallow area to the north and an attached diving well to the south. There is also a separate wading pool to the north of the main pool. The pools are served by a masonry bathhouse building and surrounded by chain-link fencing. The pool was constructed in 1959 and renovated in 1999.

The pool has reached the end of its useful life and is in need of complete replacement. While significant renovation is an option, it is not recommended, as the underlying issues with ground water, deteriorated concrete and aging infrastructure can not be reliable repaired for the long-term.

In 2013 a comprehensive conditions assessment was performed, which details deficiencies with the pool. Of note in the study is the potential for PCB remediation, which will require further testing prior to demolition.

The full test of the 2013 report is attached as Appendix 01.

Swimming Pool and Bathhouse

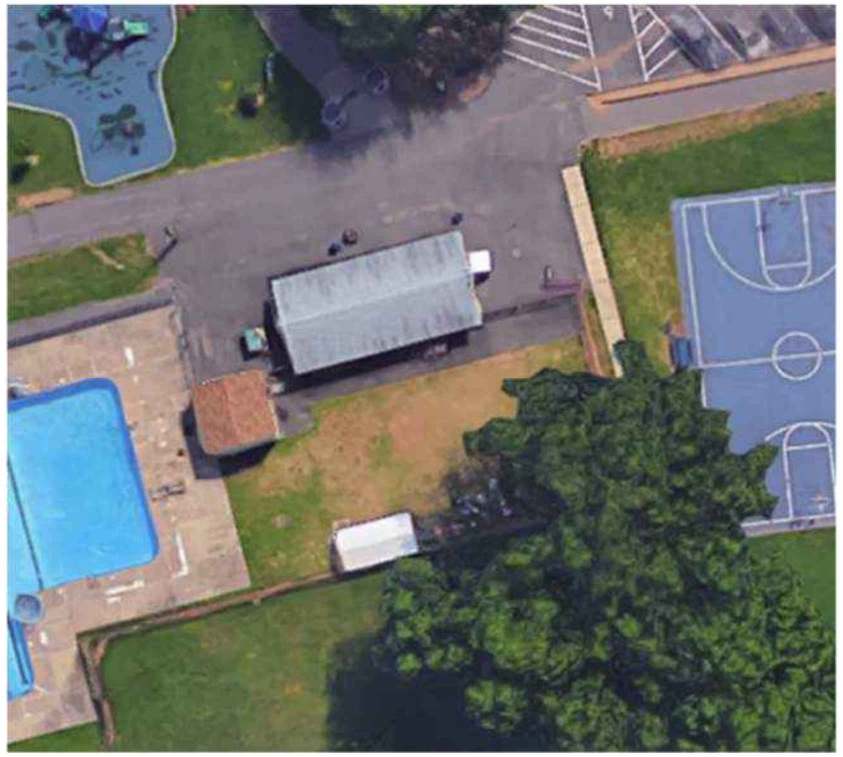
The southwest end of the Park provides open space for two youth soccer fields, near the corner of Willard Ave. and Cross Street. These heavily used fields have access by means of pedestrian sidewalks along Willard Avenue, a small parking lot at the corner of Cross Street and Mooreland Avenue and through a field within the park, off of the Pond Loop walkway.

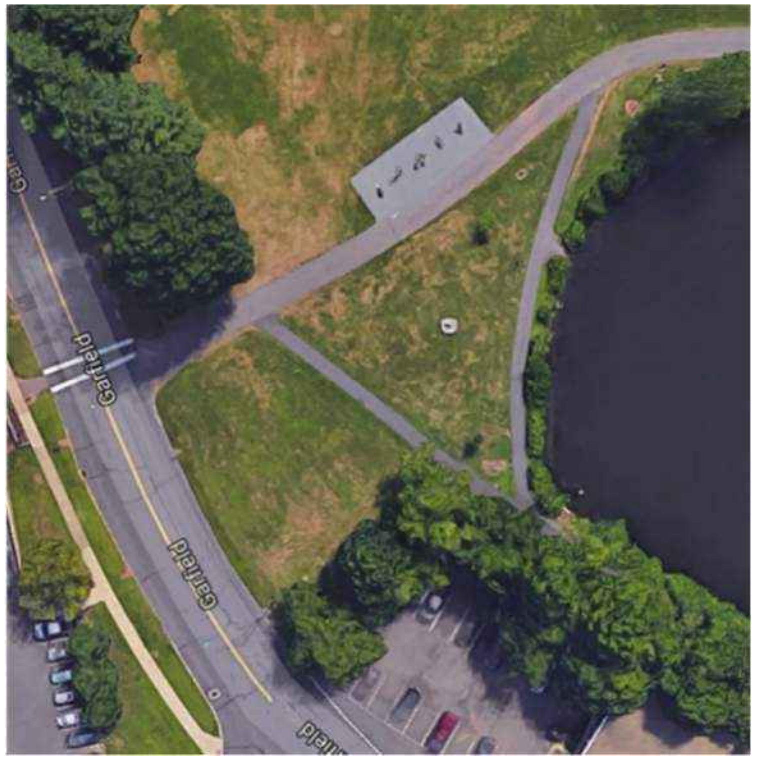
The soccer fields have recently had an irrigation system installed, but changes to the field orientation may require significant modifications. Currently, there is not sufficient room to shift field striping to mitigate wear patterns.

The "neck" of open space between the pond and the soccer fields is underutilized. It's size, topography and proximity to shade lends itself to passive programming, such as picnic areas.

This end of the Park is somewhat separated from the upper side of the Park and could benefit from more integration with other amenities, such as the Toilet Rooms and Snack Bar.

Soccer Fields and Open Space, Southwest





In the area east of the Pond, there are three small structures, including a Gazebo, Pavilion and Dock.

The pavilion serves as a bandstand for concerts in the Park. While functional, it is not ideally located or appointed. With concerts primarily occurring in the evening, the setting sun obscures the view to the bandstand.

These structures should be evaluated in the context of an overall plan and modified or removed as necessary.

There is a Snack Bar and Toilet Room Building located between the swimming pool and the basketball courts. The building experienced a fire recently, but has been fully reconstructed. It will continue to serve it's present use and should be included in the overall planning of the Park.

Additional architectural and programming improvements may be studied to better integrate the building with any new construction. Outbuildings may also be removed if storage is planned into a building addition.

The primary crosswalk at Garfield Street aligns with the sidewalk that runs through the Park. This walkway also provides access into the park for emergency and maintenance vehicles.

This walkway provides pedestrian access to the Pond Loop, as well as access to fitness equipment, the swimming pool, basketball and tennis courts, toilet/snack bar building and the playground and terminates at the parking lot at the north side of the Park.

Other Amenities

Programming and Needs

Elements Common to all Schemes:

- Create a recognizable streetscape at the edges of the Park that abut public streets.
- Establish recognizable Gateways at Park entrance points.
- Protect wetlands and bio-diversity within the Park
- Link Park to active and passive recreation opportunities around the Park.
- Respect buffers to neighbors with regard to noise, lighting, parking and activity.
- Do not modify topography or install improvements in the Floodway or the Floodplain

Aquatics Programming:

- Accommodate 9,000 visits/month
- Zero-depth entry, with spray features
- 25-yard, 8-lane lap pool
- 1-Meter Diving Board
- Waterslide
- Climbing Wall(s)
- Floating, inflatable dock should be evaluated
- Water polo and water basketball should be accommodated.
- Bathhouse should accommodate 200 campers (100 male and 100 female)
- Provide Splash Pad adjacent to, but separate from, the pool to accommodate use in the shoulder seasons (April to October). Options for single pass, filter and reuse, or recycle (irrigation or other grey water use) will require further discussion.
- There will not be night swimming. Only security lighting will be required.

Court and Hard Surface Programming:

- Soft-paved play area for preschool during the school year and for youth camps during the summer. It will also be used for VIPs during weekly special events in Spring through the Fall.
- Provide 4-6 tennis courts, with lighting on timers.
- Basketball Court, with lighting on timers
- “Kevin Ollie” Barrier Free Basketball Court.
- Two Bocce Courts
- Two Pickleball Courts
- Fitness Equipment
- Sand Volleyball

Programming and Needs

Active Park Programming:

- Remove Existing Baseball Field. Add
- Modifications to irrigation system at soccer fields
- Accommodate Ultimate Frisbee
- Accommodate Adult Flag Football
- Ensure space for Newington Extravaganza is maintained, inclusive of fireworks safe zone.
- Plan for pond use, such as canoe and kayak rentals.

Passive Park Programming:

- Improve and add to pedestrian paths and trails
- Replace footbridges with bridges that can accommodate emergency and maintenance vehicles.
- Provide picnic pavilions
- Include site amenities, such as benches, bike racks and trash receptacles
- Provide an overlook at the pond

Other Park Programming:

- The existing Toilet Building and Snack Bar that had a fire recently, has been reconstructed and shall remain operational.
- A bandstand is required to accommodate bands up to an 8-piece band. Sufficient power and lighting is required for evening concerts.
- Security lighting and cameras will be required. A 30-Day DVR recording shall be planned.
- RecTrac Management Software shall be accommodated. WiFi shall be provided in the Park.
- Lightning prediction systems shall be utilized in the Park, particularly at the pool and splash pad.
- Power to accommodate Holiday Decorations at the Bridge and Waterfall should be provided.

Programming and Needs

Conceptual Planning

The large existing spaces that define the geometry and natural features of the Park, including the Pond and Mill Brook, the open fields to the east and the Soccer Fields remain in their current location. The existing playground, known as "Our Children's Place" also remains in its current location.

The proposed plan groups other functions by type and uses. Court sports are reconfigured in the general location of the existing tennis courts. The Pool facility is located on Garfield Street, across the street from the planned recreation center.

This approach works well with Camp and other recreational programs offered across the street, and provides good access to parking and alignment of crosswalks with new curb cuts.

This plan also preserves open park space in the center of the Park by moving "constructed" program closer to the public street.

Access to utilities and good visibility for security are also key benefits of this plan, as it relates to the Pool. The location of the building near a stand of existing trees and on the bend of the road, reduces visual impact and maintains view of the Park from the street.

This location contributes to the "complex" of Town facilities recently constructed on the north side of Garfield Street.

This scheme also allows easier phasing of improvements, because the placement of the pool and bathhouse near the street does not displace any other program elements, resulting in minimal disruption to current Park activities during construction.

Overall Park Conceptual Plan

NORTH

The proposed swimming pool and splash pad provides a variety aquatic programs, water depths and activities for swimmers of all ages and abilities.

The main swimming pool incorporates a zero-depth entrance with water spray features, a six-lane, 25-yard lap pool, ranging in depth from 3’-6” to 5’-0” and a deeper end incorporating a water slide, aquatic climbing walls and a 1-meter diving board, as well as competitive diving stands for training.

Adjacent to the pool is an aquatic splash pad, with a variety of water spray features. This splash pad would operate with a touch-button bollard so it can be activated only when in use, saving significant water and energy costs. Additional savings will be realized in reduced staffing costs, as lifeguards are not required.

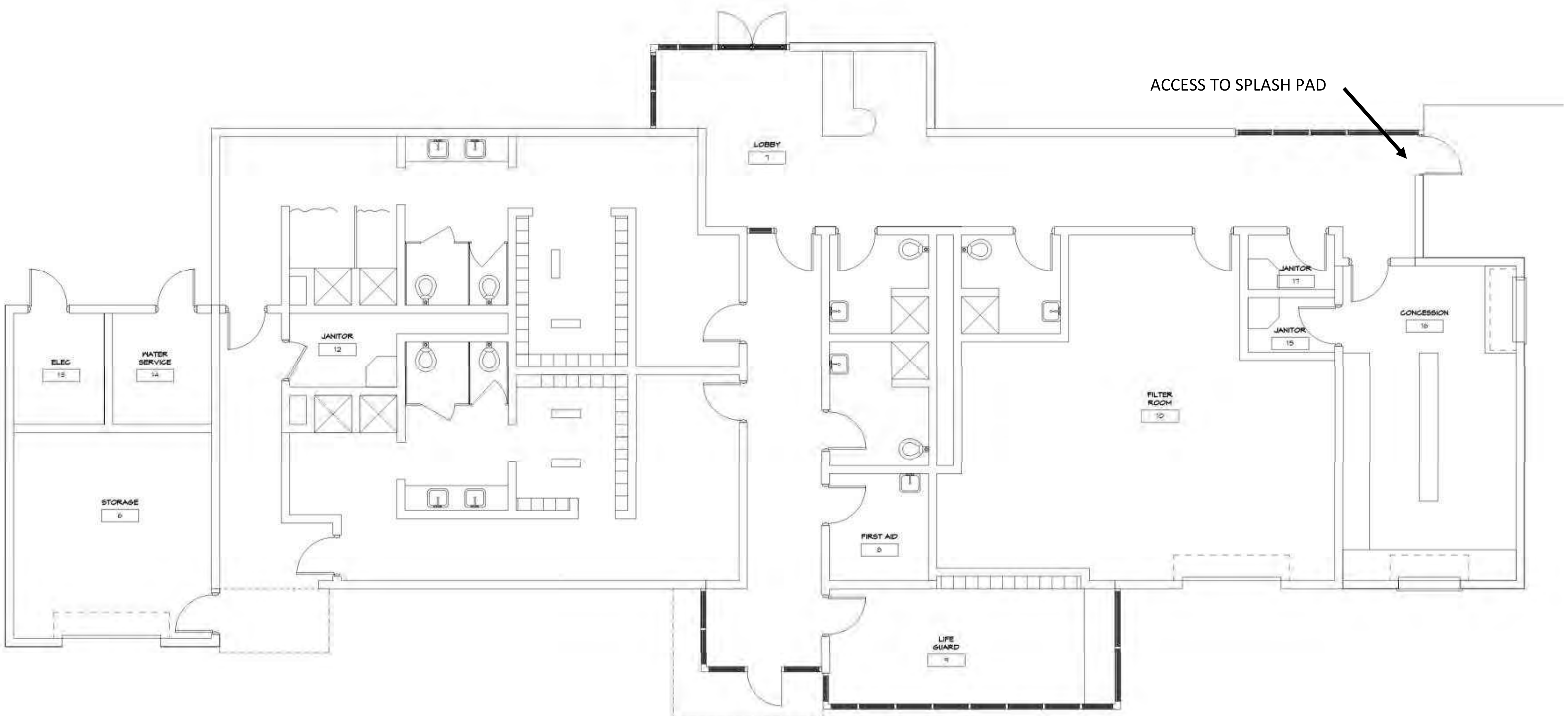
The bathhouse building design would compliment the new construction on Garfield Street and contribute to the overall development.

The pool area would be enclosed by fencing and would include lawn areas, hard decks, shade structures and plantings to provide comfortable space for extended visits.

Adjacent to the swimming pool is a soft-paved, fenced in play area. This area is sized to meet the State Statute of 75 sf for each of the anticipated 35 preschool campers that will use the space during the school year, providing the opportunity to move outdoors from the Community Center across the street. In the summer, older youth campers will have access to the area. This multi-use space also provides a designated area for VIPs during events, or other special event planning.

Conceptual Plan at Swimming Pool and Splash Pad

NORTH



The bathhouse includes Locker and Shower Rooms, Special Needs / Family Changing Rooms, Lifeguard Office, First-Aid Room and ample Storage.

A concessions area is also provided to accommodate aquatic programming and is arranged to provide access within the fence line, or when the pool is not open to non-aquatic programs as well.

The building is arranged to provide full access to pool and splash pad during the swim-season. In the shoulder seasons, direct access to toilet rooms and the splash pad is provided, while the remainder of the building can be closed.

Pool decks surround the pool and are more generous in areas where patrons will tend to gather. Separate lawn areas are provided to attract swimmers for longer periods of time. Trees and shade structures should be provided in strategic locations to provide protection from the sun and visual buffers between the pool area and the Park as a whole. The entire pool must be enclosed by fencing.

Conceptual Plan at Swimming Pool and

NORTH

The Bathhouse is sited in the Park toward the northwest quadrant.

It is just east of the existing Park Drive and avoids an MDC Sewer Right-of-Way, a large drainage structure and a number of site utilities. The orientation is such that deep end is furthest from shallow ground-water, thought the entire pool will require active ground-water management.

The Bathhouse is behind a large stand of existing trees, reducing visual impact from the street.

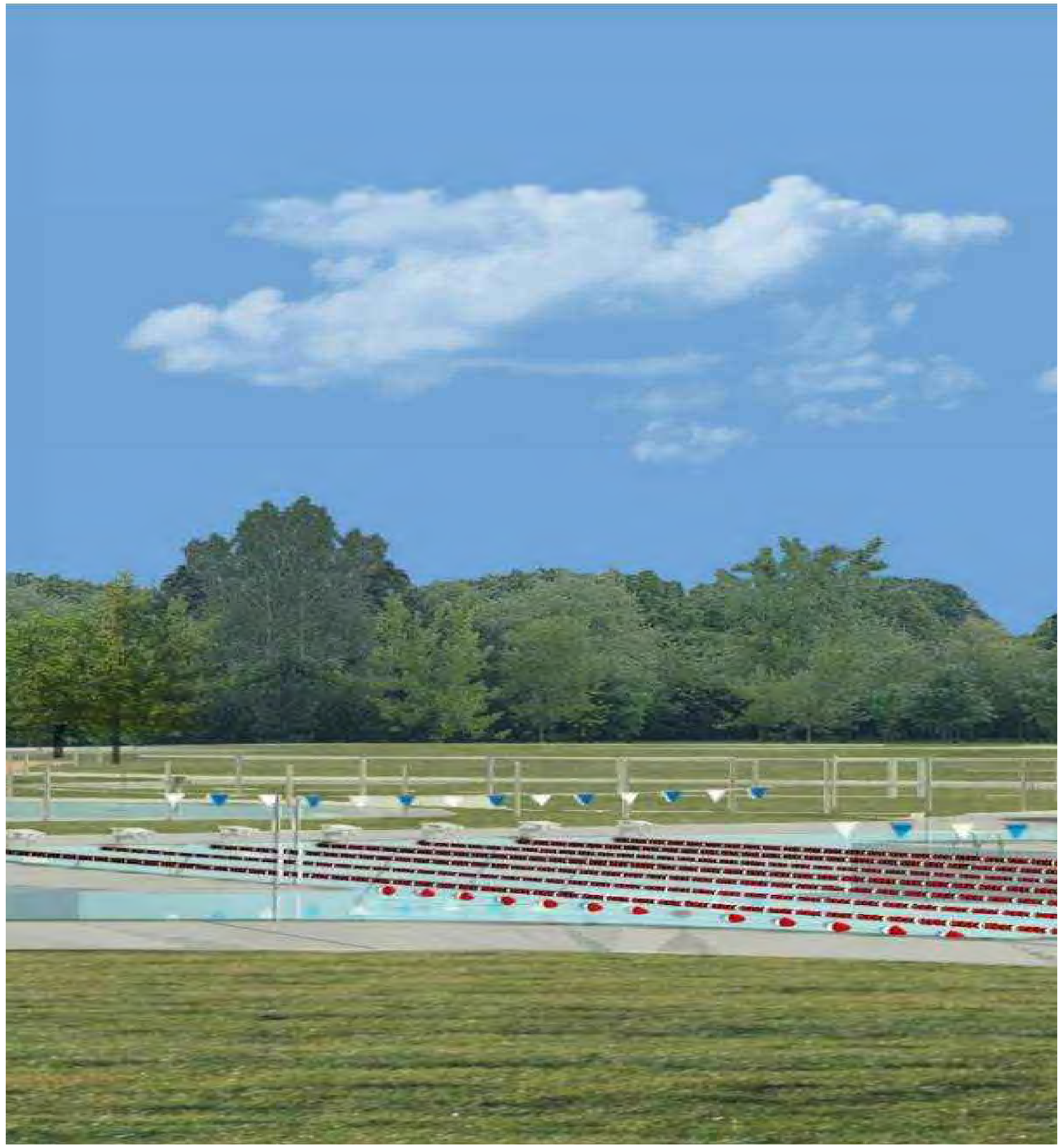
The building is designed to relate, architecturally to the new Town Hall campus across Garfield Street, including the use of similar forms and materials. A sloped roof is introduced at the main Bathhouse structure to provide ample natural daylight from the north, east and west; and to provide direct exposure to the sun for solar hot water and/or photovoltaic array to the south.

Planted roofs at the lower sections of building provide an opportunity to mange stormwater run-off and reduce the impervious area within the Park.

Newington Town Hall Campus, North of Garfield Street

View of Pool, Looking South

Conceptual Planning



Left: Spray Features in zero-depth (beach entry).

Right: Lap Swim (3'-6" to 5'-0" Deep) and a "Deep Zone 5'-0" to 11'-6" accommodates a waterslide, diving board and aquatic climbing walls.

View of Pool, Looking South

View of Pool, Looking West

Conceptual Planning

Active participation in a variety of Court Sports, including Tennis, Basketball, Sand Volleyball, Pickleball and Bocce are planned.

The relocation of the Saputo Fitness Center and the MDF Drinking Fountain from the area of the existing pool bathhouse complements programming for this area of the park. A small building is planned for storage of equipment necessary for this area.

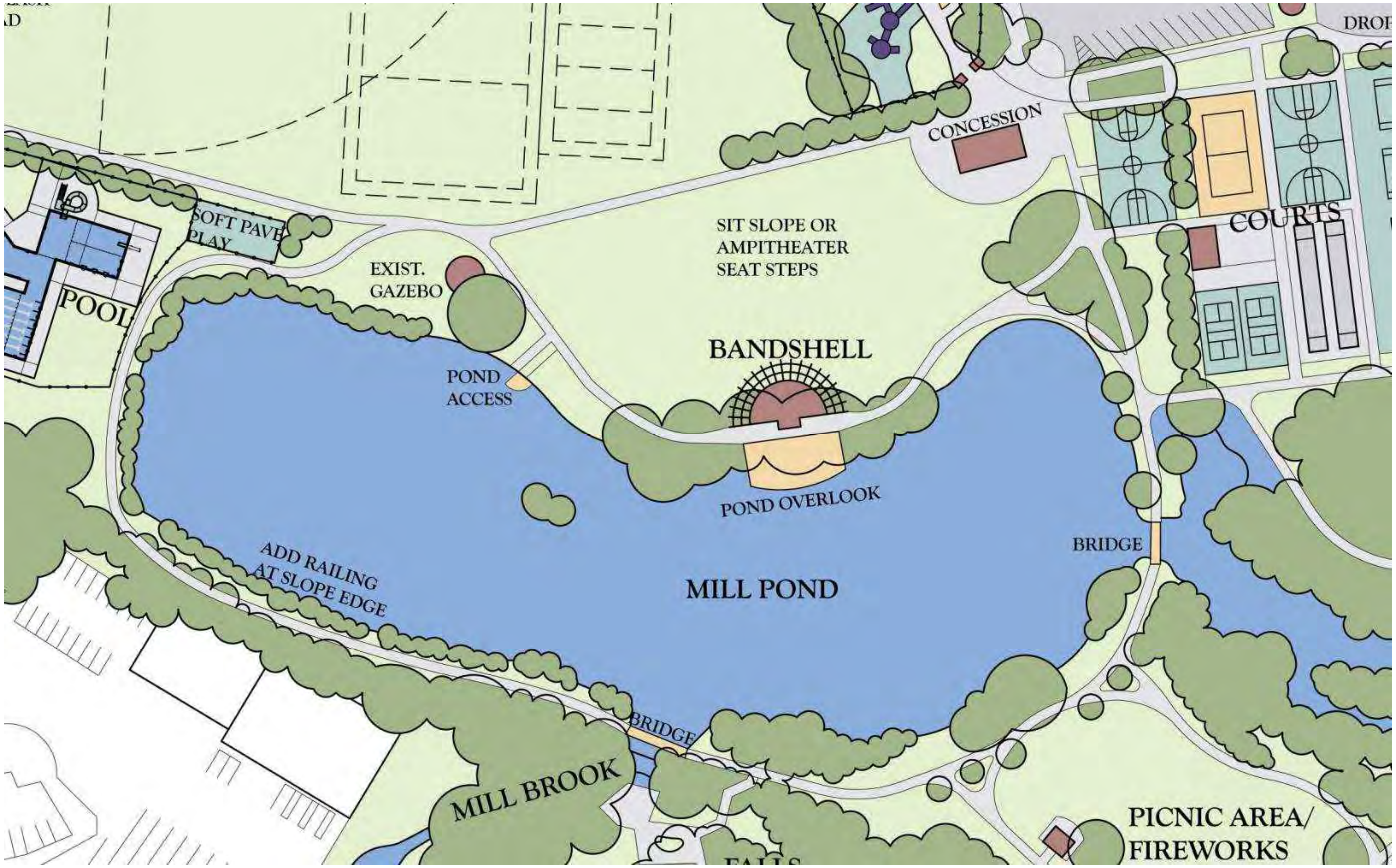
This existing toilet building and concessions adjacent to the courts and playground provides needed amenities for this area of the park.

As this is anticipated to be a heavily used area, access to existing parking infrastructure is available. Direct access to walking trails to complement the recreational and fitness aspects of the activities is also in close proximity.

Conceptual Plan at Court Sports

NORTH

Conceptual Planning



Mill Pond plays a significant role in the layout and the identity of the Park. A goal of the master Plan is to use the Pond to organize activities and provide meaningful active and passive recreation.

Existing walking trails remain and are extended to provide a walkway along Mill Brook, east of the pond. Bridges are replaced for vehicle access to enhance maintenance and public safety.

At the west side of the pond, there is a significant drop off in grade, near the walking trail, down to the bus yard. Railings and plantings should be added here to provide safety for walkers.

A new bandshell in the location of the removed swimming pool and adjacent to the pond, takes advantage of the natural grade of the site, to provide an amphitheater type landscape. This can be left natural, or be more formalized with tiered seating. An overlook at the Pond's edge provides an additional passive recreational opportunity. Should the Town consider access to the water for activities such as kayaking, canoeing or paddleboats, a dock can be added to facilitate these activities.

Conceptual Plan at Mill Pond

NORTH

PARK LOOP - $1\frac{1}{4}$ MI
MILE LOOP - 1 MI
MILE LOOP 1 MI
POND LOOP - $\frac{1}{3}$ MI
BROOK LOOP - $\frac{1}{2}$ MI

Existing walking paths are maintained and additional paths proposed to provide a variety of distances and types of experiences.

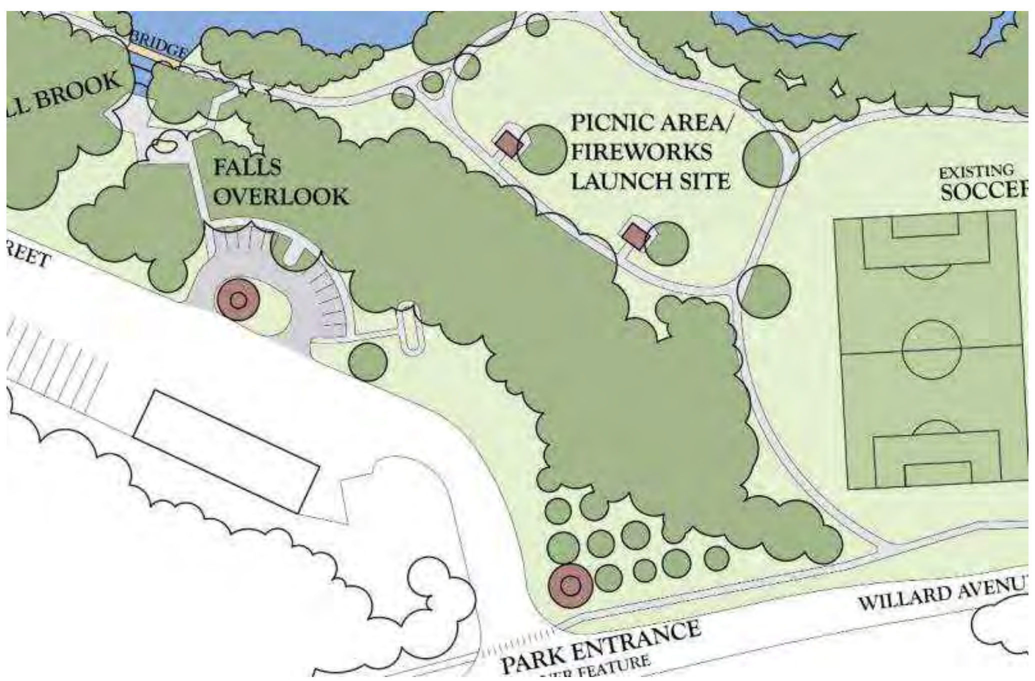
Trail maps and markings can be used to identify short walks of 1/3 or 1/2 mile and longer walks of up to 1 1/4 mile. Defined trails can be combined to lengthen the walk.

The experience varies from the more natural Brook Loop and Pond Loop to walks along the roadway.

Existing connections to the lower park area at the base of the falls is maintained, utilizing existing stairs for access.

Conceptual Plan for Walking Trails

NORTH



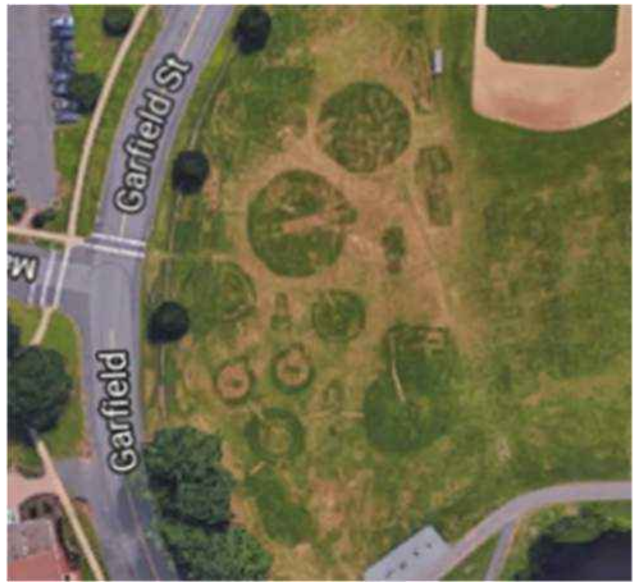
To provide additional parking, without taking space from the Park, a number of smaller parking lots have been proposed at locations that provide access points to the park at specific program areas.

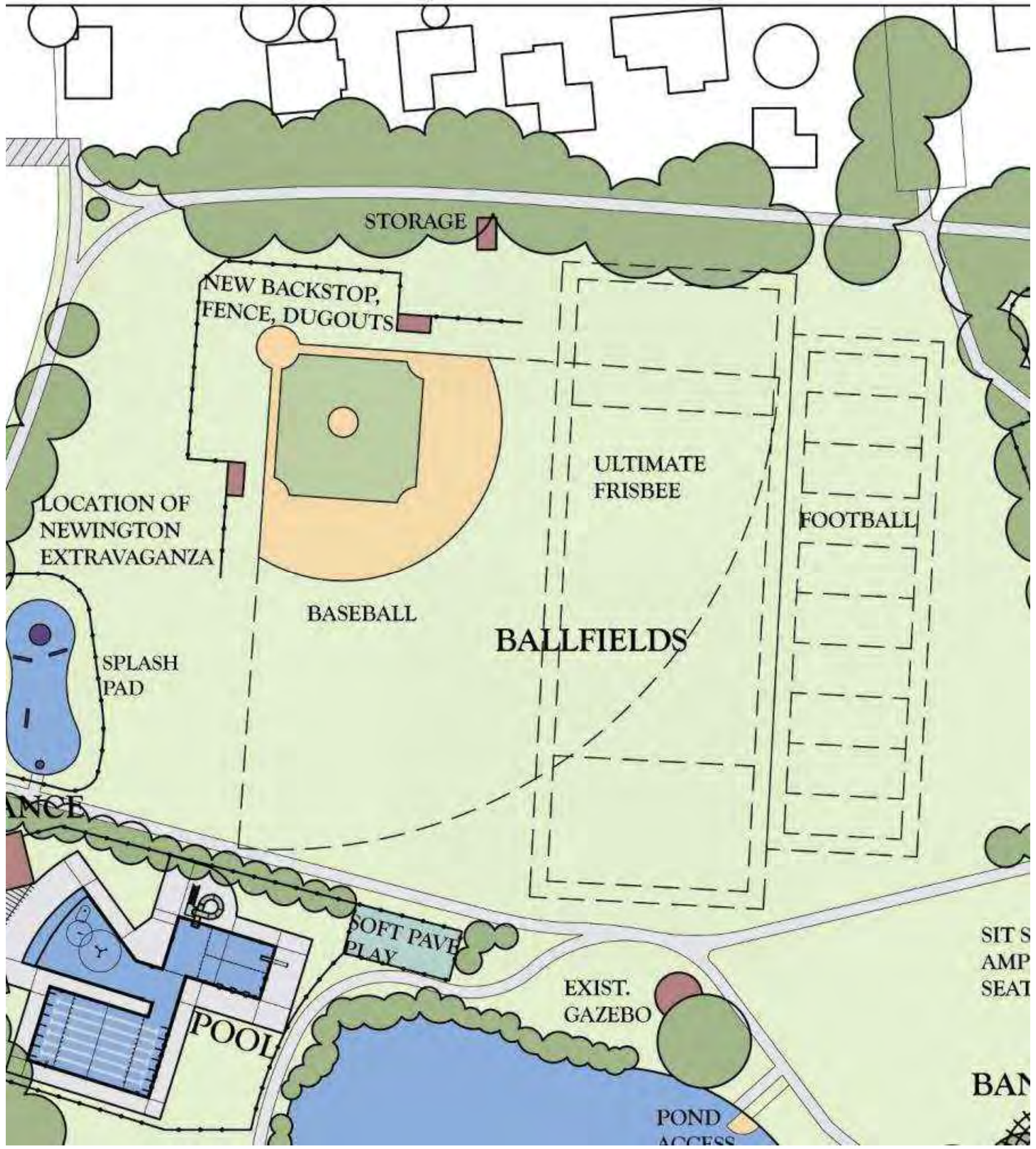
Top Left: A parking area and drop-off zone is added at the intersection of Browning Avenue and Hillcrest Ave. on a small parcel of land, owned by the Town.

Bottom Left: A parking area adjacent to the park at the lower level near the base of the falls provides access to that area, away from the main park.

Top: A small parking lot is improved at the end of Brookdale Ave., which is a dead end road. At the intersection of Brookdale Ave. and Wilson Ave. a small lot is added that can serve trail-head access to the newly proposed water woods walk. Improvements are also proposed at the existing parking lot at the intersection of Moreland Ave. and Cross Street.

Conceptual Plan for Walking Trails NORTH ← ***Conceptual Planning***





The Newington Extravaganza occupies the north end of the Park for the carnival-like event. In the upper-left photo, the general layout of the carnival can be seen in the pattern of the grass, following removal. Booths line the outfield of the Baseball field.

The relocation of the pool will shift some of the carnival toward the east, essentially wrapping the infield and occupying more space in the area of the Ultimate Frisbee Field.

During the fireworks show, there is a regulated safe-zone that must be maintained. This safe zone will make it necessary to keep the public away from the area of the bandstand and a portion of the Court Sports.

Layout for Extravaganza and Fireworks Safe Zone

NORTH ←

Conceptual Planning

Appendix 01—2013 and 2020 Mill Pond Pool Evaluations

Weston&Sampson®
CMR, INC.
CONSTRUCTION / MAINTENANCE / REPAIR

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tel: 978-532-1900 fax: 978-977-0100

report

Mill Pond Park Pool Evaluation

Town of Newington
131 Cedar Street
Newington, CT 06111

March 2013

AQUATICS GROUP
a division of Weston&Sampson®

ENGINEERS REPORT

The Town of Newington is located in the Connecticut River valley in Hartford County, Connecticut. It is a community roughly 13.2 square miles in size, with a population of 30,599 based on the 2010 census. The Towns Recreation and Parks Department operates twelve active parks of which two contain swimming pools. Badger Field, Beacon Park, Beechwood Park, Candlewyck Park, Churchill Park, Clem Lemire Recreation Complex, Eagle Lantern Park, Littlebrook Park, Mill Brook Park, Mill Pond Park, Seymour Park, Starr Park. Each park offers many amenities for the community including athletic fields, playgrounds, tennis courts, picnicking, and swimming; this report is limited to the swimming facility at the Mill Pond Park.

Weston & Sampson has been retained to perform professional engineering and planning services in connection with the Mill Pond Park swimming pool and wading pool. Our scope of services includes the following:

- review of existing pool plans and systems
- research appropriate repairs for the main pool and wading pool
- preform code analysis for conformance with the new federal standards for ADA and Virginia Graeme Baker (VGB)
- observe leak testing as needed
- review existing conditions for structural stability
- review building condition
- examine existing piping, circulation, chemical treatment and filtration systems
- Preparation of an Engineers Report that contains pertinent information on pool replacement cost, recommended repairs and cost, and a conclusion and summary of recommendations.

BACKGROUND and PROGRAM

The Mill Pond Park, located on Garfield Street, is the largest town park. Facilities include a baseball field, boundless playground, soccer fields, tennis courts, outdoor pool, basketball court, concession stand, walking nature trail, ice skating, football field, fishing pond for children under 16 years of age, and a waterfall. The swimming pool was constructed in 1959.
There is substantial community involvement in the pool's programs, including seasonal memberships, swimming lessons, summer camps, adult swim, and competitive team usage. In all, the pool enjoys broad appeal across all population groups in the town.

The pool was replumbed in 1999 by Rizzo Pools. The bathhouse building was renovated in 1988. Renovations included: A new public restroom facility for the park, a complete interior wall reconfiguration, mechanical and electrical upgrades, and replacement of the bathhouse interior finishes. Structural upgrades included a new concrete floor, new doors and windows, and a new roof.

EXISTING CONDITIONS

Entrance to the facility is through a fifty five year old concrete masonry bath-house building. The entry bathhouse includes life guard staff offices, first aide room, mechanical room, men's and ladies changing/locker area and restrooms, and storage area.

Figure 1 – Mill Pond Pool

The entire pool facility is enclosed by 6-foot high galvanized chain link perimeter fence with gates around the perimeter; additionally the wading pool is surrounded by a 4-foot high galvanized chain link fence and self-closing gate to provide separation from the main pool area. Patrons make their way to the pools via 6-foot wide bituminous concrete sidewalk which connect the pools with the bathhouse structure. The walkway leading from the parking lot to the building entrance is relatively flat and is in conformance with ADA requirements. The aerial photograph (Figure 2) to the right gives a general layout of the existing pool facility.

Figure 2 – Overview of Mill Pond Pool facility

The main pool configuration is a "Z" shaped pool. The north side of the "Z", "general swim area" is approximately 40-feet wide by 50-feet long with a 3-foot depth on the north side and sloping to a 4-foot depth where the racing lines begin. The middle section of the pool is the lap pool, which is approximately 50-feet wide by

75-feet long and contains 7 swim lanes. The south end of the pool is considered the deep end and is 12-feet deep. It is approximately 40-feet wide by 50-feet long and contains one diving board. The main pool has 7750 square feet of water surface, 410 linear feet of perimeter, and contains approximately 295,000 gallons. The pool has 21 return inlets and 16 skimmers. The deep end of the pool and lap area is left partially filled with water in the winter to prevent hydraulic lift.

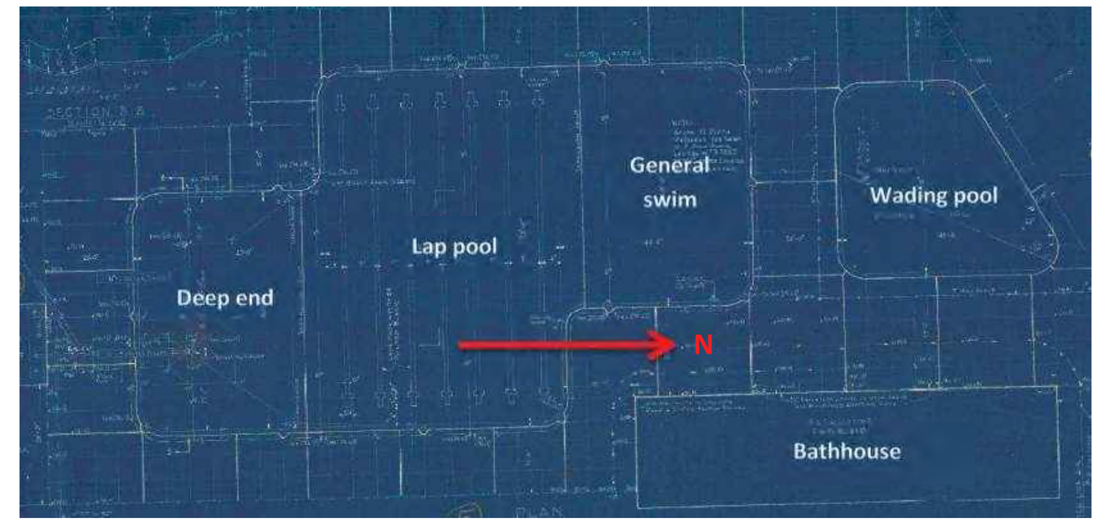


Figure 3 – Plan layout of Mill Pond

The wading pool, located to the north of the main pool, is trapezoidal shaped, and is 40-feet long by 45-feet wide and ranges in depth from 6-inches to 10-inches at the main drains. The pool has 1,450 square feet of water surface and contains approximately 6,500 gallons of water.

WATER LOSS

The pool staff reports that Mill Pond Pool is not losing significant water. The total water usage is averaging only $85/month. This is based on water bills showing approximately 425 gallons used per day, of which most is probably bathroom and shower usage and evaporation. The pool staff reports that if the pool is drained, water enters the pool through cracks in the pool walls and floor. The only reasonable explanation that the pool does not loose water is because the water table is so high and there is equal water pressure on both sides of the cracks. Mill Pond is directly adjacent to the pool. (See Figure 2)

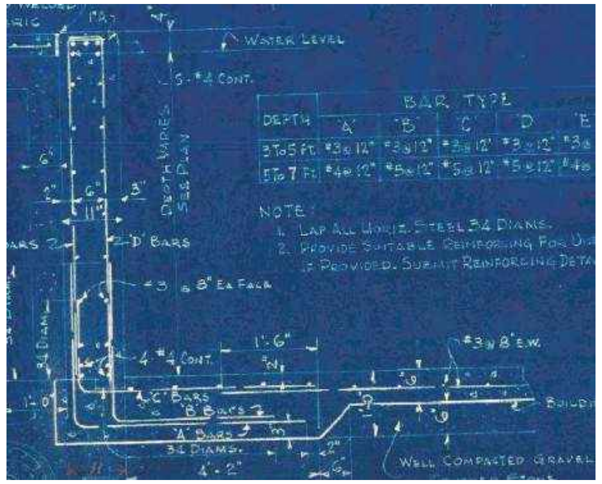


Figure 4 – Pool wall detail

POOL SHELL

The main pool consists of a "Z" shaped structure of approximately 130 feet long by 75 feet wide, and varies in depth from 3-feet to 12-feet. The original pool construction is reinforced concrete, the pool floor is poured in panels with a thickened footing around the entire perimeter. The walls were constructed on top of the floor footing and are approximately 11-inches thick. Construction plans from 1958 (Figure 4) show rebar, and expansion joints filled with joint sealant. Also called out are keyway joints with 9-inch pvc waterstop. The plans also show a French perimeter drainage system at the base of the pool floor.

Mill Pond is located very close to the pool and water comes through cracks in the wall when the pool is drained. The static water pressure relief valve in the deep end has been cemented over. The static valve should be working correctly to allow water to enter the pool if the ground water table rises. The concrete pool floor is lightly reinforced and not designed to handle upward pressures due high ground water. The pool floors and walls have numerous cracks, and have been patched in various locations. (Figure 5) The expansion joints in the pool appear to be properly caulked.


Figure 5 – Expansion joint, cracks, and patches

A core sample of the concrete floor was taken in the shallow end of the pool (Appendix B). Compressive strength was found to be 6,850psi, which is good and means the pool shell is structurally sound. The soil beneath the floor appeared to be mostly clayish gravel. Clayish material is unsuitable for a structural base because it can result in movement that along with the static pressure will cause structural cracks.


Figure 6 – Peeling paint and PVC joint separation

The curvature of the floor and walls in the deep end of the pool do not meet the requirements for a 1-meter diving board.

The pool operator plans to repaint the pool this year and stated that the concrete under the paint in some areas seems to be powdery and flakes off down to the aggregate. The paint is flaking and delaminating in many areas. The coping strip at the top of the pool walls is coming out in places and may be a source of water loss. (Figure 6)

POOL DECK

The deck shows signs of settling and cracking in some areas that creates potential tripping hazard and can be uncomfortable and possibly cause an injury to bare feet. (Figure 8) Areas of the deck are discolored and some areas have been repaired. Overall the deck is not it too bad of shape for its age. Most of the caulking in the expansion joints on the decks is old brittle and cracked allowing for water to get beneath the deck and increase settling of the deck and the possibility of frost heaves. (Figure 7) Some of the expansion joints in the middle of the deck and the expansion joints between the deck and bathhouse are not sealed.

The lack of a gutter or drain in the low spot between the bathhouse building and the pool has caused concrete deck separation. All water in this area is


Figure 7 – Failed expansion joint caulking


Figure 8 – Frost heave or settling concrete deck

draining through cracks and is saturating the soil under the deck. Water saturated soil can also put pressure on pool and foundation walls. The perimeter of the deck closest to the pool is newer than the rest of the deck. This portion of the deck was removed in 1999 when the piping was replaced. Rust is showing through the concrete deck in some areas. The welded wire mesh may have been installed too close to the surface.

POOL AREA & DECK EQUIPMENT

The depth markers on the pool walls and deck are hand painted or stickers. Most are faded or missing. (Figure 9) Some of the depth markers are incorrect. The depth must be measured from the floor of the pool to the water level. Depth markers must be provided on the pool rim at points of minimum and maximum depths, at all points where the pool floor changes slope, and at appropriate points in between. Depth markers at these points must be visible from within the pool and while standing on the pool deck. Letters and numbers must be at least 4-inches tall.

Figure 9 – Peeling depth markers

Ladders should not be no more than 75 ft apart when measured along linear feet of wall. The ladders in the deep end are over this far apart from one another.

The fence around the pool is galvanized, but is starting to show signs of rust. The fence is bent in some areas and has large gaps. The gaps between vertical members and between the ground and the bottom of the fence cannot be greater than 2-inches. (Figure 10)


Figure 10 – Fence gate

The diving board support is outdated with concrete counterweights. The diving board is 14' long. The lifeguard chairs are in good condition and appear to made of PVC composite material. The anti-slip strips on some of the lifeguard chairs are worn off and could result in a slip hazard for a lifeguard. Some of the concrete anchors holding down the lifeguard chairs are corroded and should be


Figure 11 – Copper pipe for handicap lift

replaced with stainless steel anchors. The temporary stairs do not meet ADA code requirements.

Pool staff reports new handicap lifts will be ordered for the upcoming season. The lifts will be hydraulic portable units, which need to be permanently anchored to meet ADA requirements (even though they are portable). This pool used to be equipped with a permanently mounted hydraulic (water powered) lift. The same connection can be used. The copper pipe connecting the lift was installed in an expansion joint in the concrete. The copper pipe is above the caulking and sticking out of the ground in areas. (Figure 11)

POOL PIPING

The pool piping in the filter room and under the concrete deck was completely replaced in 1999 by Rizzo Pools. Pool staff reports the Virginia Graeme Baker (VGB) main drain covers are 24"x24" with 6" direct suction. The covers and pipe were under water during the inspection and this information is consistent with what is shown on the 1958 plans. Water is returned to the pool through a 6-inch pipe branching out to1.5-inch return inlets. The pool has 21 return inlets and 16 skimmers.

Many of the skimmers have stress cracks on the inside but have been repaired with fiberglass resin. (Figure 12) There are no skimmers along the deep end wall closest to


Figure 12 – Repaired skimmer


Figure 13 – Cracked joint between concrete and skimmer

the diving board. Skimmers are recommended in the deep end. The skimmers do not have equalization ports which are recommended by CT pool design guidelines. The skimmers appear to be cast in concrete with no caulking around the mouth of the skimmers. (Figure 13) The shrinkage between the skimmers and the concrete should be caulked to prevent water loss.

The return piping fittings are relatively new 1.5-inch PVC fittings with PVC covers. They have stainless steel hardware and appear to be in good condition. The return fittings are not original and most likely were replaced during the last major renovation.

The main drain piping is undersized and do not meet CT pool design guidelines. The flow rate must not exceed 4-feet per second at 100% design flow rate. The design flow rate for a 6 hour turnover is 819 gpm (gallons per minute). This equates to over 9-feet per second. The flow rate must be reduced to meet federal Virginia Graeme Baker (VGB) law. Surge tanks (balance tanks) should be considered to eliminate direct suction from the main drains.

This pool does not have an auto makeup or automatic water level controller. Automatic water makeup systems are recommended at public pools in Connecticut.

WADING POOL

The wading pool contains approximately 6,500 gallons. Water in the wading pool is circulated with a 1.5hp pump and filtered with a duel filter arrangement. The majority of the concrete shell appears to be in good shape with minimal cracks. As with the main pool, the caulking joints in the deck and coping around the wading pool are cracked.

The concrete coping is cracked in areas and has heaved around one of the skimmers. (Figure 14) The

Figure 14 – Wading pool cracked coping above skimmer

Figure 15 – Cracked skimmer and coping concrete

Figure 16 – Wading pool

skimmers appear to be cast in concrete with no caulking around the mouth of the skimmers. The shrinkage between the skimmers and the concrete should be caulked. Some skimmers have cracked and have been repaired with fiberglass. (Figure 15)

The electrical panels in the wading pool equipment room show signs of corrosion. The equipment room is ventilated with two small louvers located near the ceiling (approximately 1 square feet each). Mechanical ventilation by the use of a fan and louver at a lower level will reduce corrosion. The wading pool equipment room is part of the bathhouse and contains the filter, pump, chlorine, and acid chemical tanks.

MAIN POOL EQUIPMENT ROOM

The main pool filter system consists of five (5) sand filters which were installed in 1993. The sand has not been replaced since then. Water chemistry is controlled automatically through the use of liquid chlorine and liquid acid. Stenner chemical feed pumps transport the chemicals to injection points. The pool pump is 15hp and has a 6-inch suction and a 4-inch discharge. Two (2) filters are backwashed at a time through a 2” pipe to the backwash pit. The backwash pit is connected to city sewer.

Figure 17 – Main pool filters, chemical storage, and stairs

An emergency eyewash station was present. Acid is used to lower pH. Carbon Dioxide (CO_2) is much more commonly used than acid because it is less hazardous and is commonly available. Chemical tanks should have secondary containment in case of a leak. (Figure 17)

The existence of an electrical bonding grid around the pool is unknown, and probably non-existent. If major repairs are made metal deck equipment in the pool area and concrete reinforcement will need to be connected to a bonding grid. The bonding grid must connect to the pool pump. The pump is not bonded, and no bonding is shown on the plans. A wire just outside of the equipment room has been cut after it exits the building and before it enters the ground. (Figure 18) This wire may be either a ground wire or bonding wire.

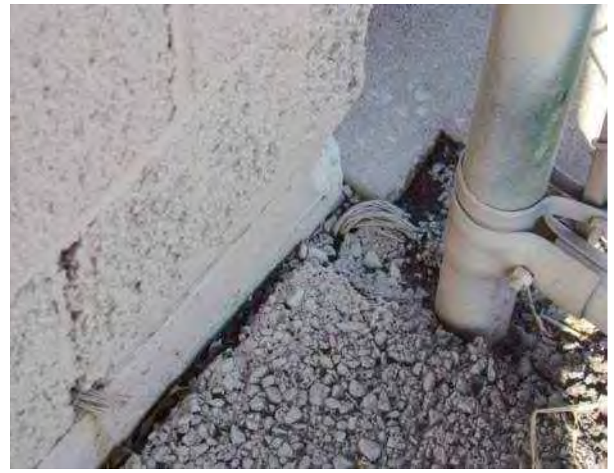


Figure 18 – Cut bonding or grounding wire

Figure 19 – Main pool pump

General corrosion inside the equipment room is apparent. Electrical panels, the pump, pipe flanges, and flange hardware are corroded. The paint on the cement block walls is delaminating (either from cement deterioration, moisture, or chemical exposure). Improved ventilation will reduce corrosion. A copper water pipe is not securely attached to the wall and is free to vibrate.

BUILDINGS – Interior/Exterior

Two separate building were inspected as part of this evaluation. The bathhouse located to the East of the pool and the main pool filter building located to the South of the pool. The bathhouse was completely renovated in 1988, at which time according to the drawings, a new system of wood trusses were installed above the flat steel bar joints to give the building a gable roof design.

Figure 20 – Rear of bathhouse

Figure 21 – Main pool filter building

The roofing shingles appear to be original to that renovation, which would make them 25 years old. The shingles do not show signs of leaking but are nearing the end of their service life and should be replaced. The roof on the filter building was converted from a flat metal roof to a wood framed pitched roof in recent years, giving the roof a similar appearance as the main bathhouse. The roof appears to be in good condition.

The exterior CMU block walls on both buildings are painted. The masonry joints needs to be caulked or repointed in numerous areas. There are a handful of holes in the CMU block on the outside of the building that should be filled with mortar or caulking. The holes may be from old piping or conduit. Some of the joints on the filter building show traveling cracks. (Figure 22)

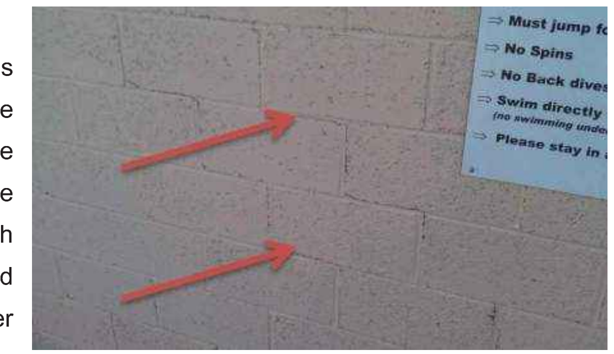


Figure 22 – Traveling cracks on filter building

The bathrooms are not ADA accessible and will need to be made compliant if any major renovations are made. A handicap shower is available (Figure 23), but does not have a private enclosure for a wheelchair bound person. In multiple locations, such as the main entrance, there is greater than a ¼-inch bump in floor elevation. Floor transitions between rooms must be smooth. The four other showers share two floor drains. Each shower floor must be pitched so that water does not pass from one bather to another. It appears the original floor was not pitched correctly in the vicinity of the showers and drainage slits were cut into the floor to reduce puddling. (Figure 24) A clear 5' of width is required at all turning points for wheelchairs. (Figure 25)

Figure 23 – Existing handicap shower

Figure 24 – Floor drains

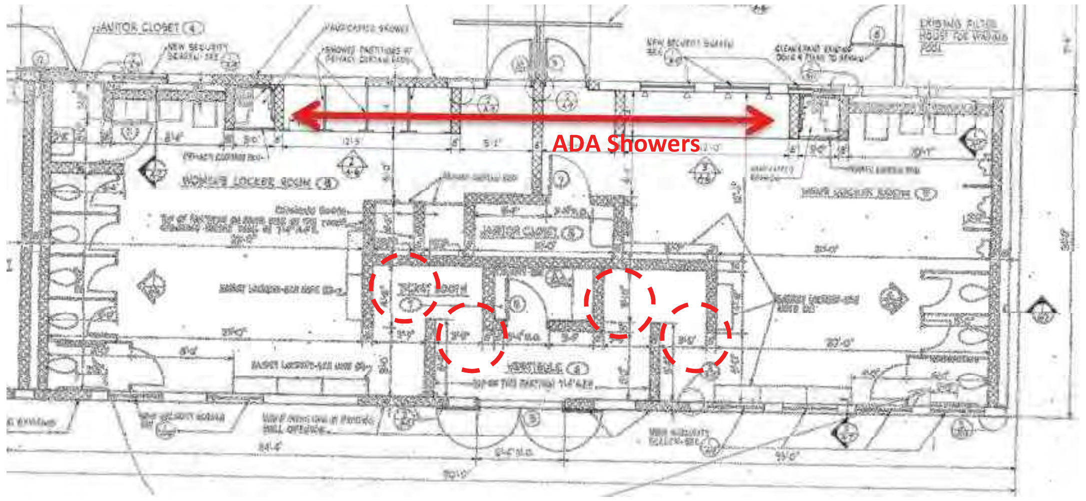


Figure 25 – ADA issue areas (showers and insufficient turning radiuses)

Health and safety signage is posted, but does not meet current standards. New signs should be mounted that are current with ADA and Health Department requirements. The bathhouse does not have a handicap mirror. The mechanical and plumbing fixtures (hot water heater, toilets, sinks, etc.) all appear to be original to 1988. There are no exit signs posted at the egress doors and no emergency lighting. The building contains no smoke detectors or fire alarms.

Figure 26 – Conduit at rear of filter building

The rear of the filter building has a snapped conduit with exposed wires (Figure 26). Conduit failure is common along foundation walls where conduit expansion joints are not installed, and the foundation has settled or heaved. The window glazing is cracked and in serious need of repair (Figure 27). The metal fascia and soffit on the bathhouse is falling out and missing in areas (Figure 28).

Figure 27 – Window glazing failure

Figure 28 – Soffit and fascia damage

BUILDING - STRUCTURE

The original building was constructed in 1958 and renovated in 1988 at which time the roof was converted into a gable roof. The building is 90 feet long by 24 feet wide, one-story masonry bearing wall structure and does not have a basement. The original roof framing consisted of 12" deep steel bar joints spaced at 30" on center clear span across the width of the building. (Figure 29)

Figure 29 – Original steel roof structure of filter building

A separate, similarly constructed building houses the pool equipment that is situated outside the immediate pool deck area adjacent to the double gate at the south end of the facility near the parking area.

The bathhouse is at the pool deck level and includes the patron's entrance, separate men's and women's lockers, showers and changing rooms. Interior partition walls are constructed of masonry block walls. Exterior walls are constructed of 8-inch masonry units.

The foundation is constructed of reinforced concrete wall with a continuous concrete strip footing set below the frost line (-3'-6"). The floor is a 6-inch concrete slab on grade reinforced with welded wire fabric.

Figure 30 – Side of bathhouse

The 1988 renovation drawings call-off the design loads which are consistent with the snow loads currently required by the Connecticut State Building Code, therefore the framing should be adequate for the anticipated snow loads.

The foundation is experiencing some cracking and spalling of concrete at the northeast corner of the building. (Figure 31) The threshold at the patron's entrance at the rear double door does not meet ADA due to the finish grade of the bituminous walkway. There is a loose 2x plank used to mitigate the change in elevation, which poses a tripping hazard. (Figure 32)

Overall, the building does not appear to be experiencing any major structural problems.

Figure 31 – Foundation spalling

Figure 32 – Bathhouse entrance trip hazard

SUMMARY AND RECOMMENDATIONS:

In summary, the deficiencies identified at the pool facility fall into three categories – immediate safety issues, recommended code upgrades, and structural/mechanical issues. For each of these categories, we recommend that the following improvements be undertaken by the Town:

Immediate Safety Issues:

- Repair gaps in fence, and secure loose fence areas.
- Review the inventory of lifesaving equipment and replace or supplement as necessary.
- Modify the main drain piping to keep water velocity flow rates under the rating on the Virginia Graeme Baker covers. This may conflict with CT pool guidelines, but is the only short-term solution.
- Remove the existing diving boards, and install smaller up to date boards that are compliant with the deep end dimensions.
- Replace depth markings.

Recommended Code Upgrades:

- Reconfigure the bathhouse to meet current ADA standards.
- Install mechanical ventilation in the chemical storage area.
- Install larger main drain sumps and larger main drain piping.
- Eliminate direct suction from the main drains by incorporating a 4,000 gallon surge tank.
- Install double walled chemical tanks or a secondary containment basin.
- Install automatic water level controller.
- Install new skimmers and an equalization port for each skimmer.
- Install new ADA compliant stairs, handicap lifts, and correct number of ladders.

Structural/Mechanical Issues:

- Option 1: Repair cracks in the pool walls with hydrophobic polyurethane grout crack injection. Replace all caulking and backer rod in expansion joints.
- Option 2: Install a new gunite pool inside the shell of the existing pool.
- Option 3: Remove the existing pool shell and install a completely new pool.
- Replace corroded valves, fittings, main pool pump, and corroded hardware.
- Replace the acid injection system with a CO_2 system.
- Install new chemical control equipment.
- Epoxy paint entire pool
- Replace depth markings.
- Replace concrete pool deck and sub base. Incorporate deck drains where needed.
- Replace diving board & stand.

Recommendations:

We recommend option 2 as the best approach to renovate the pool. The pool has many deficiencies and any renovation will require all code compliant items to be addressed. A complete demolition and replacement of the pool shell may involve expensive PCB remediation. Ground water management will be a major expense. By shooting a new gunite pool inside of the existing shell, ground water will be easier to manage. Excavation for new main drain piping will be the most challenging task regarding ground water. The community will get a pool only slightly smaller than the existing pool and minimal excavation/demolition will be required. It is common practice when doing this kind of renovation to install a zero entry ramp in the shallow end and reduce the depth of the deep end to approximately 6-feet. The new pool would incorporate a stainless steel gutter system, eliminating all skimmers and incorporating return piping into the gutter. This greatly reduces the chances of broken piping.

Option 1: The following table presents a tabulation of estimated project costs. Costs assume prevailing wage rates.

Item	Unit	Quantity	Unit Cost	Total
Code Issues				
Structural and bathhouse update	EA	1	$331,500.00	$331,500.00
Fence repair	EA	1	$6,000.00	$6,000.00
Fence replacement	LF	580	$60.00	$34,800.00
New Lifesaving Equipment - Allowance	EA	1	$500.00	$500.00
Chemical Storage Room Ventilation	LS	2	$4,000.00	$8,000.00
Surge tank	LS	1	$35,000.00	$35,000.00
Main drain piping & autofill	LS	1	$30,000.00	$30,000.00
Chemical containment	EA	4	$1,200.00	$4,800.00
New skimmers and equalization ports	EA	16	$3,000.00	$48,000.00
ADA stairs, handicap lift, and ladders	LS	1	$12,000.00	$12,000.00
			Subtotal	$510,600.00
Structural Issues (Option 1)				
Crack injection and caulking	LF	1,000	$40.00	$40,000.00
Expansion joint caulking	LF	1,000	$20.00	$20,000.00
Epoxy paint	LS	1	$25,000.00	$25,000.00
Tile depth markers and no diving tiles	EA	40	$200.00	$8,000.00
Remove & Replace Pool Deck & Subbase	SF	9,825	$12.00	$117,900.00
			Subtotal	$210,900.00
Mechanical Issues				
Replace pump, and corroded equipment	LS	1	$13,000.00	$13,000.00
Replace Acid System with CO_2	LS	2	$1,700.00	$3,400.00
Chemical control equipment	LS	2	$4,000.00	$8,000.00
			Subtotal	$24,400.00
			Contingency 15%	$111,885.00
			Soft Costs 20%	$149,180.00
			Grand Total	**$1,006,965.00**

Structural & Bathhouse Costs:

1. Apply block filler on the exterior masonry walls and repaint. (10 years) ($15,000)
2. Replace the asphalt shingles (5 years) (2,800 SF Roof Area, $41,000)
3. Repair foundation (5 years) ($1,000)
4. Adjust threshold at double door entrance (Immediate) ($3,000)
5. Emergency Lighting & Smoke Alarm (Immediate) ($5,000)
6. Paint Exposed Metal Deck and Bar Joist in Filter Building (5 years) ($2,500)
7. General Renovation / Updates (5 years) Cost per square foot ($60/SF, 2,200 SF, $132,000)

Option 2: The following table presents a tabulation of estimated project costs. Costs assume prevailing wage rates.

Item	Unit	Quantity	Unit Cost	Total
Code Issues				
Structural and bathhouse update	EA	1	$331,500.00	$331,500.00
Fence repair	EA	1	$6,000.00	$6,000.00
Fence replacement	LF	580	$60.00	$34,800.00
New Lifesaving Equipment - Allowance	EA	1	$500.00	$500.00
Chemical Storage Room Ventilation	LS	2	$4,000.00	$8,000.00
Surge tank	LS	1	$35,000.00	$35,000.00
Main drain piping & autofill	LS	1	$30,000.00	$30,000.00
Chemical containment	EA	4	$1,200.00	$4,800.00
ADA stairs, handicap lift, and ladders	LS	1	$12,000.00	$12,000.00
			Subtotal	$450,600.00
Structural Issues (Option 2)				
Install gunite pool inside existing pool shell	LS	1	$350,000.00	$350,000.00
Epoxy paint	LS	1	$25,000.00	$25,000.00
Tile depth markers and no diving tiles	EA	40	$200.00	$8,000.00
Remove & Replace Pool Deck & Subbase	SF	9,825	$12.00	$117,900.00
			Subtotal	$500,900.00
Mechanical Issues				
Replace pump, and corroded equipment	LS	1	$13,000.00	$13,000.00
Replace Acid System with CO_2	LS	2	$1,700.00	$3,400.00
Chemical control equipment	LS	2	$4,000.00	$8,000.00
			Subtotal	$24,400.00
			Contingency 15%	$146,385.00
			Soft Costs 20%	$195,180.00
			Grand Total	$1,317,465.00

Option 3: The following table presents a tabulation of estimated project costs. Costs assume prevailing wage rates.

Item	Unit	Quantity	Unit Cost	Total
Code Issues				
Structural and bathhouse update	EA	1	$331,500.00	$331,500.00
Fence repair	EA	1	$6,000.00	$6,000.00
Fence replacement	LF	580	$60.00	$34,800.00
New Lifesaving Equipment - Allowance	EA	1	$500.00	$500.00
Chemical Storage Room Ventilation	LS	2	$4,000.00	$8,000.00
Surge tank	LS	1	$35,000.00	$35,000.00
Main drain piping & autofill	LS	1	$30,000.00	$30,000.00
Chemical containment	EA	4	$1,200.00	$4,800.00
ADA stairs, handicap lift, and ladders	LS	1	$12,000.00	$12,000.00
			Subtotal	$450,600.00
Structural Issues (Option 3)				
Demo existing pool - posible PCB's	LS	1	$150,000.00	$150,000.00
Install new pool & dewatering	LS	1	$450,000.00	$450,000.00
Epoxy paint	LS	1	$25,000.00	$25,000.00
Tile depth markers and no diving tiles	EA	40	$200.00	$8,000.00
Remove & Replace Pool Deck & Subbase	SF	9,825	$12.00	$117,900.00
			Subtotal	$750,900.00
Mechanical Issues				
Replace pump, and corroded equipment	LS	1	$13,000.00	$13,000.00
Replace Acid System with CO_2	LS	2	$1,700.00	$3,400.00
Chemical control equipment	LS	2	$4,000.00	$8,000.00
			Subtotal	$24,400.00
			Contingency 15%	$183,885.00
			Soft Costs 20%	$245,180.00
			Grand Total	$1,654,965.00

APPENDICES

A. Concrete test results
B. Crack injection data sheets
C. Photographs

APPENDIX A. CONCRETE TEST RESULTS

Of Massachusetts
"The Construction Testing People"

5 Richardson Lane, Stoneham, MA 02180 781-438-7755 (Voice) 781-438-6216 (Fax)

Compressive Strength Report - Concrete Cores

Distribution Copy

Report Date 03-25-2013
Report No. 1
Job Number 16019
Project Newington,CT-Mill Pond & Church Hill Rd

Contractor Weston & Sampson

The following are results of compressive strength tests performed on concrete cores obtained at the above site. Testing in accordance with ASTM C-42.

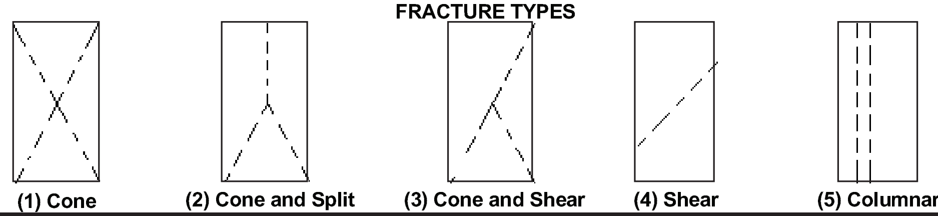
Core Mark No.	Lengt After Cap (in.)	Height (in.)	Diameter (Inches)	Height to Diameter Ratio	Area (Sq. in.)	Date Cast	Date Tested	Age Days	Required PSI	Total Load (lbs.)	Unit Load (PSI)	Corrected Unit Load (PSI)	Fracture Type
1	4.8	4.6	2.7	17.0	5.7		03/25/2013			40,000	7,020	6,850	2
2	5.6	5.4	2.7	2.0	5.7		03/25/2013		Unknown	34,000	5,960	5,960	2

GENERAL REMARKS: Core #1, Mill Pond and Core #2, Church Hill pool. Both cores were bagged and tagged for client and cores saved at the UTS lab. Corrected Unit Load - Strength correction factor applied, ratio of length of core to diameter of core, Length/Diameter as per ASTM C-42-77, if applicable.

Inspector Name	Premium Time	Hours	Travel Time
R. Granada	No		

REVIEWED BY: Robert S. Granada

FRACTURE TYPES



Our reports are available in PDF form via email. Please email us at reports@utsofmass.com for more information.

CC: Weston & Sampson Paul Jensen

APPENDIX B. CRACK INJECTION DATA SHEETS

de neef®
CONSTRUCTION CHEMICALS, INC.

TECHNICAL INFORMATION
URETHANES

PRODUCT NAME
HYDRO ACTIVE® Flex SLV
Hydrophobic Polyurethane Grout

MANUFACTURER
De Neef Construction Chemicals, Inc.
5610 Brystone Drive
Houston, TX 77041
1(800) 732-0166

PRODUCT DESCRIPTION
HYDRO ACTIVE® Flex SLV is a very low viscosity hydrophobic polyurethane that, when used with **HYDRO ACTIVE® Flex Cat**, is designed to form a flexible gasket or plug in very tight joints and hairline cracks. In its uncured form, **HYDRO ACTIVE® Flex SLV** is a pale yellow, nonflammable liquid. When in contact with water the grout expands and depending on temperature and the amount of accelerator (**HYDRO ACTIVE® Flex Cat**) used quickly cures to a tough, flexible, closed cell polyurethane foam that is essentially unaffected by corrosive environments.

APPROPRIATE APPLICATIONS
- Sealing leaks thru very tight joints and hairline cracks in concrete and masonry.

ADVANTAGES
- NSF 61 Potable water approved
- Contains no volatile solvents
- Single component
- High elongation creates tight seal in moving cracks
- Controllable cure time
- Free foam expansion up to 15 times its liquid volume
- Very low viscosity permits injection into hairline cracks
- Resistant to most corrosive environments

TYPICAL PROPERTIES

Uncured		
Solids	100%	ASTM D 2369 B
Viscosity at 77°F	150-250 cps	ASTM D 2196 A
Color	Pale yellow	
Density	9.0 – 9.15 lbs/gal	ASTM D 3574
Flashpoint	>130°C	ASTM D 92
Corrosiveness	Non-corrosive	
Influence of pH	No influence between 2-11	
Flex Cat		
Appearance	Transparent Liquid	
Viscosity	5-16 cps at 77°F	ASTM D 2196
Density	8.50 – 8.60 lbs/gal	ASTM D 3574
Flashpoint	> 200° F	ASTM D 92
Influence of pH	No influence when pH < 7	
Cured		
Density	8.76 – 9.20 lbs/gal	ASTM D 3574
Tensile Strength	174 psi	ASTM D 3574
Elongation	250%	ASTM D 3574
Shrinkage	Less than 4%	ASTM D 1042
Influence of pH	No influence between 2-11	
Toxicity	Non-toxic	

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown above may result.

Reactivity

	%HYDRO ACTIVE® Flex Cat	Geltime in min-sec
* at 50°F	1%	7' 50"
	3%	3' 50"
* at 68°F	1%	6' 00"
	3%	3' 00"
* at 86°F	1%	5' 50"
	3%	2' 30"

Example - 1% Flex Cat =1.3 oz. per gallon of Grout
Note: Flex Cat must be agitated by shaking the can prior to adding to resin.

PACKAGING
HYDRO ACTIVE® Flex SLV:
- 55 gallon metal drum sealed under dry nitrogen.
- 5 gal metal pail sealed under dry nitrogen.

HYDRO ACTIVE® Flex Cat Accelerator:
- 25 oz. cans.

LIMITATIONS
Low temperatures will significantly affect viscosity. If site temperatures are extremely low, heat bands or heated water baths may be used on the pails before and during installation to maintain the product's temperature. Avoid splashing water into open containers, as the material is water activated. Avoid exceeding 90ºF when warming.

CAUTION: pH NOTICE. Water used to activate HYDRO ACTIVE® Grouts must be in a range of pH 3-10 for optimum foam quality.

SURFACE PREPARATION
Refer to De Neef Surface Preparation Guidelines for more details.

INSTALLATION PROCEDURES
Prior to installation, both the grout and accelerator must be agitated separately before combining by vigorously shaking the containers or by mixing with a jiffy mixer. The grout should never be used with more **HYDRO ACTIVE® Flex Cat** than the amount recommended on this data sheet. Excess acceleration will cause a vigorous expansion that is prone to shrinkage. Pour the desired amount of **HYDRO ACTIVE® Flex SLV** into a clean pail. Measure the appropriate amount of **HYDRO ACTIVE® Flex Cat** and pour it into the **HYDRO ACTIVE® Flex SLV** and stir until adequately mixed. During injection the grout will follow the path of least resistance. When the material has stopped penetrating it will continue to expand against the confines of the crack/joint and compress within itself, forming a very dense, closed cell material stopping the leak.

For application procedures in extreme temperatures and specific environments or equipment recommendations call the DeNeef Technical Service Department.

STORAGE & HANDLING
Store in dry area in original resealable containers.
Warning! If **HYDRO ACTIVE® Flex Cat** is allowed to freeze, it will lower performance.

PRECAUTIONS
Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Ventilation is recommended. Refer to Material Safety Data Sheet for detailed safety precautions.

SAFETY INFORMATION
In the event of an EMERGENCY call:
CHEM-TREC 800-424-9300.

WARRANTY INFORMATION
De Neef Construction Chemicals, Inc. products are warranted under the policy set forth under the WARRANTY section of the De Neef Construction Chemicals Inc., product catalog. Warranty information can also be obtained via the De Neef Construction Chemicals Inc. website at www.deneef.com, by calling 713-896-0123 or toll free at 1-800-732-0166.

Rev. 08/2009

DRINKING WATER SYSTEM COMPONENTS
ANSI/NSF 61
3N76

"HYDRO ACTIVE® FLEX SLV GROUT"
MAXIMUM SURFACE AREA TO VOLUME RATIO
0.25 CM²/L AT 23ºC
ONLY WHEN MIXED WITH
"HYDRO ACTIVE® FLEX CAT" ACTIVATOR (1-3%)

CLASSIFIED UL WATER QUALITY

APPENDIX C. PHOTOGRAPHS











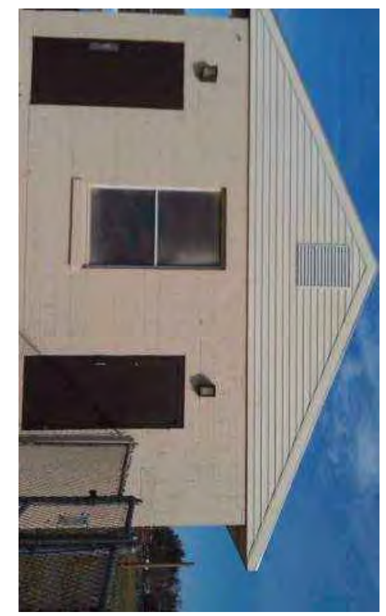




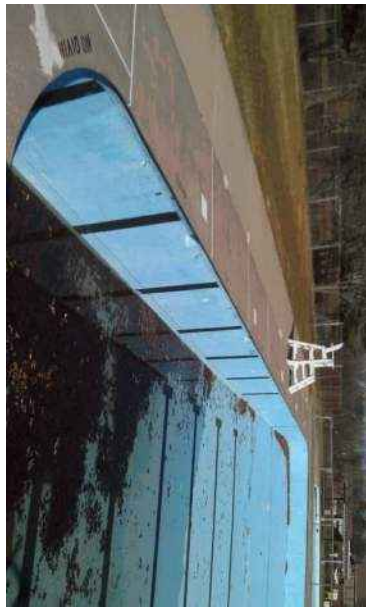












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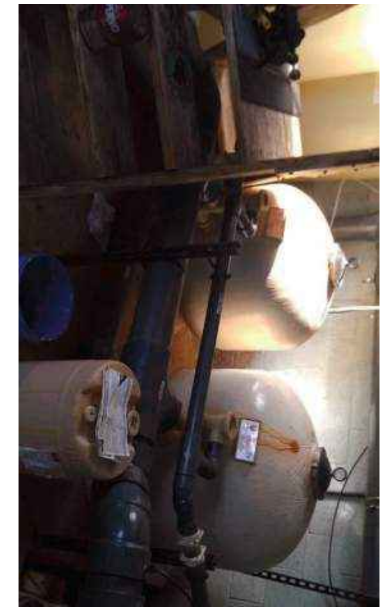






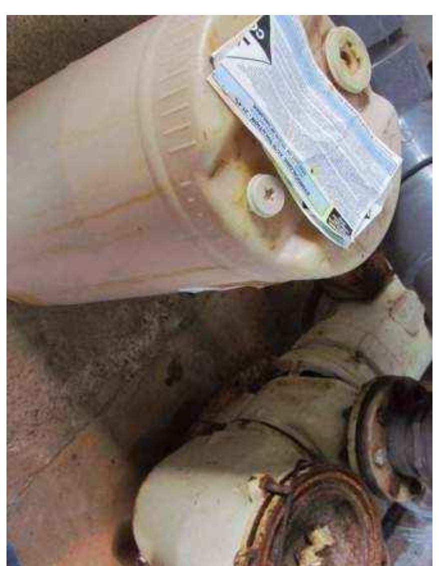


TRITON
PERMANENT MEDIA WATER FILTER
MODEL TR-140
PAC•FAB, INC.







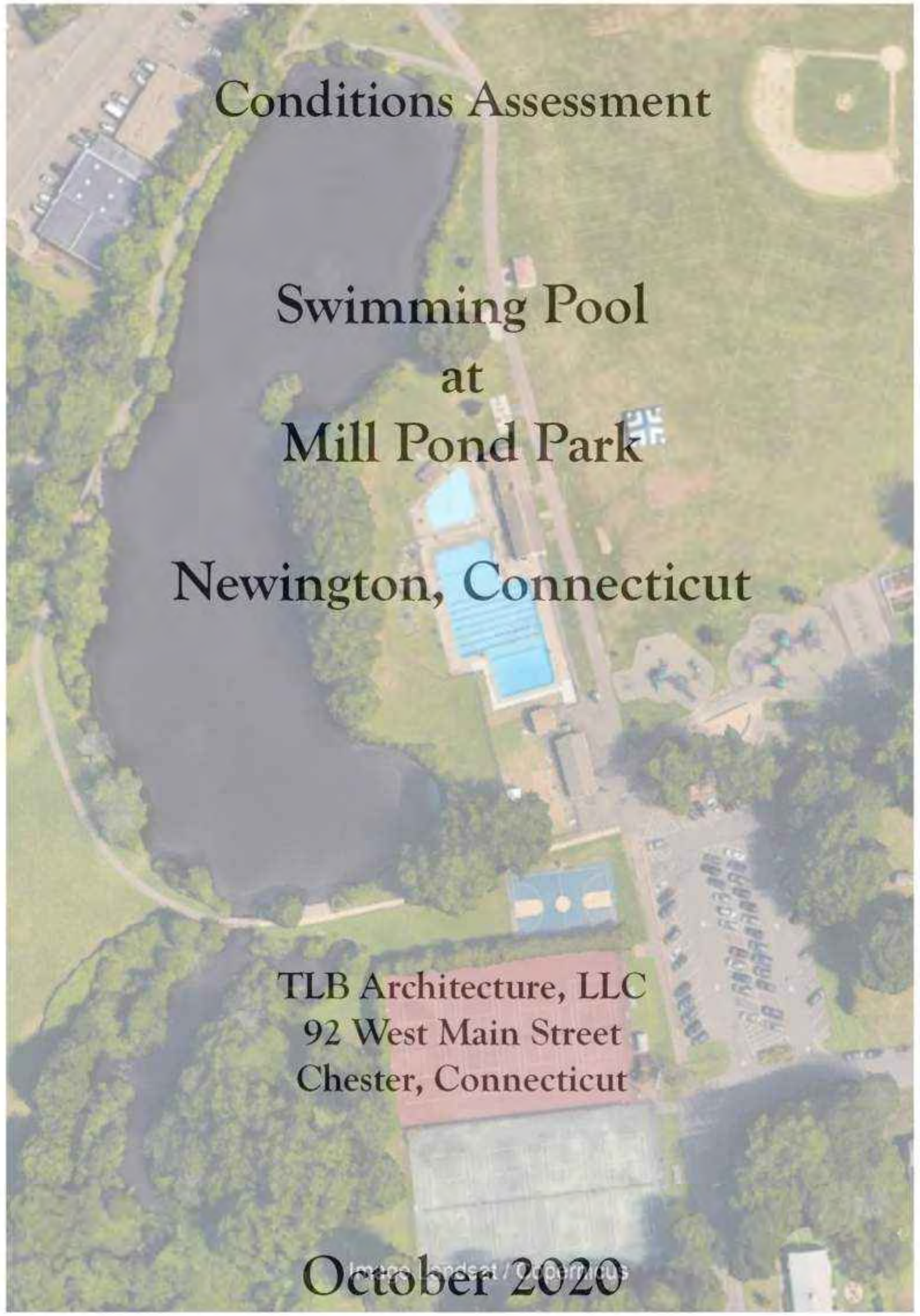


Table of Contents

I. Introduction

Owens Realty Services has been retained to provide consulting services to provide a conditions assessment, inclusive of a visual inspection and Code compliance review of the outdoor swimming pools at Mill Pond Park.

The assessment includes an outdoor 'zee'-shaped swimming pool and an outdoor wading pool, decks and fencing, as well as swimming pool recirculation, filtration and chemical control systems.

Random soundings of suspect areas were completed, but a complete program of soundings and invasive structural analysis was not done for this analysis.

The piping and equipment was reviewed where accessible, but camera assessment of buried piping was not provided, nor was SCUBA diving for dye-testing to find leaks. As such, information regarding leaks is based on discussions with Parks and Recreation staff and investigations done by others.

The pool was evaluated for compliance with the CT State Building Code, State of CT Department of Public Health Requirements, the Virginia Graeme Baker Pool and Spa Safety Act and the ADAAG.

The goal of this effort is to identify potential concerns related to the following:

System operation and compliance with applicable Codes, including DPH
Condition of existing equipment
Condition of pool shell and deck
Condition of fencing

We also reviewed earlier reports provided by the Town of Newington and included such additional information as deemed pertinent.

Since the swimming pool was not opened this year due to the Covid 19 Pandemic the systems were not reviewed in an operating condition. As such we could not fully assess operation of all systems.

II. Executive Summary

Mill Pond Pool was constructed in 19?59 and, as with any pool of 60 years old it has a number of issues as a result of a harsh New England environment, heavy use, wear and tear. Mill Pond is further impacted by it's location adjacent to the Pond and the resultant high ground water which imparts hydrostatic pressure on the pool walls and floor.

As a result of these factors, the swimming pool is in generally poor condition with significant deterioration of concrete, cracking and leaks. Several repairs have been completed over the years, with varying degrees of success.

The pool recirculation, filtration and chemical control systems for the pool were replaced in 1999 and consist of a series of five 36" dia. high rate sand filters. While this system is rated for commercial use, it is uncommon on a pool of this size and, as installed does not comply with DPH regulations for pipe sizes and velocities.

The wading pool is in better condition than the main pool, but also suffers from damaged concrete.

Pool decks are in very poor condition and many areas exceed allowable slope for ADA compliance.

Perimeter fencing is in poor condition, with many areas having displaced posts and mesh creating a hazard, as well as openings exceeding allowed limits per DPH regulations.

Condition Codes	
Excellent	16-20 years useful life
Good	Good at present (11-15 years)
Fair	Minor / cosmetic repairs needed to maintain condition (6-10 years)
Poor	Immediate repairs needed to prevent deterioration (0-5 years)

Conditions

System	Condition	Comments
Pool Structure	Poor	Extensive Deterioration and Cracking
Pool Decks	Poor	Damaged, misaligned and areas non-compliant
Wading Pool	Fair	Concrete is reparable
Wading Pool Decks	Poor	Damaged and misaligned
Perimeter Fencing	Poor	Damaged and non-compliant
Pool Systems	Fair	Condition is fair but all piping, including buried is undersized
Wading Pool Systems	Good	Not rated for commercial use

III. Existing Conditions Analysis

A. OVERVIEW

Main Pool:

The swimming pool was constructed in 1959 adjacent to Mill Pond, within Mill Pond Park. The pool provides aquatic programming to the community for both competitive and recreational activities. The pool is a 'Zee' shaped with the main body of water providing a 7-lane, 25-yard lap pool with a shallow wing to the north and a deeper wing to the south. Pool depth of the shallow wing is 3-feet to 4-feet. The lap lanes slope from 4-feet to 6-feet across the lanes, and then transitions to 12-feet deep at the deep wing.

The pool shell is in generally poor condition with extensive cracking, spalling and delamination of concrete. A 2014 study that extracted a concrete core indicated concrete strength (presumably taken at an area without delamination) was of sufficient compressive strength. However it also noted that sub-soil is clayish gravel. This material is not free-draining and traps water. Given the high ground-water adjacent to the pond, excessive hydrostatic pressure is damaging the pool structure. As this damage is initiated from the back of walls and below the floor, permanent repairs are nearly impossible. As such, continued deterioration is to be anticipated.

The pool has skimmers to convey pool water to the filtration and chemical control systems. Filtered and treated water is returned to the pool by means of wall inlets distributed around the pool perimeter. Pool coping is integral with the concrete decks. Pool finish is paint, directly on the cast-in-place concrete.

There does not appear to have been any significant renovations to the pool since the original construction, except for recirculation, filtration and chemical control systems replacement in 1999. These systems are located in an outbuilding to the south of the pool and include high-rate sand filters and automatic chemical control systems. Other work to the facility has been maintenance and repair related.

In the 1999 systems replacement, original cast-iron pool piping within the Filter Room was replaced with PVC. Underground piping below the deck was also replaced with PVC, though the extent of replacement between the deck and the Filter Room is unknown, as there is a PVC to cast-iron transition as the filtered water return exits the building. Skimmers were presumably also replaced in 1999, though are showing signs of stress cracking and separation from the concrete.

The recirculation system is by means of direct suction from skimmers and bottom drains to the recirculation pump. The deep end of the pool was full of water during the site visit, and as such drain covers were not visible. However, it has been reported that the covers were replaced with 24" square, VGB compliant covers. Given the 6-inch diameter piping, the pool is not VGB or DPH compliant, as the pipe velocity, even at a Code minimum 8-hour turnover exceeds allowable velocity. There is no vacuum release system on the pool pump, and as such the pool presents an entrapment risk.

A. OVERVIEW

Main Pool (cont.)

Pool water is conveyed to the filtration system by a 10 HP pump, which is located on the building floor, above pool water level. Filtration is accomplished by means of a series of five, 36" TRC sand filters with multi-port valves. The flow rates and pipe velocities for the system are non-compliant. Refer to hydraulic analysis for calculations of flow rate, filtration rate and velocity. These systems backwash to sanitary sewer through an air gap and pit in the corner of the building. The outlet of the backwash line is below the flood rim of the pit and as such, does not provide a compliant air-gap and presents a risk of contaminating the pool water with wastewater.

Pool chemistry is maintained by means of a calcium hypochlorite feeder for sanitizer and liquid acid for pH correction. These systems appear relatively new and suitable for continued use. The pool chemistry is controlled by means of an Aquasol water chemistry controller.

The concrete decks surrounding the pool are in generally poor condition, having suffered frost damage, settlement and misalignment. Sealant joints are deteriorated allowing water to penetrate the soils below the decks, exacerbating the frost damage. The deck immediately surrounding the pool was replaced as part of the 1999 systems and piping replacement. This zone of deck, approximately 5-feet wide, is sound, though areas exceed the 1:48 cross pitch as defined for ADA accessibility. Regrading the decks for compliance will require replacement of deck drainage as well.

Wading Pool:

The wading pool is a trapezoidal shape approximately 45-feet x 40-feet and 6—12-inches deep. There are a number of cracks in the pool, but the concrete seemed generally sound. Hollow areas were observed around penetrations in the floors, as well as around the skimmers. The coping is integral with the pool wall and is cracked in a number of locations.

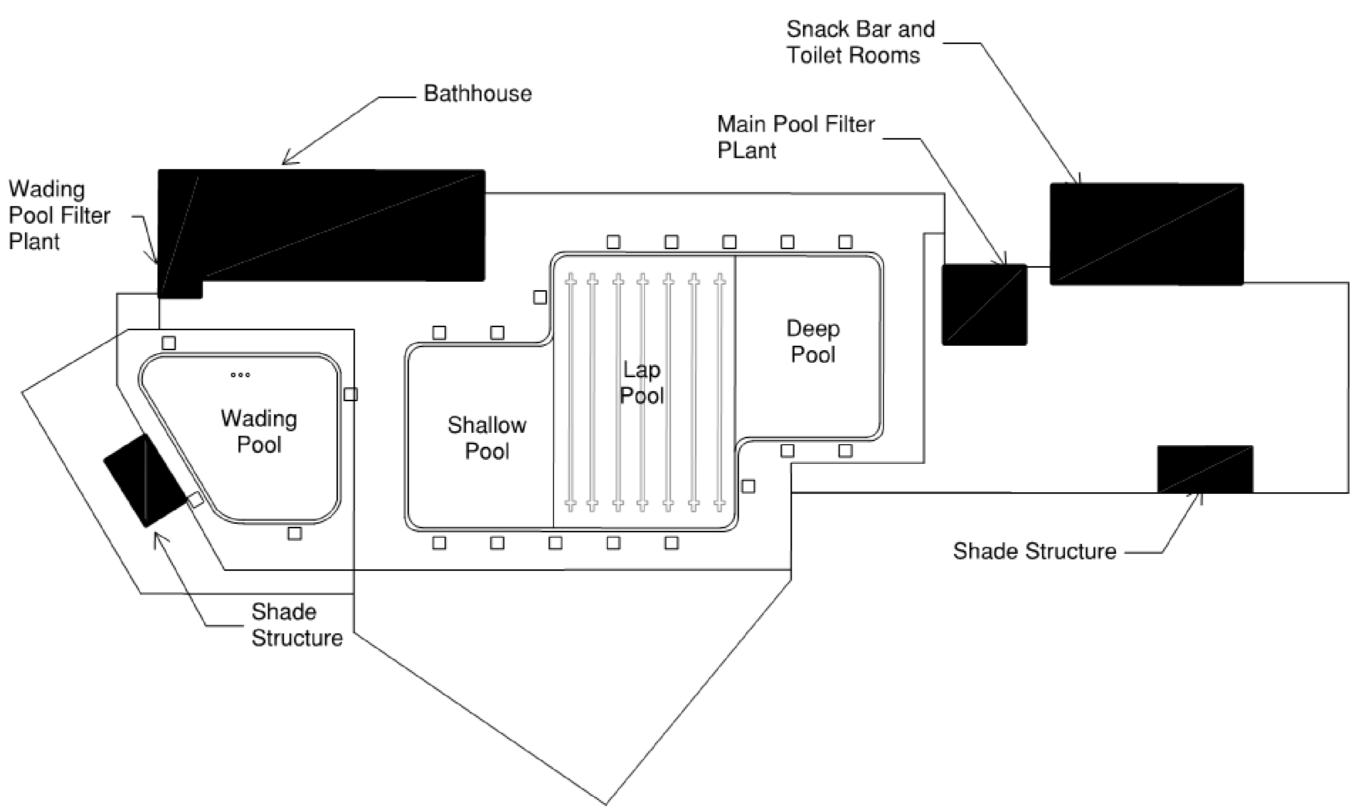
Pool decks surrounding the wading pool are in poor condition and have settled adjacent to the pool, creating a trip hazard. Joints are open and allowing water to penetrate to soils below the deck, creating freeze/thaw damage.

The wading pool recirculation, filtration and chemical control system is adequately sized, though the filter is a residential filter, not rated for commercial use. The main drains are not VGB compliant and there is no vacuum release system present. If wading pool use is to resume, this issue should be remedied as there is risk of entrapment.

A. OVERVIEW

Fencing:

The pool perimeter is surrounded by a six-feet high, galvanized chain-link fence, with the portion separating the wading pool from the main pool standing 4-feet high. This outer perimeter fence provides a complete enclosure, using the bathhouse and filter building as a portion of the enclosure. It is in poor condition with significant rusting, misalignment and gaps exceeding allowable dimensions, both between posts and to grade below the fencing.



B. CODE ANALYSIS

1. *General Information*

The swimming pool was evaluated for Code compliance with the State of Connecticut Building and Fire Codes, CT Department of Health Requirements, the Federal Americans with Disabilities Act (ADA) and Virginia Graeme Baker Pool and Spa Safety Act (VGB) . The Scope of this report is limited to the Pools and Decks, but building compliance is also required, and is addressed by others.

Note: Red text indicates areas of hydraulic non-compliance

Basic Information:

Pool Area:	7,750 sf
Pool Perimeter:	410 lf
Pool Water Volume:	295,000 gallons
Occupant Load of Pool: (7,750 sf / 25 sf/person):	310 bathers

2. *Department of Health Requirements:*

a. Turnover Rate: Required- 8 hours max. (6-hour recommended)
b. Filtration Rate: Required- 15 GPM/sf max. (12 gpm/sf recommended)
c. Allowable Velocities***:***

Suction:	*Max 6 fps*
Discharge:	*Max 10 fps*
Gravity:	*Max 4 fps*

c. Actual Flow and Pipe Velocities at 8-hour turnover:

Calculated Flow Rate: 615 GPM

Suction:

	Pipe	100% Flow
Main Drains:	6”:	6.8 fps
Skimmer Pipe:	6”	6.8 fps
Pump Suction:	6”:	8.42 fps
Discharge:		
	2” (ea. Filter):	12.56 fps
	6”:	6.8 fps

B. CODE ANALYSIS

2. Department of Health Requirements (continued):

The piping is undersized between the main drains and the pump, even if the pipe is flowing at full diameter. In actuality, the pipes are likely calcified after years of use, and as the pipe diameter decreases, velocity increases, bringing the piping further out of compliance.

The 6" piping reduces to 2-inch at each filter. There are five filters so the flow at each is 123 GPM, which places the velocity at this pipe out of compliance as well. The filtration rate is also out of compliance at 17.6 GPM/sf.

d. Depth Markings:

Depth markers are required to be in numerals of four inches minimum height and a color contrasting with the background, placed on the vertical walls above the water level or another method to be plainly visible to persons in and out of the swimming pool. Depth of water shall be plainly marked near the water surface on the vertical wall and on the edge of the deck next to the pool. Depth markers shall be placed at the following locations:

1. At the points of maximum and minimum depths.
2. At any change of pool floor slope, including the point of change of slope between the deep and shallow portions of the pool, that is the breakpoint;
3. At intermediate one-foot increments of water depth in the shallow end; and,
4. If the pool is designed for diving, at appropriate points to denote the water depths in the diving area.
5. If the pool is of constant depth, at appropriate points that will satisfactorily denote the water depth.

Currently, depth and 'No Diving' markings are not present on the pool walls, except in a couple of locations and are insufficient at the deck.

B. CODE ANALYSIS

2. Department of Health Requirements (continued):

f. Safety Requirements—Lifesaving Equipment:

Lifesaving equipment and first-aid equipment needs to be inventoried and properly located around the pool. With a pool perimeter of 410 lf, at least four stations are required, each unit including a ring buoy, life pole or shepherd's crook. As the pool was not operational at the time of the visit, an inventory was not completed, but it appears there are only three guard stations on the deck. They are portable however, and one may have been stored.

Every swimming pool shall have a readily accessible room or area designated and equipped for emergency care, which shall include a telephone. There is no such dedicated room or area currently identified at the pool.

g. Pool signage was not compliant. A sign should be visible from the pool indicating the following:

STATE POOL REGULATIONS

1. NO DIVING IS PERMITTED OFF THE DECK INTO SHALLOW AREAS OF THE POOL.
2. All Persons Shall Bathe With Warm Water and Soap Before Entering the Pool
3. Any Persons Known Or Suspected of Having a Communicable Disease Shall Not Use The Pool.
4. Spitting or Blowing the Nose in the Pool is Prohibited.

Running, Boisterous or Rough Play is Prohibited.

3. ADA:

a. Pool Access:

Because the pool is greater than 300 linear feet, ADAAG requires two means of HCA access/egress for the pool. One means must be a lift complying with 1009.2 or a sloped entry complying with 1009.3. A compliant lift is reportedly available. The second means has been provided as steps, complying with 1009.6. The steps are removable and must be in place during operation to ensure compliance.

b. Pool Deck Access:

The accessible route from the locker rooms, onto the pool deck and to accessible lift and stairs should have cross-pitch limited to a maximum of 1:48 (1/4" per foot slope) The decks adjacent to the pool have not been surveyed but appear to exceed this cross-pitch limitation.

B. CODE ANALYSIS

4. *Virginia Graeme Baker Pool and Spa Safety Act:*

The existing main drain system was submerged and not visible at the time of the visit. It has been reported that VGB-compliant drain covers have been provided. The expiration date should be verified.

It should be noted, however, that the drains are direct suction and the 6-inch diameter piping has a velocity exceeding the allowable limit. It is also likely that the pool drain sumps are not compliant and, since there is no vacuum release system the pool drains are not VGB-compliant, even if covers are ANSI/ASME A112.19.8 certified.

If the pool is operated with the existing drains and piping in place, a secondary anti-entrapment system such as a supplemental vacuum release system interlocked with the pump should be installed.

The velocity through the drain grates should also be verified to ensure that flow is limited to a maximum of 1 1/2 fps to avoid both entrapment and entanglement issues.

C. ISSUES and DEFICIENCIES

This section identifies issues and deficiencies based on physical condition of systems and assemblies.

While the scope of this report is limited, it should be reviewed in the context of the overall design goals for the park Facility, as the architecture, structural components, mechanical and electrical systems all play a significant role in the overall quality, function and long-term viability of the facility.

This section identifies issues and deficiencies based on the following:

- System operation and compliance with applicable Codes, including DPH
- Condition of existing equipment
- Condition of pool shell and deck
- Condition of fencing

C. ISSUES and DEFICIENCIES - Main Pool

Pool concrete has numerous cracks, spalls and delaminated areas. The photos to the right and below and on the following pages depict typical conditions. Many of these have been patched and repaired with both cementitious repair materials and soft repair materials. As the pool shell is being impacted from hydrostatic pressure from behind the walls and below the floor, all patches will eventually fail and additional deterioration can be anticipated. Paint finish is worn and peeling throughout pool.

Typical crack in pool floor

Delamination adjacent to construction joint

Previously repaired crack in pool floor with failure of repair materials

C. ISSUES and DEFICIENCIES—Main Pool

Multiple delaminations along the edge of crack

Significant spall of approximately 4-inches deep

Previously repaired areas in pool floor with failure of repair materials

Many of the spalled areas and delaminated areas occur along cracks, which means water penetration is prevalent. In this pool, particularly in the deeper end, water is leaking out of the pool, but groundwater is pushing into the pool. This limits water loss as pressures are equalized, but saturates concrete and cause the deterioration seen throughout the pool.

C. ISSUES and DEFICIENCIES - Main Pool

Broad areas of spalling and delamination

III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Main Pool Systems

10 HP pool recirculation pump draws water in direct suction from skimmers and main drains.

- Piping is undersized and not in compliance with DPH Regulations.
- Pump should be on housekeeping pad and bolted down to limit vibration that could break fittings and damage pump.
- System is in direct suction without an anti-entrapment device. At calculated velocities, the drains are not VGB compliant, even if covers are certified.

Above: 10 HP recirculation pump.
Below Right: Main drain and skimmer suction piping.
Below Left: Pump discharge to Filters

III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Main Pool Systems

Filtration is accomplished by means of five, Pentair TRC 140 high rate sand filters. Each is fed from a 2-inch pipe, connected to the main 6-inch supply and return.

- Piping is undersized and not in compliance with DPH Regulations.
- There are no throttling valves or flow meters at each filter to confirm that each are flowing at the same rate.

Typical filter piping and multi-port valve. Position of the valve determines filter mode –vs– backwash mode.

C. ISSUES and DEFICIENCIES - Main Pool Systems

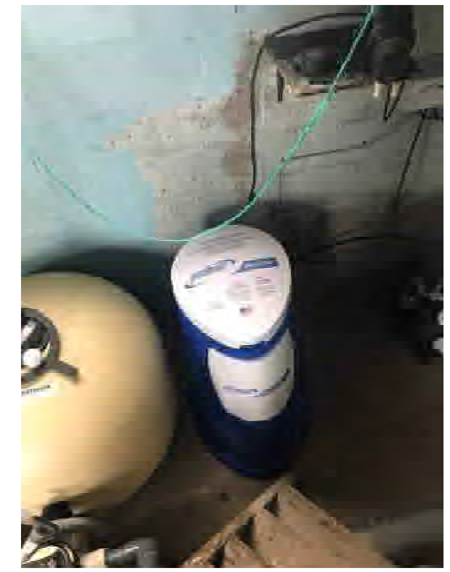
When the filter is in backwash mode, it discharges dirty filter water to a collector pipe that connects to cast-iron waste piping in the pit.

- It appears the backwash discharge is a direct connection to sewer, which is not DPH compliant, as an air-gap is required. The current arrangement could allow waste water to siphon back into the pool system.

Typical filter piping and multi-port valve. Position of the valve determines filter mode –vs– backwash mode.

III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Main Pool Systems



Pool water chemistry is maintained through an automatic water chemistry controller (Aquasol). This system includes a flow-cell that monitors pool water conditions and adds chlorine for sanitizing and corrects pH by introduction of acid. This occurs continuously.

Water sanitizer is a calcium hypochlorite erosion feeder (Pulsar). pH correction is liquid acid, fed into the system through a peristaltic pump (Stenner). This system is appropriate and, pending verification that all components are operable, suitable for continued use.

C. ISSUES and DEFICIENCIES Main Pool Decks

Typical deck conditions. Note 1990's vintage decking closest to pool, original decking in foreground and recently replaced decks toward the back of the photo.

1990's vintage decking is generally in good condition, though there are some significant cracks and areas of damage. Differential settlement has also caused misalignments and failed sealant joints excacerbates freeze/thaw damage.

C. ISSUES and DEFICIENCIES - Main Pool Decks

Deck pitch at the slab adjacent to the pool exceeds the ADA allowable cross pitch of 1:48. This maximum slope must be maintained for an accessible route from the bathhouse to the HCA Lift Chair and the Steps.

C. ISSUES and DEFICIENCIES - Main Pool Decks

Failed sealant joints and cracks allow water penetration.

Miscellaneous cracking

C. ISSUES and DEFICIENCIES - Wading Pool

Right: Cracked and damaged concrete at skimmer boxes.

Below: Crack across pool, and vertically at inlet fitting and skimmer.

III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Wading Pool Systems

Right: High rate sand filter, not rated for commercial use.

Piping and equipment is sized properly for flow, but drains are not VGB compliant and a vacuum release system should be installed.

Air gap at backwash is insufficient.

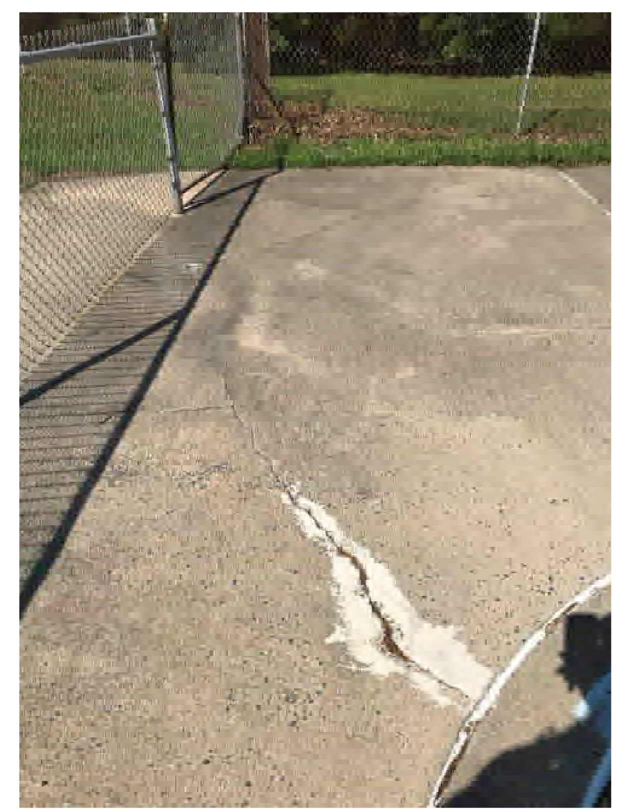
Below: 1 1/2 HP pool recirculation pump.

III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Wading Pool—Decks

Right and Below:

Cracked deck, repaired areas and failed sealant joints in deck allow water infiltration.



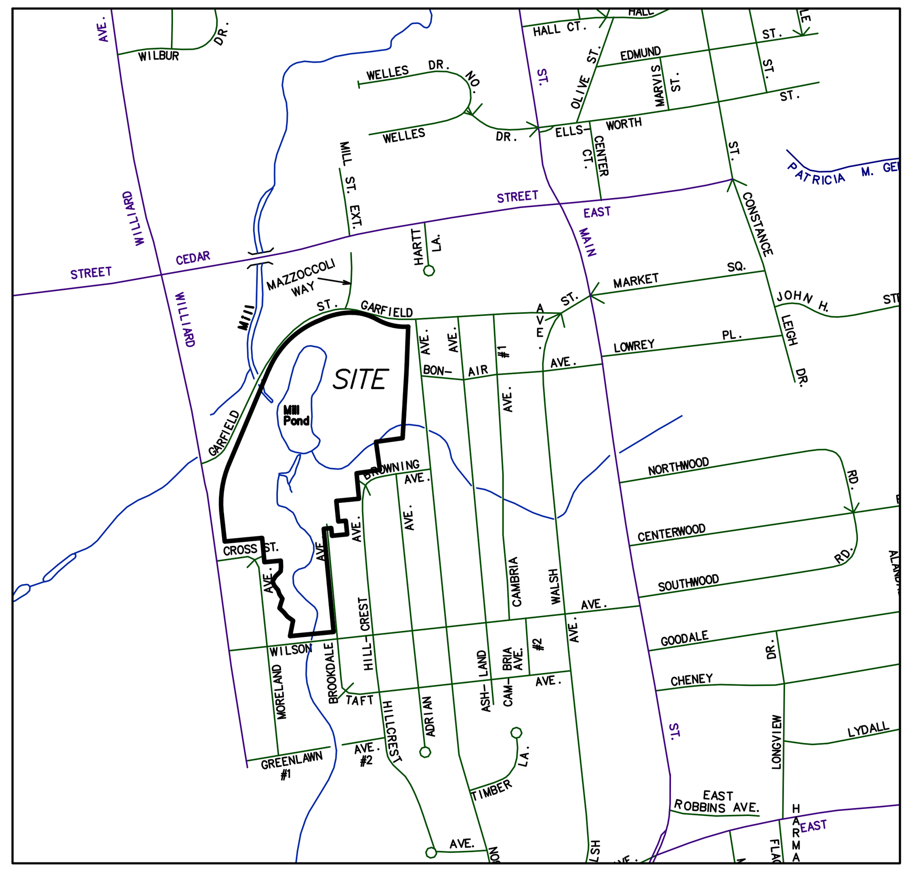
III. Existing Conditions Analysis

C. ISSUES and DEFICIENCIES - Fencing

Rusted and bent fencing presents a hazard and results in gaps and openings in excess of the allowable 2-inch spacing.

Missing caps and end plugs allow water infiltration leading to further rusting. It also allows wasps to nest, creating additional risk.

Appendix 02—Land Survey



LOCATION MAP
SCALE: 1"=1000'

MAP REFERENCES:

1) "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF NEWINGTON—WILLARD AVE., & RICHARD ST. FROM CEDAR ST., SOUTHERLY TO THE HARTFORD—NEW HAVEN TURNPIKE ROUTE NO. 173, SHEET 1 OF 6", SCALE: 1"=40', PREPARED BY WENDELL L. HOLSTEN AND DATED 3—31—41.
2) "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF NEWINGTON—WILLARD AVE., & RICHARD ST. FROM CEDAR ST., SOUTHERLY TO THE HARTFORD—NEW HAVEN TURNPIKE ROUTE NO. 173, SHEET 2 OF 6", SCALE: 1"=40', PREPARED BY WENDELL L. HOLSTEN AND DATED 3—31—41.
3) "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF NEWINGTON—MILL STREET FROM WILLARD AVE., NORTHEASTERLY TO CEDAR STREET., SHEET 1 OF 2", SCALE: 1"=40', PREPARED BY WENDELL L. HOLSTEN AND DATED 3—31—41.
4) "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF NEWINGTON—MILL STREET FROM WILLARD AVE., NORTHEASTERLY TO CEDAR STREET., SHEET 2 OF 2", SCALE: 1"=40', PREPARED BY WENDELL L. HOLSTEN AND DATED 3—31—41.
5) "LAYOUT PLAN — NEW CONSTRUCTION OF NEWINGTON MUNICIPAL CENTER NEWINGTON, CT", SCALE: 1"=40', PREPARED BY QA+M ARCHITECTURE AND DATED JANUARY 18, 2019.
6) "SECTION NO. 1 HOME GARDENS—NEWINGTON, CONN. OWNED BY J.W. WILBUR", SCALE: 1"=1000', PREPARED BY ALFRED ELIOT AND DATED SEPT. 24, 1912.
7) "SECTION NO. 2 HOME GARDENS—NEWINGTON, CONN. OWNED BY J.W. WILBUR", SCALE: 1"=1000', PREPARED BY ALFRED ELIOT AND DATED SEPT. 21, 1912.
8) "PLAN OF RIGHTS OF WAY FOR NEWINGTON TRUNK SEWER SOUTH OF DOWD STREET", SCALE: 1"=100', PREPARED BY THE METROPOLITAN DISTRICT AND DATED JULY 1949.
9) "MAP SHOWING RELOCATION OF CROSS ST. NEWINGTON, CONN.— LOT NUMBERS REFER TO MAP OF HOME GARDENS "SECT 2 OWNED BY J.W. WILBUR SEPT 21, 1912", SCALE: 1"=50', PREPARED BY E.C. FRESEN AND DATED MAY 20, 1947.
10) "MAP OF PROPOSED STREET FROM GARFIELD STREET WESTERLY TO WILLARD AVENUE ACROSS LAND OF TOWN OF NEWINGTON, NEWINGTON, CONN.", SCALE: 1"=40', PREPARED BY W.E. PETERS AND DATED AUGUST 1971.
11) "PLAN SHOWING 20' PERMANENT EASEMENT TO THE METROPOLITAN DISTRICT ACROSS LANDS OF THE TOWN OF NEWINGTON BETWEEN HILLCREST & BROOKDALE AVE", SCALE: 1"=40', PREPARED BY W.E. PETERS AND DATED MARCH 1978.
12) "ORIGINAL SURVEY ABANDONMENT MAP PREPARED FOR TOWN OF NEWINGTON SHOWING PORTIONS OF GARFIELD STREET AND MAZZOCCOLI WAY TO BE ABANDONED, NEWINGTON, CONNECTICUT", SCALE: 1"=40', PREPARED BY THE BONGIOVANNI GROUP, INC. AND DATED 8—7—19.

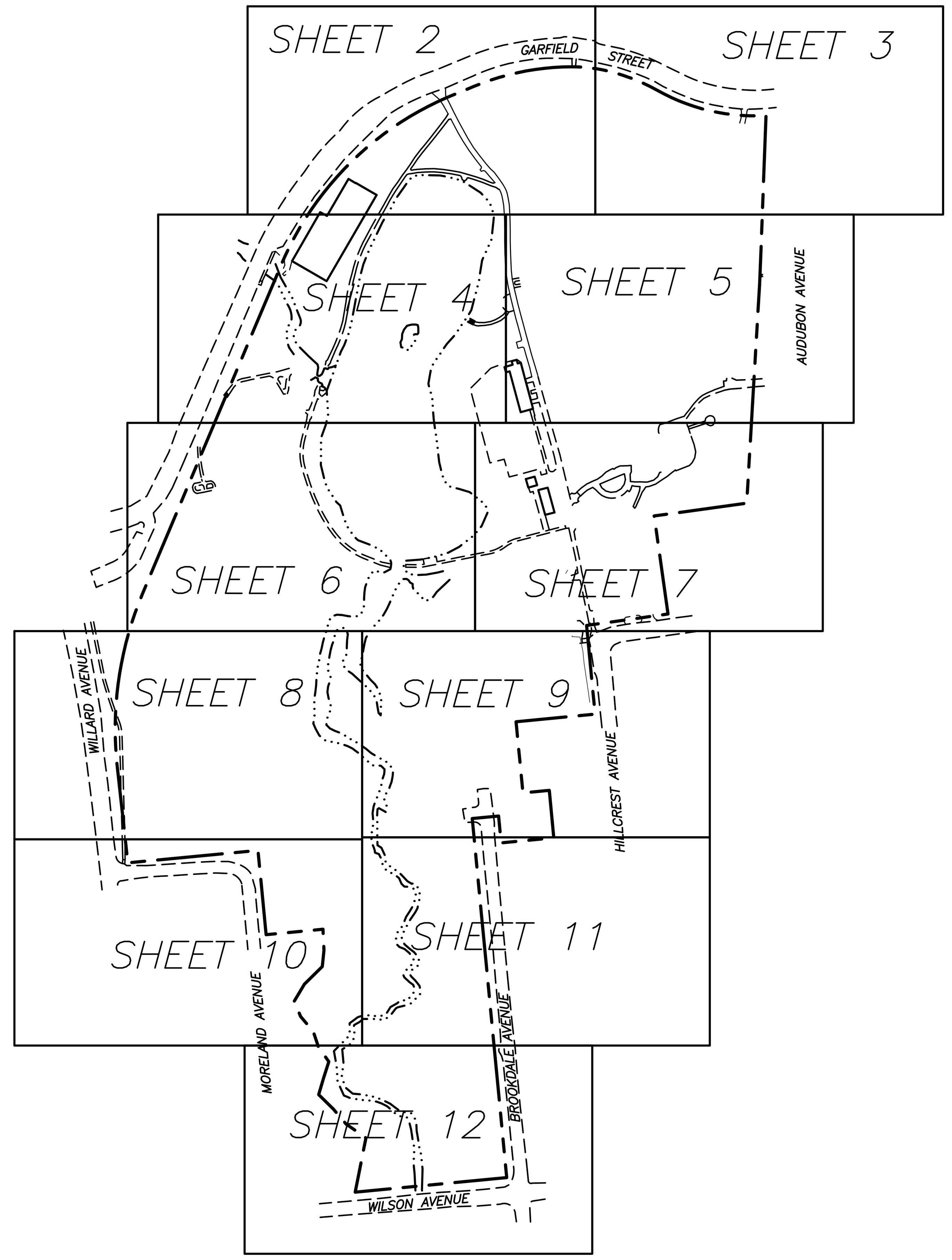
SYMBOLS LEGEND

Light Pole
Utility Pole
Utility Pole w/ Light
Guy Anchor
Deciduous Tree
Evergreen Tree
Bush
WV Water Gate
GV Water Gate
Fire Hydrant
Traverse
Iron Pin
Monument
Drill Hole
Merestone Monument
Drainage Manhole
Sanitary Manhole
Electric Manhole

Water Manhole
Telephone Manhole
TV Manhole
Electric Manhole
Traffic Light
Span Pole
Double Sign
Sign
Test Pit
Boring
Wetland Flag
OFP Flag Pole

GEN Electric Generator
Electric Transformer
AC Unit
Post
Handhole
Handicap Ramp
Spot Light
Monitoring Well
Well
"C" Catch Basin
"CL" Curb—Less Catch Basin
"R" Round Catch Basin
"Y.D." Yard Drain

Property Line
Easement Line
100 Contour Line
101x8 Spot Grade
Chain Link Fence
Wood Fence
Guardrail
Edge Marsh
Treeline
Hedge Line
Stonewall
Retaining Wall
Underground Gas Line
Underground Water Line
Overhead Wires
Town Wetland Line
FW 000 FEMA Floodway Line
FEMA 500 FEMA 500ft Buffer
FEMA 100 FEMA 100ft Buffer



INDEX MAP
SCALE: 1"=200'

NOTES:
INDICATED UNDERGROUND UTILITIES ARE BASED ON ACTUAL FIELD LOCATIONS AND AVAILABLE NOTES AND MAPPING BY OTHERS. THE LOCATIONS ARE APPROXIMATE AND ALL UTILITIES MAY NOT BE SHOWN. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL HAVE ALL UTILITIES MARKED ON THE GROUND.

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3) CERTAIN UTILITIES SHOWN H VERIFIED. (SEE NOTE #4 BEL
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10) "NO SIGNAL" MEANS THAT T

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QUALITY LEVEL A: "QL A". UTILIT VERTICALLY) AND ACCURATELY RE OTHER DIMENSIONED INFORMATION

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MILL POND PARK

NEWINGTON CONNECTICUT

PREPARED FOR TLB ARCHITECTURE

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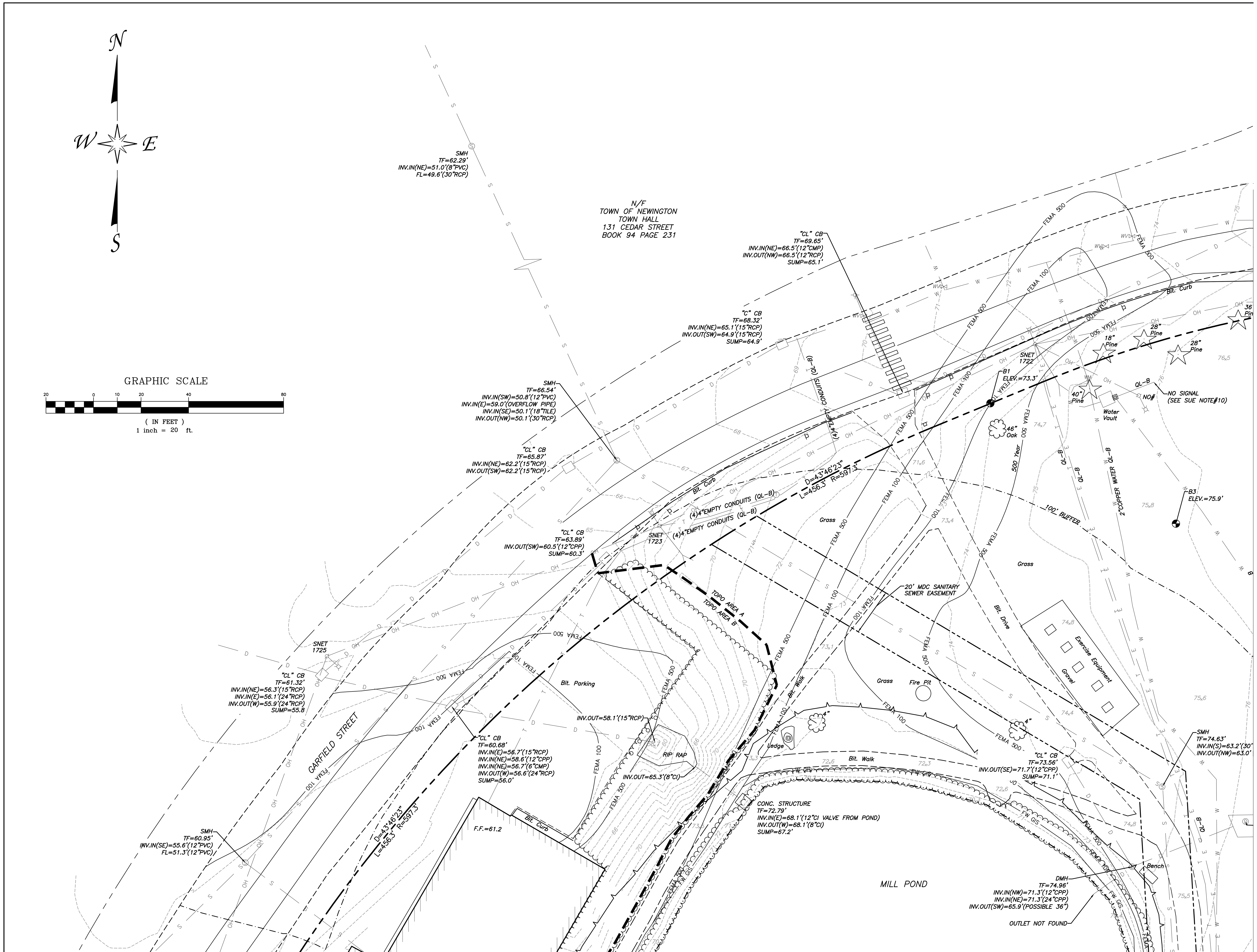

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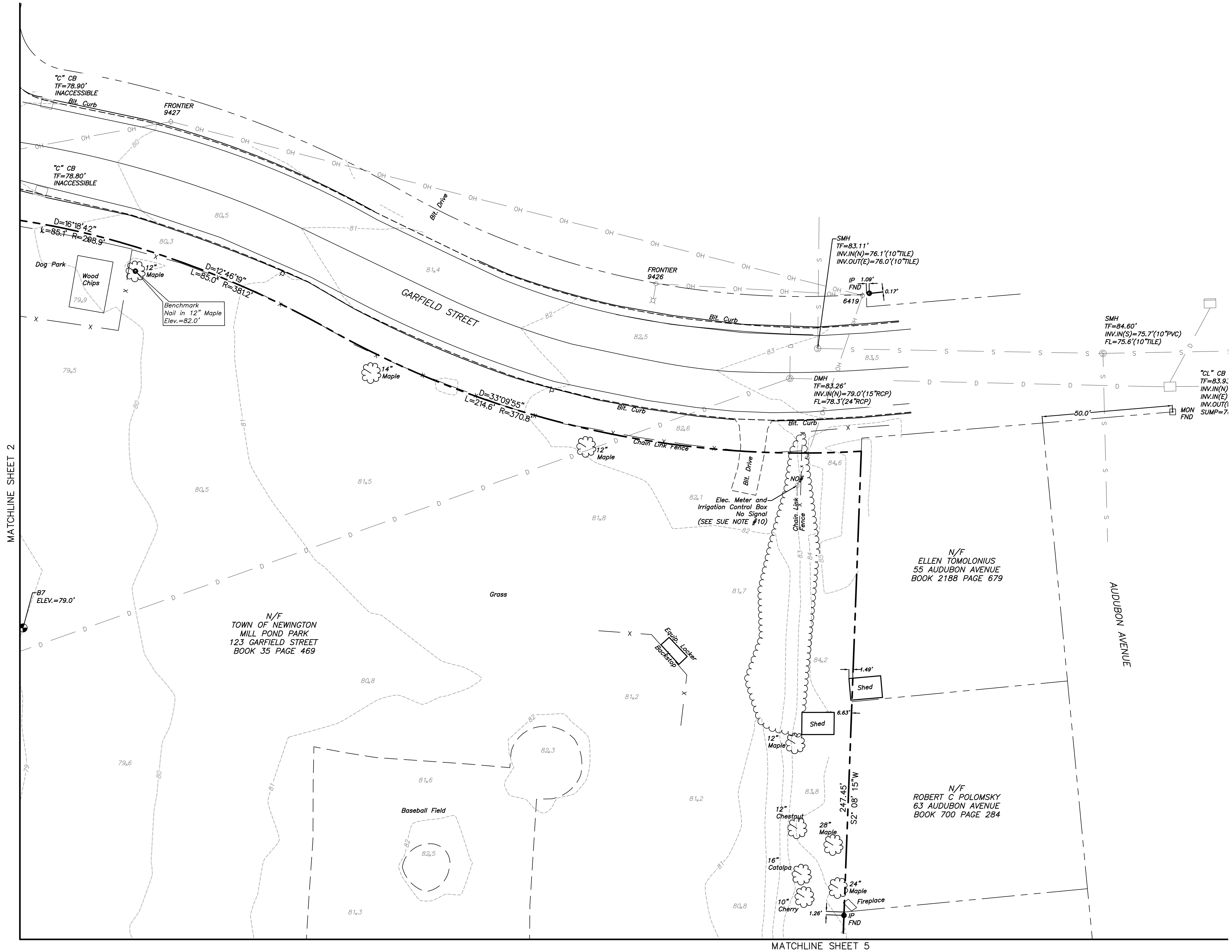

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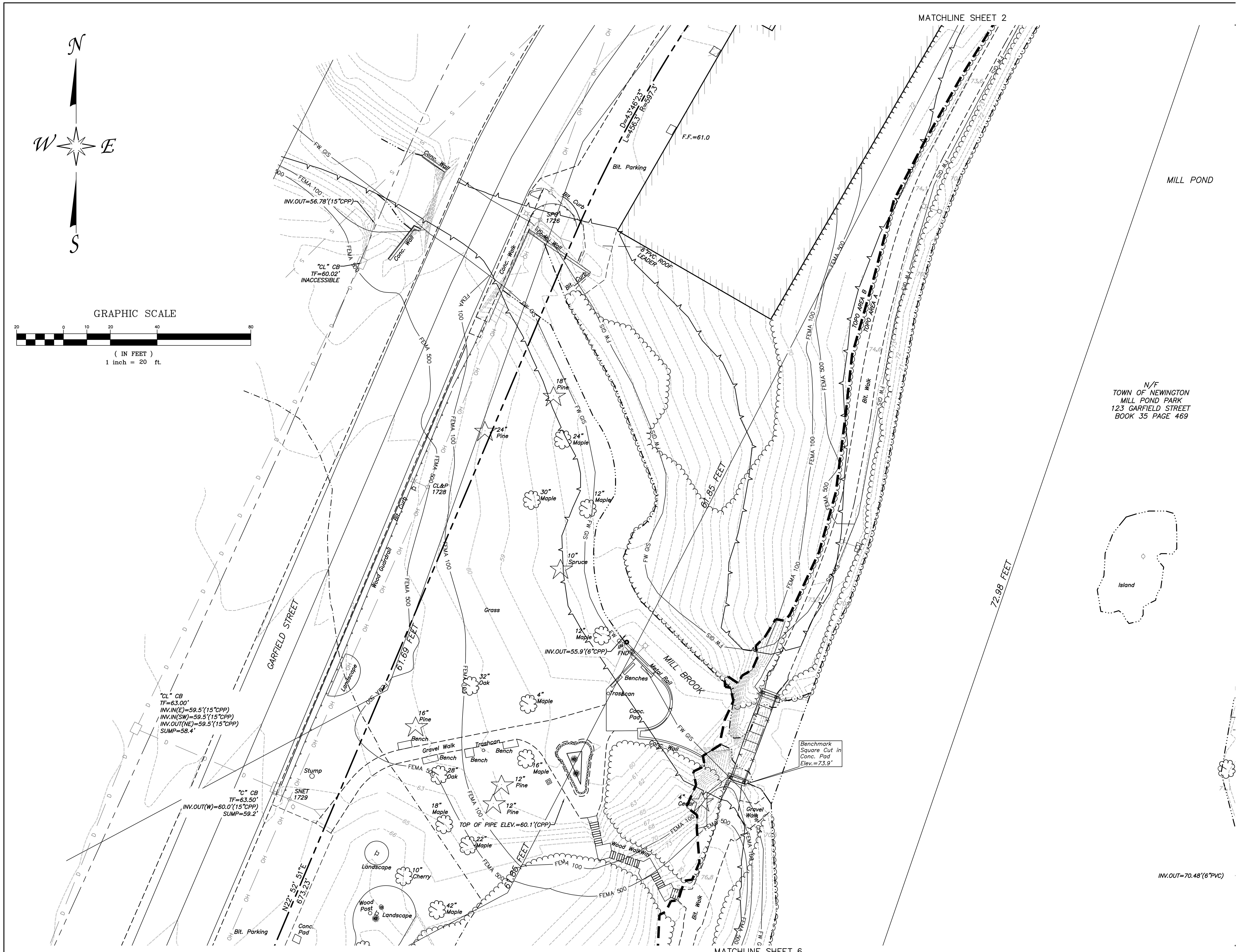

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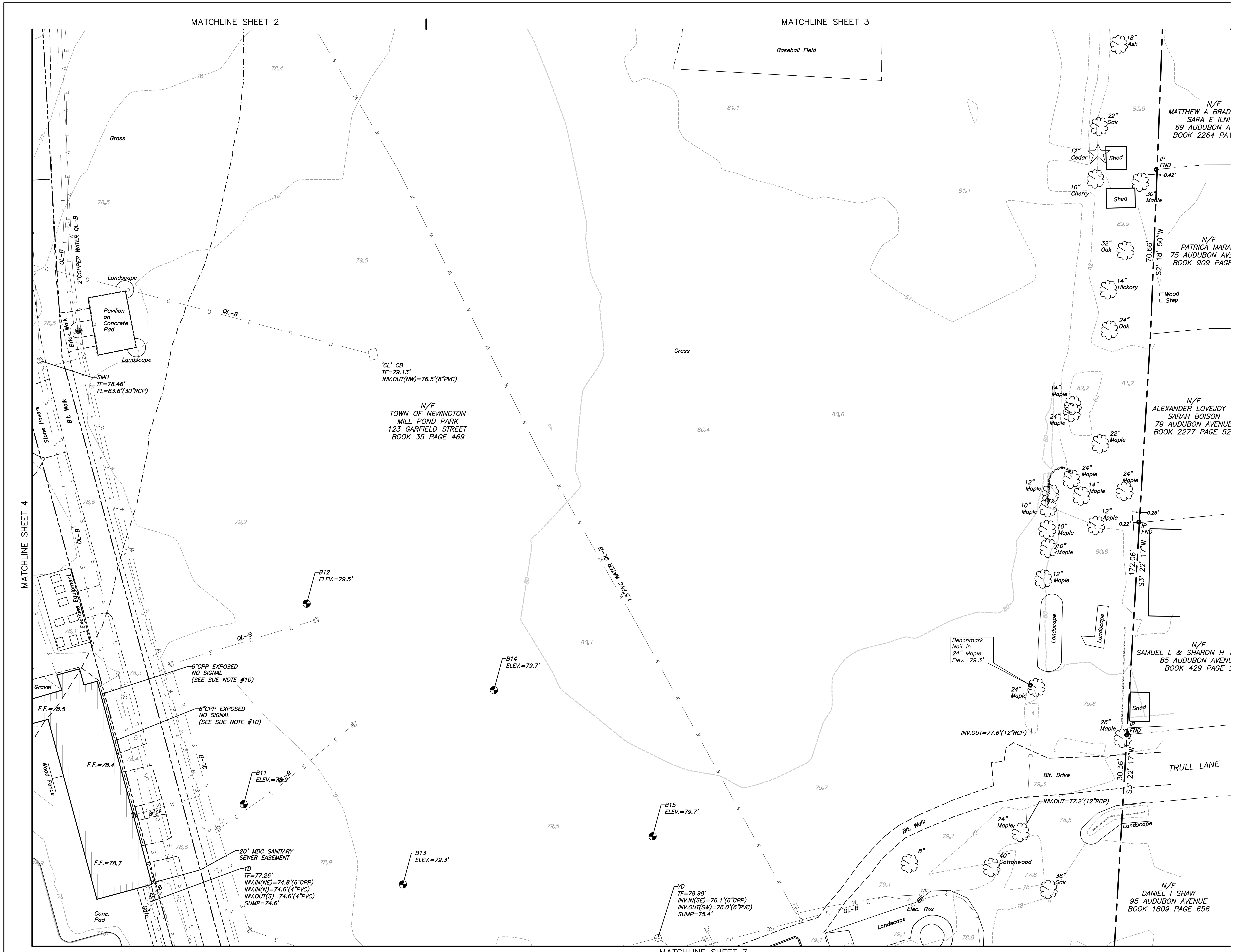

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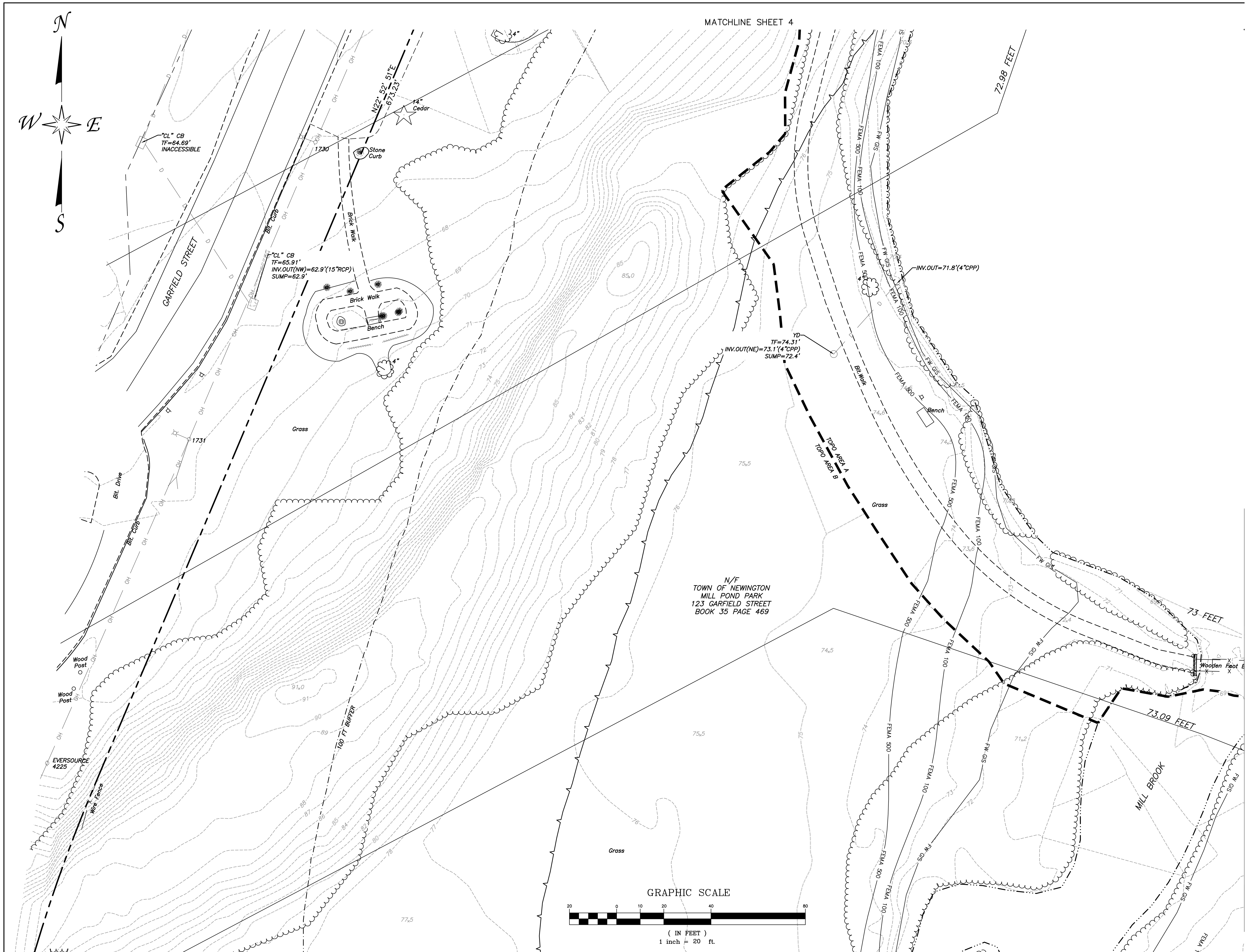

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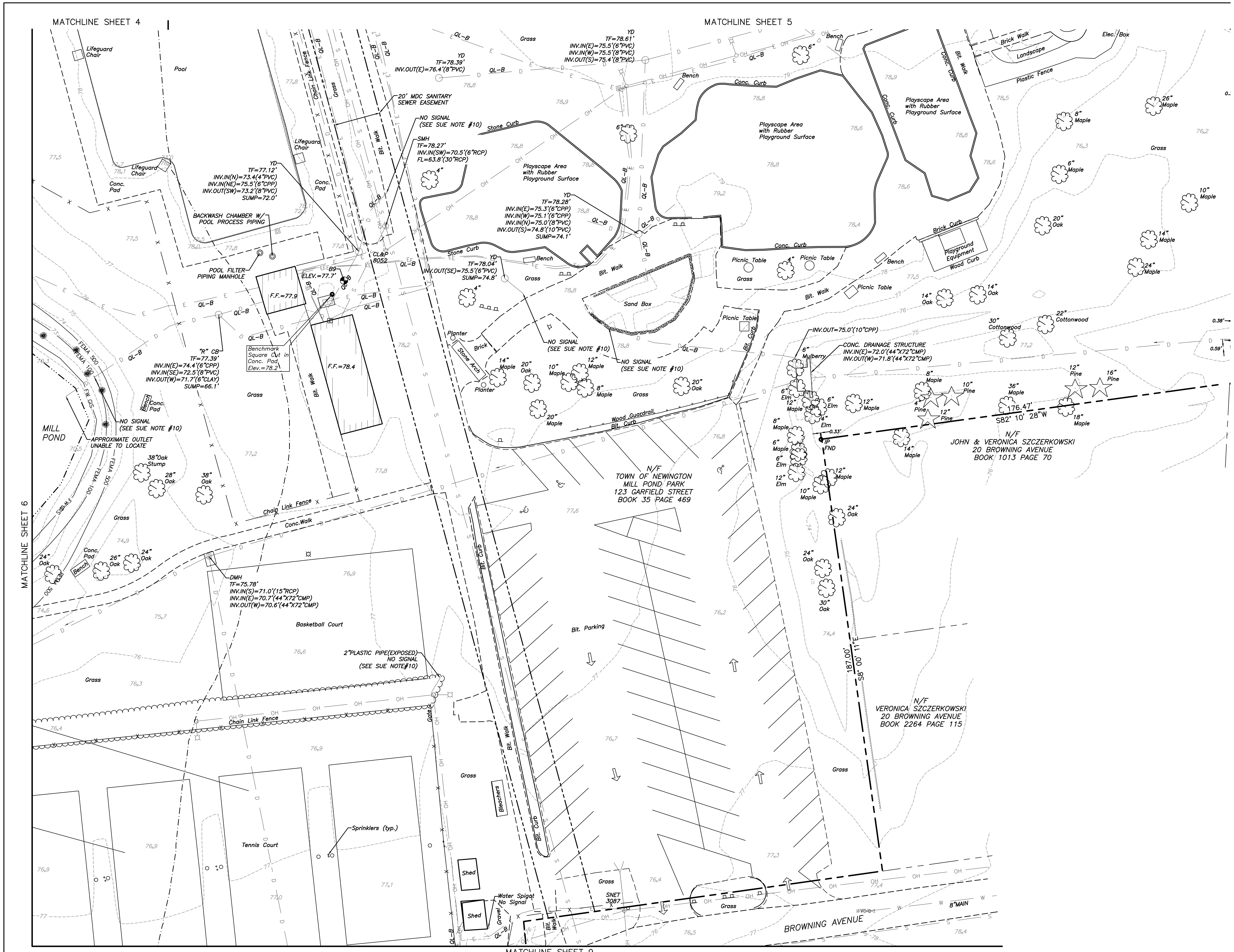

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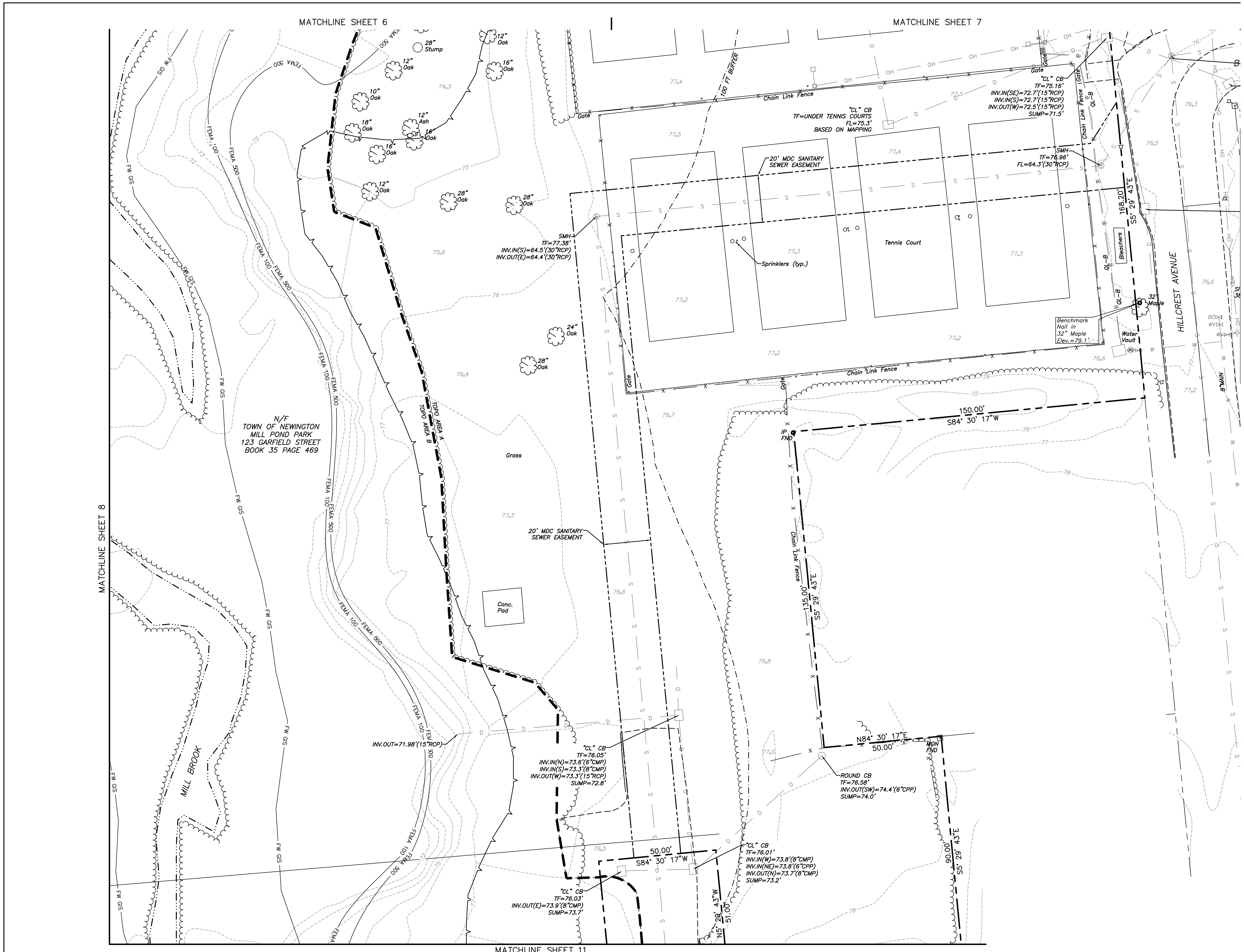

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Consulting Engineers & Surveyors
DBE/MBE Certified

MILL POND PARK

NEWINGTON CONNECTICUT

PREPARED FOR TLB ARCHITECTURE

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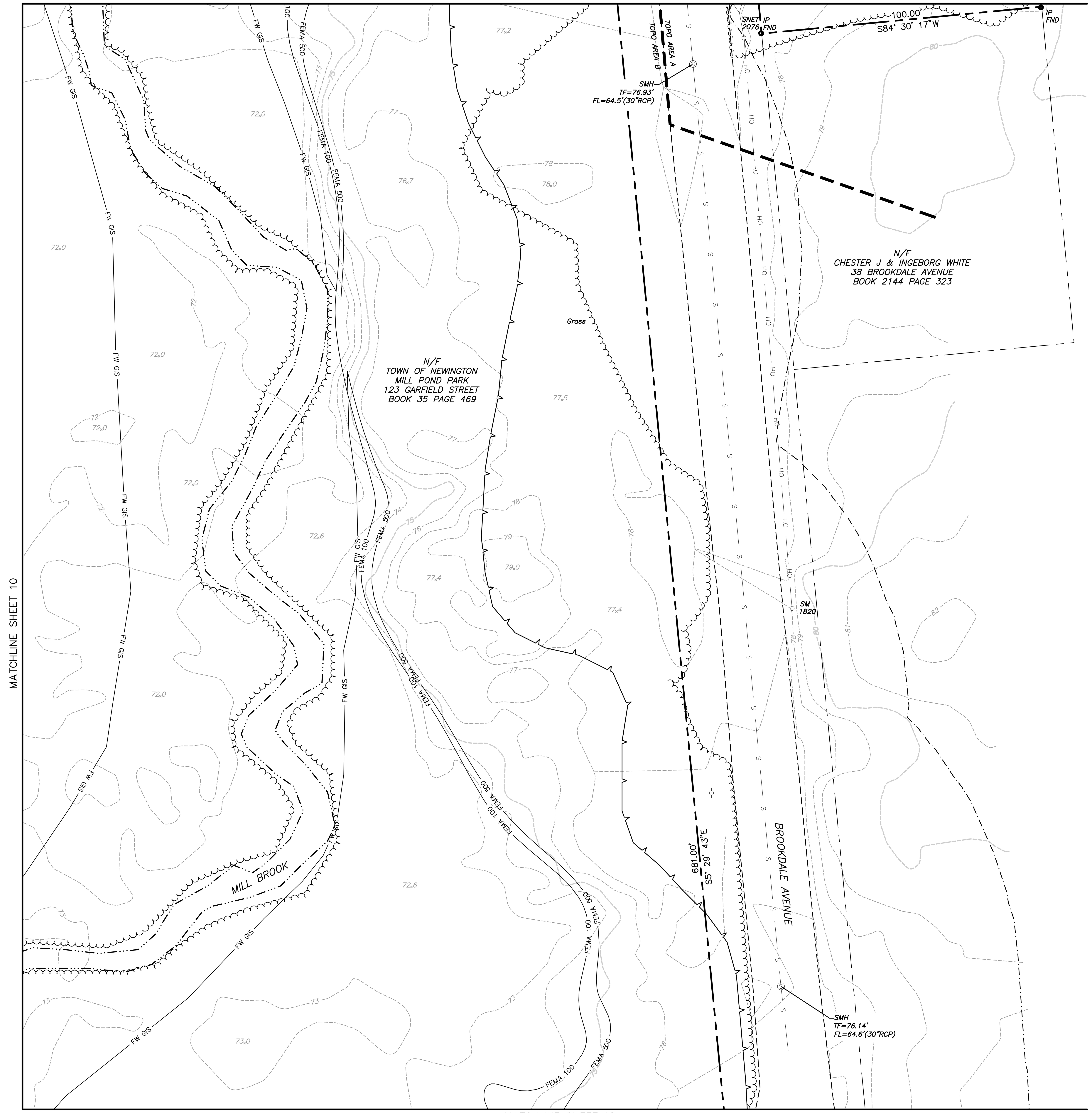
MATCHLINE SHEET 9



MATCHLINE SHEET 12

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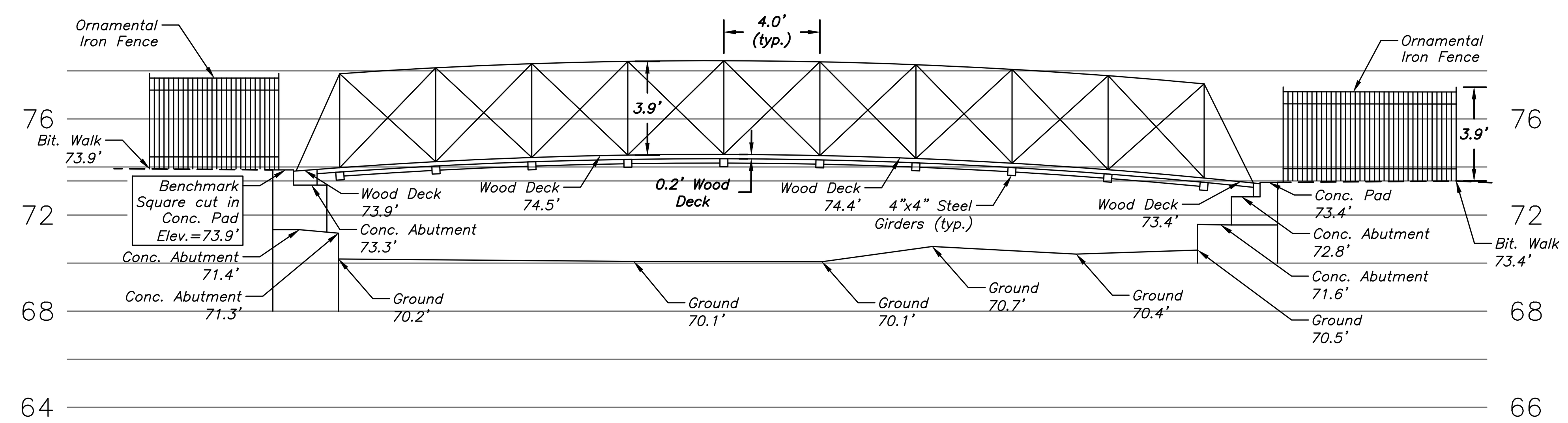
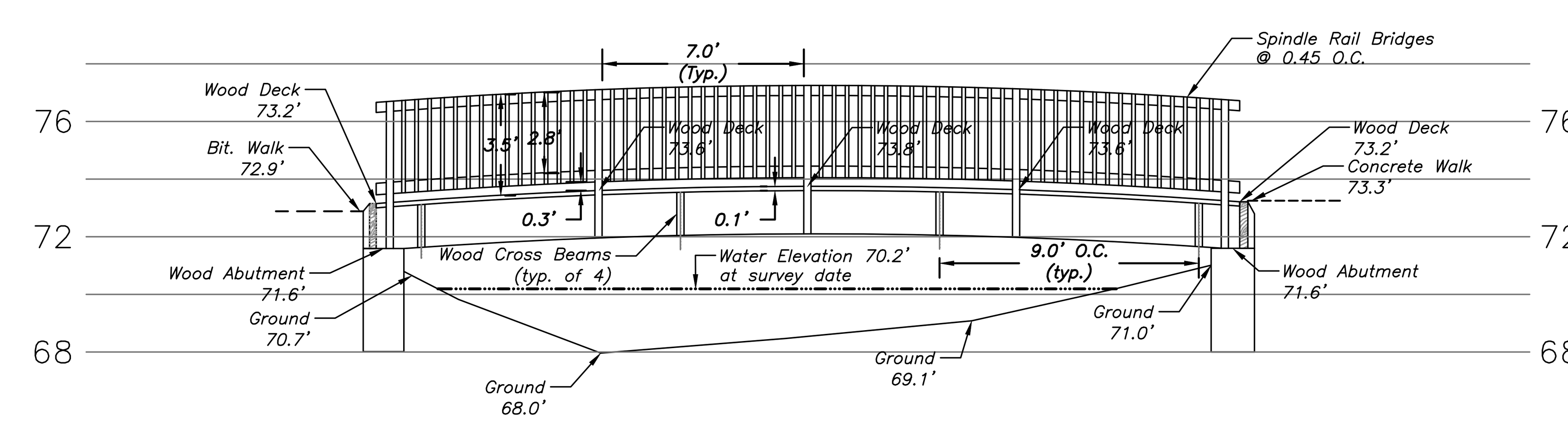


West View



South View

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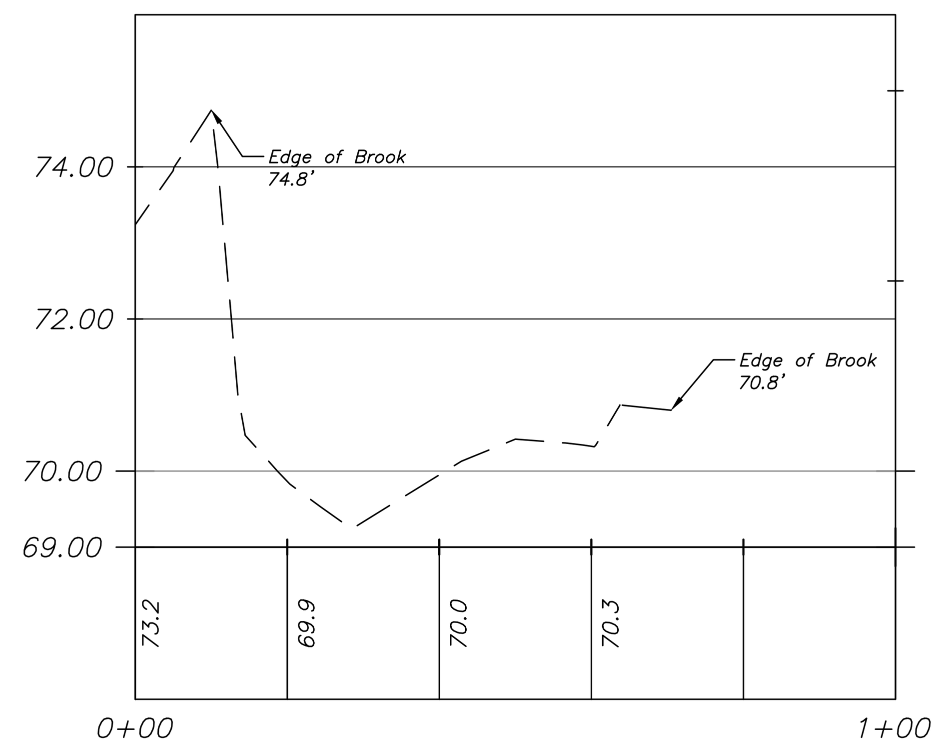
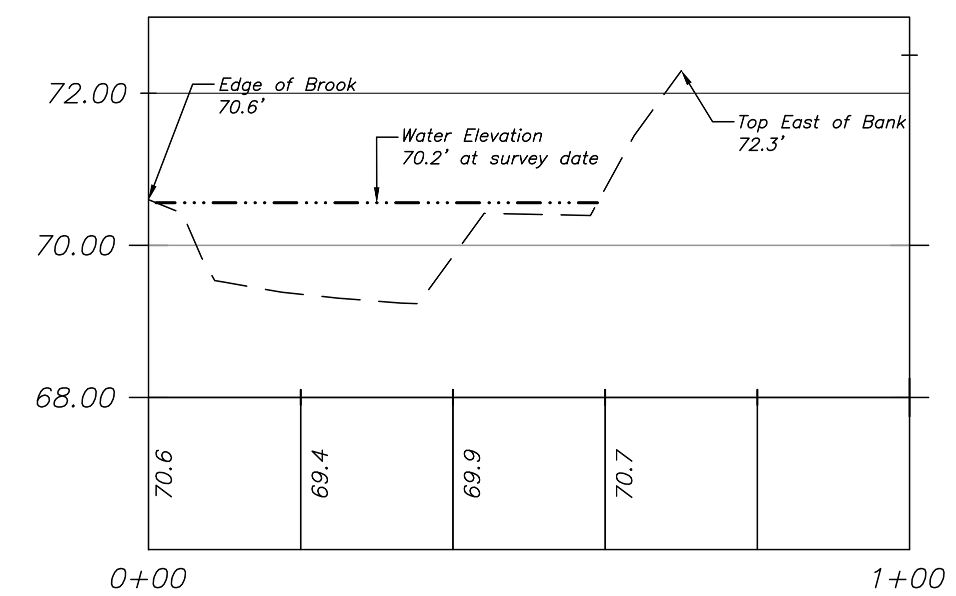
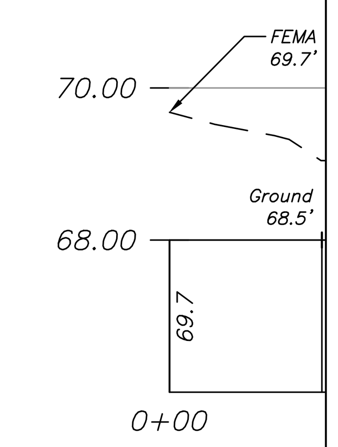
Waterfall Bridge– East Side



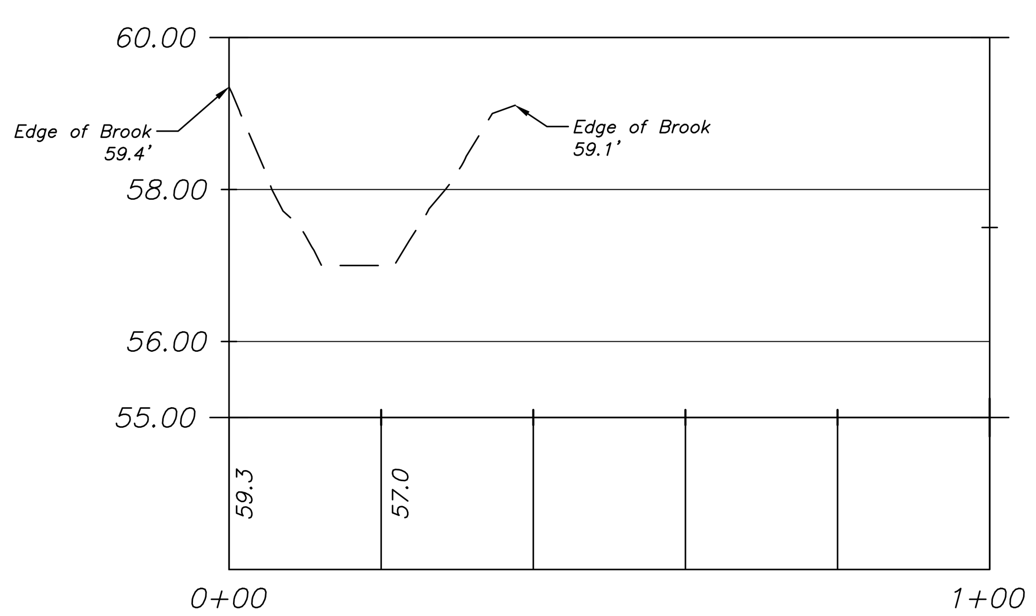
Wooden Foot Bridge–North Side



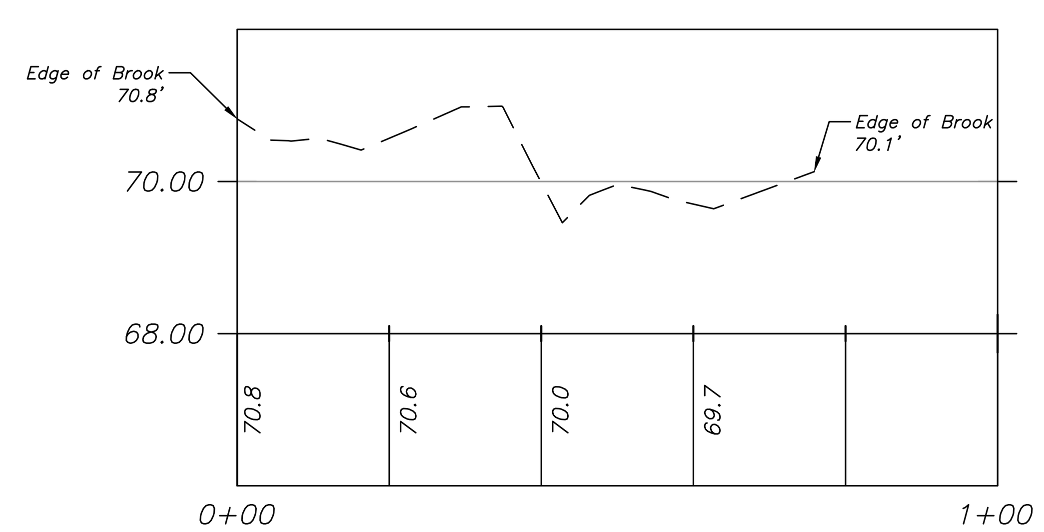
Wooden Foot



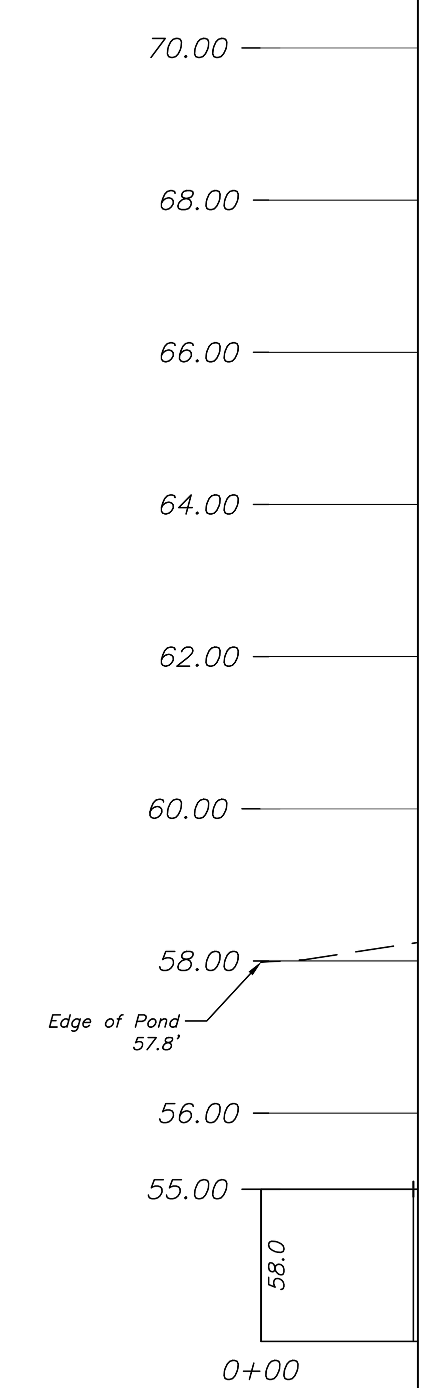
Waterfall Bridge– West Side



Wooden Foot Bridge–South Side



Waterfall Bri



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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Appendix 03—Geotechnical Analysis

Phase I
New Pool and Bathhouse
at Mill Pond Park
Newington, Connecticut

Report on Geotechnical Engineering Investigation

April 8, 2021

Prepared By:
GNCB
Consulting Engineers, P. C.
Old Saybrook, Connecticut

Prepared For:
Town of Newington
c/o TLB Architecture, LLC
Chester, Connecticut

GNCB
Consulting Engineers, P.C.
Structural Engineering
Geotechnical Engineering
Historic Preservation

April 8, 2021

Town of Newington
Parks and Recreation Department
200 Garfield Street, Newington, Connecticut 06111
c/o TLB Architecture, LLC (Attn: Michael Fortuna, AIA)
email: mfortuna@tlbarchitecture.com

Re: Mill Pond Park – Phase I
New Pool and Bathhouse
123 Garfield Street, Newington, Connecticut
Town of Newington P.O. 210740

Principals
Charles C. Brown, P.E.
James F. Norden, P.E.
Amy Jagaczewski, P.E.

Principal Emeritus
Kenneth Gibble, P.E.

Geotechnical Associate
David L. Freed, P.E.

Structural Associate
Richard A. Centola, P.E.

Dear Mr. Fortuna,

This report summarizes the results of recent test borings and foundation design studies for the Phase I renovations at Mill Pond Park (pool and bathhouse) in Newington, Connecticut. Our work was undertaken in accordance with our proposal dated August 11, 2020, as authorized in a December 4, 2020 Purchase Order Agreement issued by the Town of Newington.

In summary, the results of 15 test borings (refer to locations shown on Drawings 2 and 2A) indicate that subsurface conditions typically consist of a thin surface man-placed fill/topsoil underlain by glaciolacustrine silt. For the primary Site D, we recommend that the new pool base slab consist of a reinforced concrete mat that bears on a minimum 18 in. thickness of ¾ in. size crushed stone that is placed on the natural soils, or on a compacted structural fill. Perimeter and under mat drains are recommended for the pool. The bathhouse may be supported on normal spread footing foundations with an earth-supported slab on grade, however an unsuitable alluvium silt, as encountered at the bathhouse east end at B-2 and B-10, will need to be removed and replaced with compacted structural fill.

We appreciate the opportunity to work with you and the design team on this aspect of the project. Please call if you have any questions or need additional information.

Very truly yours,

David L. Freed, P.E.
Geotechnical Associate

1358 Boston Post Road
P.O. Box 802
Old Saybrook, CT 06475
Tel 860.388.1224
lastname@gncbengineers.com
gncbengineers.com

GNCB Consulting Engineers, P.C.

Table of Contents

I. PURPOSE AND SCOPE:

The purpose of this study was to investigate soil and groundwater conditions within select park areas, and to develop foundation design recommendations for Phase I renovations to the park, specifically construction of a new pool and abutting bathhouse at Mill Pond Park, in Newington, Connecticut. Comments on geotechnical engineering aspects of project construction are also provided.

To achieve these objectives, GNCB Consulting Engineers, P.C. (GNCB) completed the following scope of work:

- Developed and monitored a program of 15 test borings (B-1 to B-15), three groundwater observation wells (at B-3, B-7, and B-14). In addition to the primary Site D (B-1 to B-8 and B-10), explorations were completed at an alternate Site A (B-11 to B-15) and at the existing pool (B-9).

- Conducted engineering analyses on soil bearing capacity, settlement, seismic requirements, and other aspects of project design.

- Prepared an engineering report that summarizes the work completed.

II. SITE LOCATION AND SURFACE CONDITIONS:

Mill Pond Park is located southeast of the intersection of Willard Avenue (Route 173) and Garfield Street and just south of the town offices in Newington, Connecticut, as shown on Drawing 1, “Project Locus.” The primary (Site D) area for the new pool and bathhouse is located north of Mill

Pond and adjacent to the existing park entrance from Garfield Street. Mill Pond Park is largely a grass and wooded area with foot paths and athletic fields; a pool exits along the west side of the park and east of Mill Pond. Site utilities (electric, water, communication, and drainage lines) enter the park from Garfield Street; also included is an MDC sewer pipe and easement. Martinez Couch & Associates are in the process of creating an existing condition plan with topographic information, however a preliminary plan showing the location of test borings and spot grades was provided to us for use in this report. This preliminary plan, dated January 6, 2021 was used as a base plan for the attached Drawings 2 and 2A, "Test Boring Plan."

The area of proposed construction at Site D is an open grass area that slopes down from northeast to southwest ranging from about El. 79 to El. 76. (Note: Elevations are in feet and refer to NAVD 1988 Datum). Of significance is a stream exiting from the northwest corner of Mill Pond that flows under Garfield Street. In addition, a large BASALT rock outcropping exists along the east side of Willard Street.

III. PROPOSED CONSTRUCTION:

The Phase I construction consists of a new pool and bathhouse. A conceptual layout of this new construction at the primary Site D, as prepared by TLB Architecture in December 2020, is shown on Drawing 2A; no conceptual layout has been prepared for the alternate Site A which is located east of the existing pool and north of the playground area. While grading decisions have not been made for the Site D pool area, we have assumed for this report that the pool deck and bathhouse finish floor grade will be at about El. 78, and the pool water surface at El. 77.5. The reinforced concrete pool, having an overall rectangular shape, is orientated in the east-west direction that measures about 210 ft. long by 80 ft. wide. Water depth ranges from a "zero-depth" at the west end, to 5 ft. within the center lap pool, to 11.5 ft. at the north end diving/surge tank area. We understand that the water within the pool will be drained during periods of non-use (i.e. fall, winter, and spring).

The one-story bathhouse will be located north of the west end of the pool and will have a finish floor grade at about El. 78, consistent with the pool deck surface. The building will be masonry construction. Associated with the new pool/bathhouse, Phase I construction will include relocating the park entrance area to the east.

IV. SUBSURFACE INVESTIGATIONS:

We were provided with the locations and logs of several test borings completed for town structures north of the site and replacement of a bridge over the stream exiting Mill Pond and passing under Garfield Street.

For foundation design of the current Phase I project, GNCB recommended and monitored on a full-time basis a subsurface exploration program consisting of 15 test borings (B-1 through B-15). In addition to exploring the primary Site D, explorations were completed at the secondary pool/bathhouse Site A and at the existing pool. Drawings 2 and 2A show the locations of the test borings. Martinez Couch & Associates determined by survey the as-drilled locations and ground surface elevations.

GNCB prepared Table I that summarizes the subsurface conditions observed at each test boring; detailed soil descriptions are contained in the following report section. Logs of the explorations, prepared by the contractor and reviewed by GNCB, are included as Appendix A.

General Borings, Inc. of Prospect, Connecticut, under contract to GNCB, drilled the explorations using a tracked rig to advance 3-1/4 in. inside diameter hollow stem augers (HSAs). At the test borings, soil samples

(ASTM D 1586) were obtained generally at 5 ft. intervals; however, near continuous sampling was completed within the upper 7 ft. The test borings ranged in depth from 8 ft. to 24 ft. All the test borings terminated in naturally-deposited soils; B-3/OW terminated at a hard auger refusal at a depth of 15.9 ft. on possible bedrock.

A 2 in. diameter PVC groundwater observation well with slotted screen for the lower 5 ft. or 10 ft. was installed in completed test borings B-3/OW and B-7/OW (at Site D) and B-14/OW at Site A. Table II contains well installation information and observations of groundwater.

V. SUBSURFACE AND GROUNDWATER CONDITIONS:

A. Subsurface Soil Conditions

The test borings revealed that the overburden soils within most of the explored areas consist of a surface man-placed fill/topsoil underlain by a glaciolacustrine silt. However, at Site D, test borings encountered a soft alluvium below the fill/topsoil (at B-2 and B-10) and a dense glacial till (at B-1 and B-3/OW) below the red-brown silt. The soils encountered, progressing downward from ground surface, are described below:

Thickness of Strata (ft.)			General Description
Site D (B1-B8, B10)	Site A (B11-B15)	Existing Pool (B9)	
0.5-1.0	1.0-4.0	2.0	Medium dense dark brown loamy SILT, trace roots (MAN-PLACED FILL/TOPSOIL)
7.0	NE	NE	Loose mottled brown to dark brown SILT, trace gravel and roots (ALLUVIUM)
6.0-23.5+	21.0+	17.0+	Stiff to medium stiff red-brown SILT (GLACIOLACUSTRINE)
12.0+	NE	NE	Medium dense to very dense gravelly medium to fine SAND, little silt to silty medium to fine SAND, little gravel (GLACIAL TILL)

A thin surface layer of topsoil and disturbed granular fill blankets Site D. Except for a localized area of alluvium encountered at B-2 and B-10, the main soil unit below the fill/topsoil, that was encountered at all the test borings, consists of a red-brown SILT (glaciolacustrine deposit). The glaciolacustrine deposit is typically a stiff to very stiff material; it was likely formed underwater within a calm lake environment that we suspect was confined on the west side by the off-site basalt rock outcroppings. The pocket of alluvium, located at the northeast corner of the proposed bathhouse, consists of a loose brown to dark brown SILT with roots and organic material. The presence of the alluvium is likely a result of the accumulation of soft silt and organic leaf material within earlier formed erosion gullies within the glaciolacustrine deposit due to stream flow or melting of ice/soil masses.

Test borings B-1 and B-3/OW encountered a deposit of glacial till at somewhat shallow depths of 7 ft. and 11 ft., respectively. While glacial till at the Mill Pond Park site would be expected at deeper depths, the glacial till encountered at B-1 and B-3/OW most likely occurred due to presence of the rock outcroppings along Willard Avenue.

Subsurface conditions within the alternate pool Site A, and at the existing pool (at B-9), are similar to Site D except the alluvium soil was not encountered and the explorations, which were drilled to a depth up to 22 ft., did not encounter glacial till.

B. Groundwater Conditions:

Groundwater at the site is shallow, within 5 ft. of ground surface, as shown by the groundwater levels observed about 2.5 weeks after well installation (refer to Table II). Groundwater rises upward from Mill Pond ranging in groundwater levels at El. 71.9 (4 ft. below ground surface at B-3/OW) to El. 73.6 (5.4 ft. below ground surface at B-7/OW) at Site D to El. 77.7 (2 ft.

below ground surface at B-14/OW) at Site A. The water level in Mill Pond is controlled at about El. 70, by the northwest outlet stream from Mill Pond; this outlet stream enters a waterfall condition over the bedrock outcrops on the west side of Willard Avenue.

Except for B-1, the test borings were dry after completion, due to the impervious composition of the silt. However, as noted on the test boring logs, soil samples were typically saturated between depths of 4 ft. and 6 ft., suggesting the presence of a high groundwater level. An overnight reading of water at B-1, which encountered a shallow and pervious glacial till, indicated groundwater at a depth of 9.5 ft., corresponding to El. 63.8.

In any event, groundwater levels fluctuate with season, construction activity in the area, and other factors. As a result, water levels at the time of construction or after, may differ from those levels shown by the test borings and observation well.

VI. FOUNDATION DESIGN AND CONSTRUCTION AT SITE D:

A. Pool:

We anticipate that the structural design for the pool will consist of a reinforced concrete mat on which the pool walls rest. We concur with this foundation system. In our opinion, the existing man-placed fill and alluvium silt are not suitable to support the pool mat foundation. The existing glaciolacustine silt and glacial till are suitable bearing materials.

In view of the potential frost susceptible of the natural glaciolacustrine silt and the design criteria that the pool remain empty during the winter sub-freezing temperatures, we recommend that the entire pool mat be constructed on a minimum 18 in. thick layer of ¾ in. size crushed stone placed on a structural filter fabric (such as Mirafi 500X) that is placed between the stone and natural silt.

In general, the test borings indicate that normal excavation to the underside of pool slab plus an additional 18 in. for placement of crushed stone terminates within the suitable natural glaciolacustrine silt. During actual excavation, the exposed soil at the excavation bottom should be monitored to confirm the presence of proper bearing soil.

B. Bathhouse:

We recommend that the bathhouse be supported on normal spread footing foundations that bear on the suitable natural glaciolacustrine silt, or on compacted structural fill placed on the suitable soil after removing the surface man-placed fill/topsoil and alluvium silt. We anticipate that suitable bearing soil will exist at normal bearing grade for the bathhouse footings, except the localized alluvium silt at B-2 and B-10 encountered to a depth about 8 ft. below ground surface will need to be removed and replaced with compacted structural fill. The ground floor slab may be an earth supported slab-on-grade. We recommend the following design criteria for the bathhouse:

1. Design in accordance with the applicable provisions of the current edition of the State of Connecticut.

2. Locate bottoms of footings at least 3.5 ft. below exterior ground surface exposed to freezing.

3. Proportion footings for a net allowable soil bearing pressure equal to 1.3 times the least lateral footing dimension as measured in feet, up to a maximum of 4 kips per sq. ft. (ksf).

4. Remove all man-placed fill/topsoil and alluvium silt within the area of the new bathhouse and replaced with compacted structural fill; carry the foundation preparation and fill to lateral limits extending a distance beyond the edge of the footing equal to the depth of fill below footing plus two feet. Prior to placing foundations or compacted structural fill, recompact the existing soil subgrade with at least 6 passes of a vibratory roller that weighs at least 5 tons. Replace any soils that are visually unstable with compacted structural fill. As a minimum, provide at least 9 in. of compacted structural fill below the ground floor slab.

5. We expect that total footing settlement will be about ¾ in. Footing settlement is expected to occur as the load is applied.

C. Pool Perimeter and Under Mat Drains:

In view of the shallow groundwater levels measured to date and the potential for higher water levels following winter ground thaw, we recommend perimeter and under mat perforated drains around the pool, in order to minimize the potential for hydrostatic pressures below the pool, particularly during periods when the pool is empty. The drains will need to be connected to a suitable gravity outlet. If a suitable gravity outlet is not available, pool design will need to include design for hydrostatic uplift, and the pool will need to be waterproofed. To minimize the hydrostatic load on the pool mat at the deeper end, a perimeter drain can be installed at a shallow depth, say 5 ft. below ground surface, to lower the design water level.

The under mat drains should consist of a series of interconnected 4 in. diameter perforated drains installed within the lower portion of the recommended 18 in. thick layer of crushed stone. The pool walls should be backfilled with a minimum 2 ft. thick zone of compacted structural fill.

Recommended layout of the drains is included on the attached Drawing 3 and 3A, "Foundation Drain." We suggest that the drain invert grades be determined after the pool geometry and grading have been completed. The drains will need to be connected to a suitable gravity outlet.

D. Seismic Criteria:

Table 20.3-1 (Manual ASCE 7-10) referenced in the 2015 IBC Code provides recommendations for seismic site soil class. Based on our interpretation of the test boring logs, we recommend that the building be designed based on a Site Soil Class D. In addition, we recommend that seismic design include spectral acceleration design values for the Town of Newington of S_s=0.182 and S_1=0.064 that are contained in Appendix N of the Code.

The natural inorganic silt or compacted structural fill to be placed are not susceptible to liquefaction.

E. Lateral Earth Pressures:

The pool exterior walls should be designed for soil and surcharge loadings. Hydrostatic pressers are not considered since foundation drainage is recommended. The recommended design values for cantilever walls are:

- retained soil: use an equivalent fluid weight of 0.035 kcf, plus
- surcharge load: use 0.33 times the vertical load, distributed uniformly over the height of wall.

The following additional criteria apply:

- coefficient of friction: use 0.50 for concrete on the natural silt or compacted structural fill/crushed stone.

- factors of safety: 2.0 for overturning and 1.5 for sliding.

F. Concrete Pool Deck:

A concrete deck surface, at about El. 78, surrounds the new main pool construction; refer to Drawing 2A for approximate limits. We recommend that the pool deck be underlain by a minimum 18 in. thick layer of compacted structural fill, to minimize potential for winter-time heave of the concrete surface due to subgrade freezing. For the most part, excavation for the deck surface will terminate in the frost susceptible glaciolacustrine silt.

Prior to placing any fill below the new pool deck area, we recommend that the soil subgrade be recompacted with at least 4 passes of a vibratory roller and any soft materials revealed by the recompaction be replaced with compacted common fill.

G. Compacted Structural and Common Fills:

Fill for use as compacted structural fill below the pool mat/crushed stone, if needed to replace unsuitable bearing soils or as backfill against the pool walls or below the concrete deck, should consist of sandy gravel or gravelly sand, free of organic material, snow, ice, or other unsuitable materials, and should be well graded within the following limits:

Sieve Size	Percent Finer By Weight
4 in.	100
¾ in.	45 - 90
No. 4	20 - 80
No. 40	5 - 50
No. 200	0 - 8

Compacted structural fill should be placed in horizontal layers having a maximum loose lift thickness of 10 in. (open areas) or 6 in. (confined areas). Each layer should be compacted to a dry density at least 95 percent of the maximum dry density as determined in accordance with ASTM Test Designation D1557.

Compacted common fill placed below the pool deck area, if needed to raise the grade to underside of recommended compacted structural fill, should comply with the requirements for compacted structural fill except as noted below:

- The gradation requirements shall be revised to a maximum 6 in. size and the maximum percent finer by weight passing on the No. 200 sieve shall be 0 to 15 percent.
- Lifts shall not exceed 12 in. in loose lift thickness.
- Each lift shall be compacted to a minimum dry density at least 92 percent of the density determined by ASTM D1557.

Based on visual classifications, the on-site soils are not suitable for use as compacted structural or common fill. The silt material contains significant portion of fine material, which if become wet during the excavation process/placement period, can be difficult to compact if at a water content more than a few percent above optimum.

VII. CONSTRUCTION CONSIDERATIONS:

A. General:

This section provides comments related to foundation construction, earthwork, and other geotechnical aspects of the project. It will aid those responsible for preparation of contract plans and specifications and those involved with construction monitoring. The contractor must evaluate potential construction problems based on their own knowledge and experience in the area and based on similar projects in other localities, considering their own proposed construction equipment and procedures.

B. Excavation:

The deepest excavation is anticipated at the east deep end of the pool to about 14 ft, and excavation to about 8 ft. at the east end of the bathhouse to remove the unsuitable alluvium silt. Material to be removed will consist primarily of glaciolacustrine silt. We expect that normal construction equipment will be adequate for excavation.

Excavation geometry should conform to OSHA excavation regulations contained in 29 CFR Part 1926 dated October 31, 1989. We expect that excavations can be made by open sloped excavation (i.e. without lateral supports). Temporary open slopes should no steeper than 1.5 hor. to 1 ver. should be stable.

C. Dewatering:

Excavation below a depth about 5 ft. will extend below groundwater. Contractors will need to submit a dewatering plan to permit work to proceed in the dry and without disturbing the bearing soils. We anticipate that pumping from open sumps will be adequate for excavations made only a few feet below groundwater, however a systematic deep sump or wellpoint system will be needed at deeper excavations. Surface water runoff which accumulates within excavations must be pumped to maintain dry excavations.

D. Preparation of Bearing Surfaces:

Since the bearing soils consist of silt, which in some cases will be close to groundwater, we recommended that final excavation be completed with backhoe equipment having smooth edged buckets. The backhoe equipment should not operate directly on the final bearing surface, but on wood mats or a minimum 2 ft. of soil overburden. The exposed bearing surface should only be recompacted, at discretion of the geotechnical engineer, if the exposed soils are not disturbed.

E. Construction Monitoring:

The recommendations contained in this report are based on the known and predictable behavior of properly engineered and constructed foundations and other facilities. We recommend that GNCB be retained to partially observe the preparation of the pool mat and bathhouse footing/slab bearing surfaces and backfilling activities. Monitoring of this work is intended to observe compliance with the design concepts and specifications, and to allow design changes if subsurface conditions differ from those anticipated prior to construction. GNCB construction administrative services are not intended to comply with the state required special inspection program; we can provide these services, if requested.

VIII. LIMITATIONS OF RECOMMENDATIONS:

This report has been prepared for specific application to the Phase I Mill Pond Park Renovation project in Newington, Connecticut, in accordance with generally accepted geotechnical engineering practice. No other warranty, express of implied, is made. If any changes in the nature, design, or location of the construction is planned, the conclusions and recommendations contained in the report should not be considered valid unless the changes are reviewed, and conclusions of this report modified or verified in writing.

The analyses and recommendations in this report are based in part upon data obtained from the referenced test borings and observation wells. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

GNCB requests an opportunity to perform a general review of the final design, contract drawings and specifications in order to confirm that our earthwork and foundation recommendations have been properly interpreted and implemented as they were intended.

Tables:

I - Summary of Test Borings

II - Summary of Groundwater Levels

GNCB Consulting Engineers, P.C.

TABLE I

SUMMARY OF TEST BORINGS

MILL POND PARK/PHASE I
123 GARFIELD STREET, NEWINGTON, CT

TEST BORING NO.	TOTAL DEPTH (FT.)	APPROX. ELEV. GROUND SURFACE (FT.)	THICKNESS SOIL (FT.)				ELEV. TOP SILT (FT.)
			MAN-PLACED FILL	ALLUVIUM	SILT	GLACIAL TILL	
B-1	19.0	73.3	1.0	-	6.0	12.0+	72.3
B-2	19.0	76.9	1.0	7.0	11.0	-	68.9
B-3/OW(R)	15.9	75.9	1.0	-	10.0	4.9+	74.9
B-4	19.0	78.4	1.0	-	18.0+	-	77.4
B-5	22.0	76.9	1.0	-	21.0+	-	75.9
B-6	19.0	76.3	1.0	-	18.0+	-	75.3
B-7/OW	24.0	79.0	1.0	-	23.0+	-	78.0
B-8	24.0	78.8	0.5	-	23.5+	-	78.3
B-9	19.0	77.7	2.0	-	17.0+	-	75.7
B-10	8.0	76.8	-	7.0	1.0+	-	69.8
B-11	19.0	78.9	4.0	-	15.0+	-	74.9
B-12	19.0	79.5	1.0	-	18.0+	-	78.5
B-13	19.0	79.3	1.0	-	18.0+	-	78.3
B-14/OW	19.0	79.7	1.0	-	18.0+	-	78.7
B-15	22.0	79.7	1.0	-	21.0+	-	78.7

(R) refusal on split spoon sampler

NOTES

1. Refer to Drawing 2, Test Boring Plan, for locations of test borings.
2. Elevations are in feet and refer to NAVD 88 Datum.

GNCB Consulting Engineers, P.C.

TABLE II

SUMMARY OF GROUNDWATR LEVELS

MILL POND PARK/PHASE I
123 GARFIELD STREET, NEWINGTON, CT

DATE	TIME (HRS)	DEPTH TO/ELEVATION OF WATER (FT.)		
		B-3/OW	B-7/OW	B-14/OW
28 Dec. 20	1500 (At well installation) 1625	- -	18.0/61.0 15.5/63.5	- -
29 Dec. 20	0900 1515-1530	- 4.0/71.9	5.5/73.5 5.0/74.0	- -
30 Dec. 20	0900-0910 1500	4.0/71.9 -	5.0/74.0 -	1.0/78.7 5.3/74.4
16 Jan. 21	1400-1430	4.0/71.9	5.4/73.6	2.0/77.7
11 Mar. 21	1250-1320	4.3/71.6	5.4/73.6	0.3/79.4
		2.0 in. O.D. diameter PVC well installed to tip at El. 60.8 bottom 5 ft. slotted screen. Ground surface at El. 75.9.	2.0 in. O.D. diameter PVC well installed to tip at El. 58.1 bottom 10 ft. slotted screen. Ground surface at El. 79.0.	2.0 in. O.D. diameter PVC well installed to tip at El. 64.7 bottom 5 ft. slotted screen. Ground surface at El. 79.7.

NOTES

1. Refer to Drawing 2, Test Boring Plan for locations of test borings.
2. Elevations are in feet and refer to NAVD 88 Datum.

Drawings:

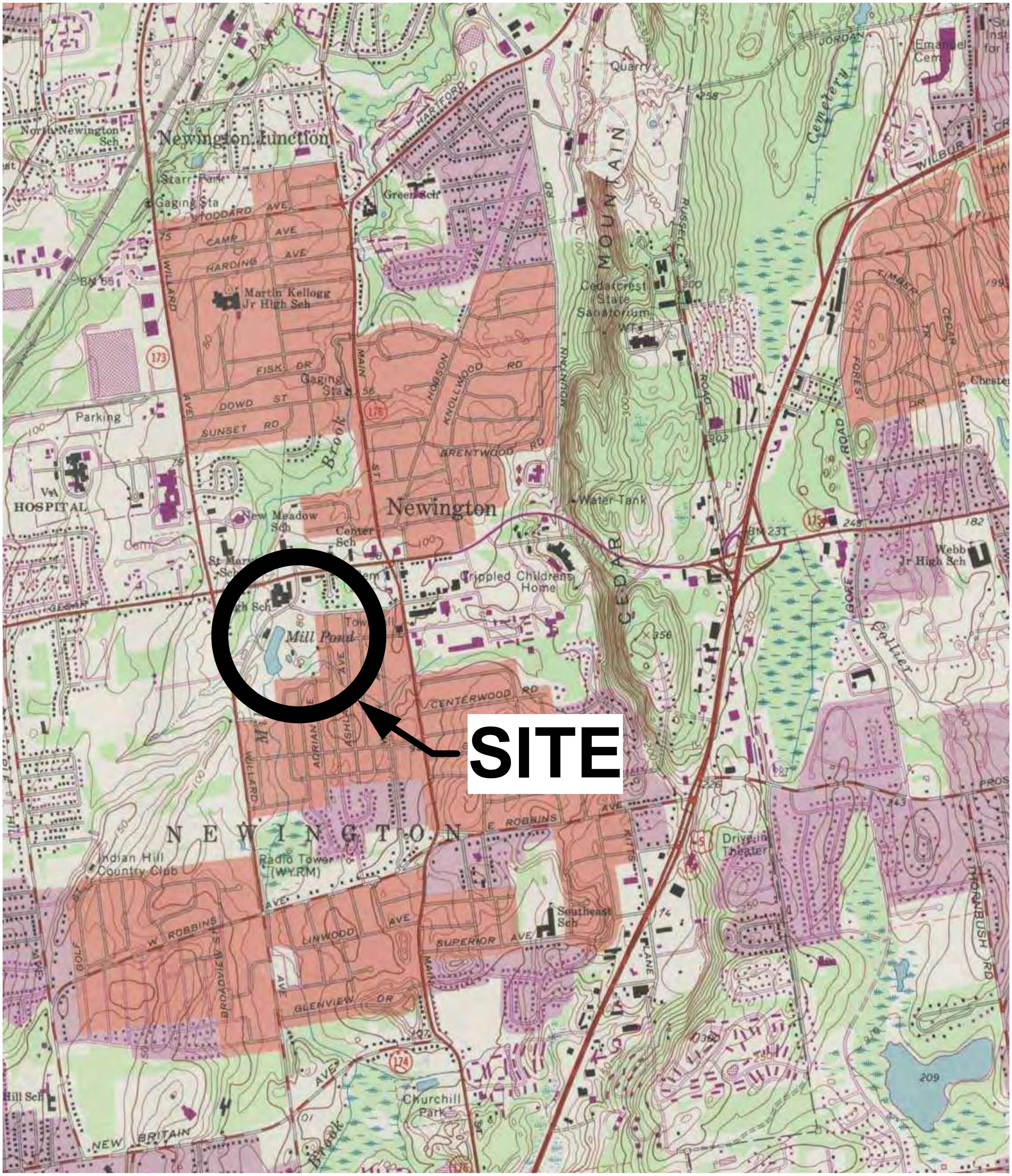
1 – Project Locus

2 - Test Boring Plan

2A – Test Boring Plan (Site D) Enlargement

3 – Foundation Drain Plan View

3A – Foundation Drain Detail

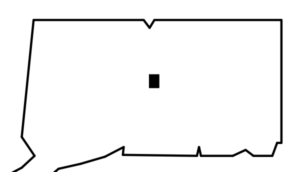


N

W — E

S

SITE COORDINATES: 41° 41' 43.6" N 72° 43' 44.8" W



U.S.G.S QUADRANGLE: THOMASTON, CT

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MILL POND PARK (PHASE 1)

NEWINGTON CT

PROJECT LOCUS

1" = 2,000 FT.

APRIL 2021

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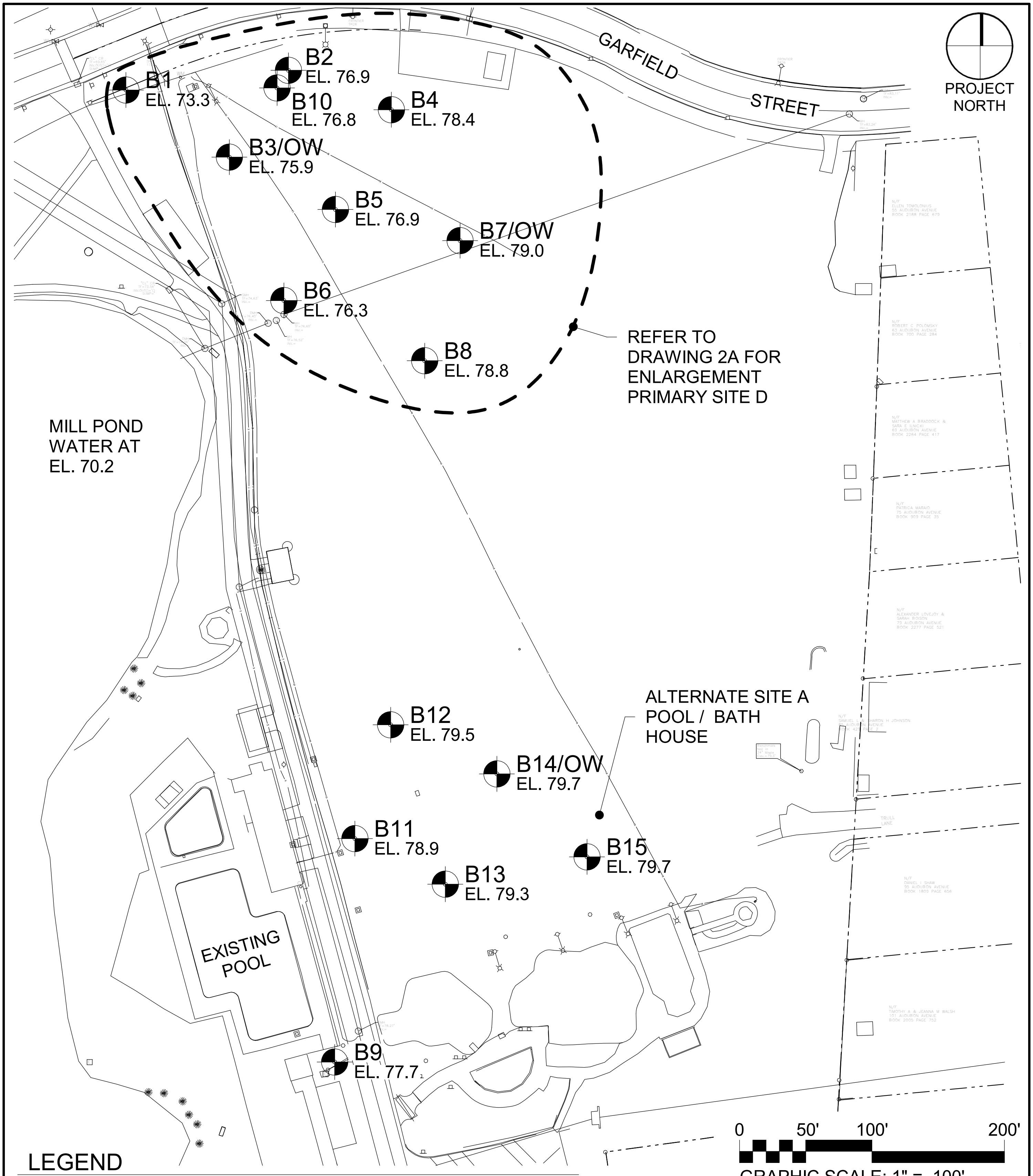
DRAWING 1



LEGEND

B14 EL. 79.7 — LOCATION AND ELEVATION OF TEST BORING DRILLED BY GENERAL BORINGS, INC. OF PROSPECT CT DURING PERIOD DECEMBER 28-30, 2020; OW INDICATES GROUND WATER WELL INSTALLED.

78 — GROUND SURFACE ELEVATION (SEE DWG 2A)

NOTES

1. BASE PLAN IS AN ELECTRONIC COPY OF BORING SKETCH BY MARTINEZ COUCH, DATED JAN 6, 2021 (FINAL SURVEY DATED FEB 18, 2021).
2. ELEVATIONS ARE IN FEET AND REFER TO NAVD 88 DATUM.

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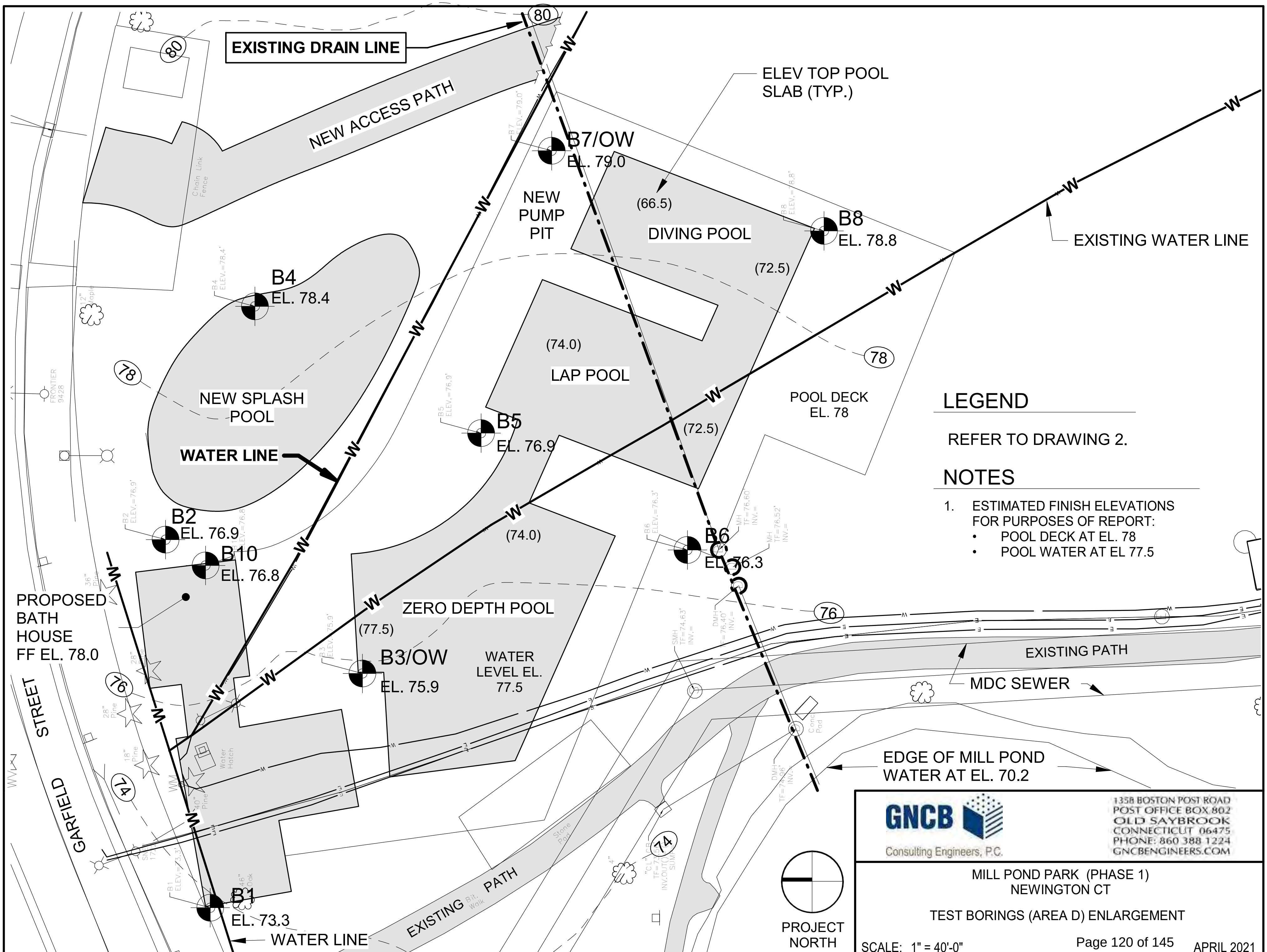
MILL POND PARK (PHASE 1)
NEWINGTON CT

TEST BORING PLAN

SCALE: 1" = 100'-0"

APRIL 2021

DRAWING 2



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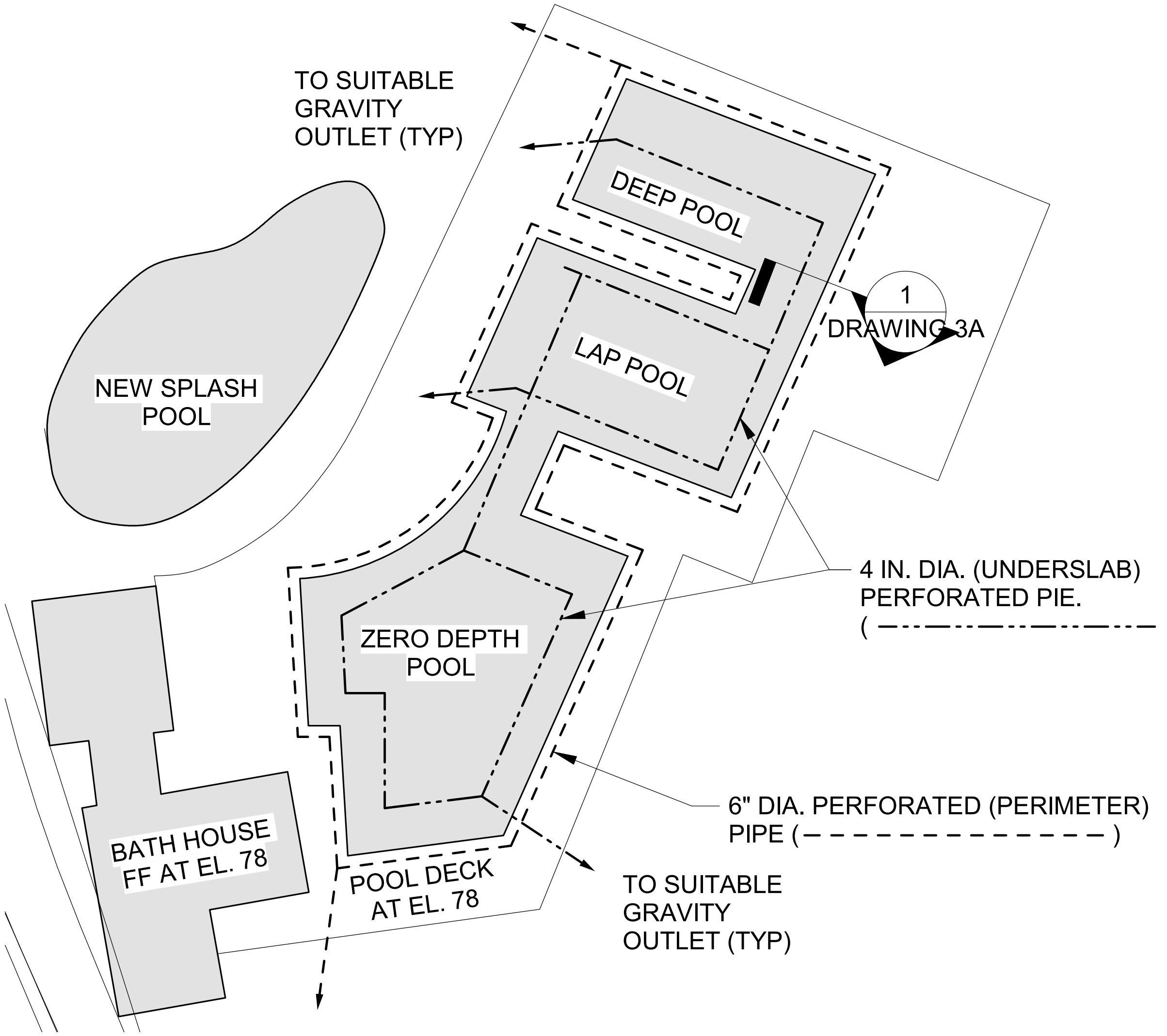
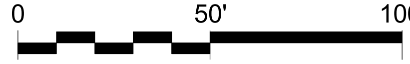
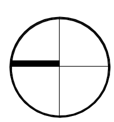




GRAPHIC SCALE: 1" = 50'



PROJECT
NORTH

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MILL POND PARK (PHASE 1)
NEWINGTON CT

FOUNDATION DRAIN PLAN VIEW

SCALE: As indicated

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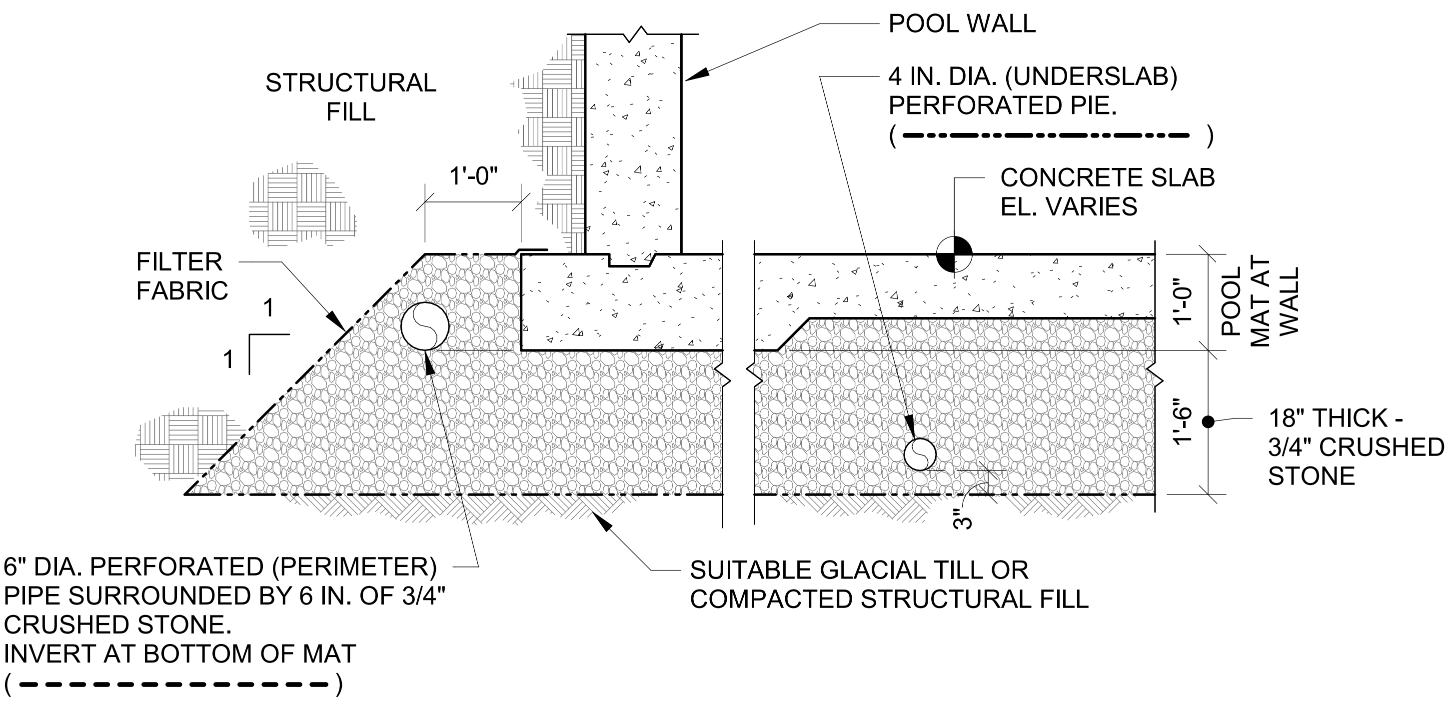
DRAWING 3



1 SECTION - FOUNDATION DRAINAGE.
1/2" = 1'-0"

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MILL POND PARK (PHASE 1)
NEWINGTON CT

FOUNDATION DRAIN DETAIL
SCALE: 1/2" = 1'-0"

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DRAWING 3A

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Appendix A:
Test Boring Logs (B-1 to B-15)

SHEET 1 OF 1

General Borings, Inc.

P. O. BOX 7135 PROSPECT, CT 06712

CLIENT: GNCB Consulting Engineers, P.C.			
FOREMAN/DRILLER: James Casson	PROJECT NAME:	Improvements to Mill Pond Park	SOIL ENGINEER
INSPECTOR: Garry Jacobson	LOCATION:	Newington, CT	DESIGN ENGINEER
Surface Elevation: 73.3	GBI JOB NO.	269-20	

		TYPE		Casing	Sampler	Core Bar	
Date Started:	12/28/20		S Auger	Casing	Sampler	Core Bar	**Hole No.** B-1
Date Finished:	12/29/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations		Size I. D.		3-1/4"	1-3/8"		Offset L R
AT 9.5' AFTER overnight HRS		Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS		Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	14	SS	2	3	2	5	FILL 1.0'	1) Medium-Top-Dark brown loamy SILT, trace roots and gravel.
		2.0-4.0	2	24	14	SS	7	9	6	6		Bottom-Red-brown SILT. 2) Very stiff-Red-brown SILT, with large root fragments.
5											SILT	
		5.0-7.0	3	24	8	SS	6	8	6	10	7.0'	3) Very stiff-Red-brown SILT, with large root fragments and one rock fragment in tip of split spoon.
												Auger grinding slightly 7.0' -10.0'
10												
		10.0-12.0	4	24	8	SS	17	12	10	16	TILL	4) Medium-Red-brown silty medium-fine SAND, little gravel.
15												
		15.0-17.0	5	24	14	SS	10	25	23	29		5) Dense-Red-brown gravelly medium-fine SAND, little silt.
		17.0-19.0	6	24	20	SS	32	40	33	43	19.0'	6) Very dense-Same as above, glacial till.
20											EOB	END OF BORING 19.0'
25												
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock	0	No. of Samples 6	**Hole No.** B-1
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712	SHEET 1 OF 1
FOREMAN/DRILLER: James Casson	PROJECT NAME: Improvements to Mill Pond Park	SOIL ENGINEER
INSPECTOR: Garry Jacobson	LOCATION: Newington, CT	DESIGN ENGINEER
Surface Elevation: 76.9	GBI JOB NO. 269-20	

Date Started: 12/29/20	TYPE	S Auger	Casing	Sampler	Core Bar	**Hole No.** B-2
Date Finished: 12/29/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	20	SS	2	4	2	4	1.0' FILL	1) Medium-Top-Dark brown loamy SILT,
												Bottom-Mottled brown to dark brown
		2.0-4.0	2	24	8	SS	3	2	2	2		SILT, trace roots and gravel.
												2) Loose-Same as above with slightly
5											ALLUVIUM	organic layers.
		5.0-7.0	3	24	10	SS	2	2	2	4		3) Loose-Same as above
		7.0-9.0	4	24	20	SS	4	5	7	12	8.0'	4) Stiff-Same as above
												Bottom-Red-brown SILT, trace
10												gravel.
		10.0-12.0	5	24	18	SS	5	4	7	8		Augers grinding slightly on probable
												cobble 9.0'-10.0'
												5) Stiff-Red-brown SILT.
											SILT	
15												
		15.0-17.0	6	24	20	SS	6	7	9	9		6) Stiff-Same as above
		17.0-19.0	7	24	20	SS	6	10	9	8		7) Stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
												NOTE: Water not observed in test
												boring at completion, however
25												soil samples were saturated below 6'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth 19		Feet in Rock 0		No. of Samples 7	**Hole No.** B-2
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

General Borings, Inc.

P. O. BOX 7135 PROSPECT, CT 06712

CLIENT: GNCB Consulting Engineers, P.C.		SHEET 1 OF 1
FOREMAN/DRILLER: James Casson	PROJECT NAME: Improvements to Mill Pond Park	SOIL ENGINEER
INSPECTOR: Garry Jacobson	LOCATION: Newington, CT	DESIGN ENGINEER
Surface Elevation: 75.9	GBI JOB NO. 269-20	

		TYPE		Casing	Sampler	Core Bar	
Date Started:	12/29/20		S Auger	Casing	Sampler	Core Bar	Hole No. B-3 OW
Date Finished:	12/29/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations		Size I. D.		3-1/4"	1-3/8"		Offset L R
AT 4.0 AFTER 6 HRS		Hammer			140 LBS.	Bit	N Coordinate
AT 4.0 AFTER 24 HRS		Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	20	SS	1	2	3	4	1.0' FILL	1) Loose-Dark brown loamy SILT
												Bottom-Red-brown SILT.
		2.0-4.0	2	24	14	SS	3	4	3	3		2) Medium-Red-brown SILT, trace gravel.
5												
		5.0-7.0	3	24	20	SS	3	4	5	7	SILT	3) Medium-Same as above.
10												
		10.0-12.0	4	24	18	SS	4	9	13	10	11.0'	4) Stiff-Top-Same as above
											TILL	Bottom-Silty medium-fine SAND, little gravel.
15											15.9'	Augers grinding boney till 10.0'-15.0'
		15.0-15.9	5	11	6	SS	25	100/5"			EOB	5) Very dense-Possible medium-fine SAND layers, silty gravel, probable cobble fragments. Split spoon refusal at 15.9'
20												EIND OF BORING 15.9'
												Installed 2" Observation Well at 15.0'
25												
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	15.9	Feet in Rock	0	No. of Samples 5	**Hole No.** B-3 OW
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712	SHEET 1 OF 1
FOREMAN/DRILLER: James Casson		SOIL ENGINEER
INSPECTOR: Garry Jacobson	PROJECT NAME: Improvements to Mill Pond Park	DESIGN ENGINEER
Surface Elevation: 78.4	LOCATION: Newington, CT	
	GBI JOB NO. 269-20	

	TYPE		Casing	Sampler	Core Bar	
Date Started: 12/28/20		S Auger				**Hole No.** B-4
Date Finished: 12/28/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	24	SS	2	4	5	8	1.0' FILL	1) Medium-Dark brown loamy SILT, trace gravel.
		2.0-4.0	2	24	12	SS	4	7	7	8		Bottom-Red-brown SILT. 2) Medium-Very stiff-Same as above with gravel in top of split spoon.
5												
		5.0-7.0	3	24	20	SS	4	3	5	9		3) Medium-Same as above, with 1/2" layer of silty medium-fine sand, also one gravel fragment.
10												
		10.0-12.0	4	24	24	SS	5	6	8	10	SILT	4) Stiff-Red-brown SILT.
15												
		15.0-17.0	5	24	24	SS	6	6	8	10		5) Very stiff-Red brown SILT.
		17.0-19.0	6	24	18	SS	5	7	6	6		6) Stiff- Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 6'
30												
35												
40												

From Ground Surface to	Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth 19	Feet in Rock 0		No. of Samples 6	**Hole No.** B-4
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%

General Borings, Inc.

P. O. BOX 7135 PROSPECT, CT 06712

CLIENT: GNCB Consulting Engineers, P.C.		SHEET 1 OF 1
FOREMAN/DRILLER: James Casson	PROJECT NAME: Improvements to Mill Pond Park	SOIL ENGINEER
INSPECTOR: Garry Jacobson	LOCATION: Newington, CT	DESIGN ENGINEER
Surface Elevation: 76.9	GBI JOB NO. 269-20	

	TYPE	S Auger		Casing	Sampler	Core Bar	
Date Started: 12/28/20							**Hole No.** B-5
Date Finished: 12/28/20		H Auger		HA	S . S.		Line & Station
Groundwater Observations	Size I. D.			3-1/4"	1-3/8"		Offset L R
AT 11.0 AFTER 2.0 HRS	Hammer				140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall				30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	12	SS	3	2	3	6	1.0' FILL	1) Medium-Top-Dark brown loamy SILT, trace gravel.
		2.0-4.0	2	24	20	SS	7	9	7	8		Bottom-Red-brown SILT. 2) Very stiff-Red-brown SILT.
5		5.0-7.0	3	24	20	SS	4	4	5	6		3) Medium-Same as above
		7.0-9.0	4	24	20	SS	4	6	10	9		4) Very stiff-Same as above
10		10.0-12.0	5	24	14	SS	3	4	5	6	SILT	5) Medium-Same as above
15		15.0-17.0	6	24	24	SS	3	4	6	9		6) Medium-Same as above
20		20.0-22.0	7	24	18	SS	2	1	1	2	22.0'	7) Very soft-Same as above
											EOB	END OF BORING 22.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 6'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	22	Feet in Rock	0	No. of Samples 7	**Hole No.** B-5
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712	SHEET 1 OF 1
FOREMAN/DRILLER: James Casson		SOIL ENGINEER
INSPECTOR: Garry Jacobson	PROJECT NAME: Improvements to Mill Pond Park	DESIGN ENGINEER
Surface Elevation: 76.3	LOCATION: Newington, CT	
	GBI JOB NO. 269-20	

	TYPE	S Auger / H Auger	Casing	Sampler	Core Bar	
Date Started: 12/29/20		S Auger	Casing	Sampler	Core Bar	**Hole No.** B-6
Date Finished: 12/29/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	18	SS	3	2	2	3	1.0' FILL	1) Medium-Top-Dark brown loamy SILT.
		2.0-4.0	2	24	4	SS	9	8	7	9		Bottom-Red-brown SILT. 2) Stiff-Same as above
5		5.0-7.0	3	24	14	SS	4	4	7	10		3) Stiff-Same as above
10		10.0-12.0	4	24	18	SS	7	8	11	12	SILT	4) Very stiff-Same as above
15		15.0-17.0	5	24	18	SS	4	7	9	10		5) Very stiff-Same as above
		17.0-19.0	6	24	18	SS	7	11	10	11		6) Very stiff-Same as above
20											19.0' EOB	END OF BORING 19.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 6'
30												
35												
40												

From Ground Surface to	Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth 19	Feet in Rock 0		No. of Samples 6	**Hole No.** B-6
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712	SHEET 1 OF 1
FOREMAN/DRILLER: James Casson		SOIL ENGINEER
INSPECTOR: Garry Jacobson	PROJECT NAME: Improvements to Mill Pond Park	
Surface Elevation: 79.0	LOCATION: Newington, CT	DESIGN ENGINEER
	GBI JOB NO. 269-20	

Date Started: 12/28/20	TYPE	S Auger	Casing	Sampler	Core Bar	**Hole No.** B-7 OW
Date Finished: 12/28/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT 5.5 AFTER 18.0 HRS	Hammer			140 LBS.	Bit	N Coordinate
AT 5.0 AFTER 42.0 HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	16	SS	2	2	4	4	1.0' FILL	1) Medium-Top-Dark brown loamy SILT, trace gravel.
		2.0-4.0	2	24	18	SS	5	6	8	10		Bottom-Red-brown SILT 2) Stiff-Red-brown SILT.
5		5.0-7.0	3	24	20	SS	6	6	9	13		3) Very stiff-Same as above
10		10.0-12.0	4	24	24	SS	4	4	5	9	SILT	4) Medium-Same as above
15		15.0-17.0	5	24	18	SS	3	4	5	6		5) Medium-Same as above
20		20.0-22.0	6	24	16	SS	4	7	8	8		6) Very stiff-Same as above
		22.0-24.0	7	24	20	SS	7	7	9	10	24.0'	7) Very dense-Same as above
25											EOB	END OF BORING 24.0'
30												Installed 2" Observation Well at 21.0'
35												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 6'
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	24	Feet in Rock	0	No. of Samples 7	**Hole No.** B-7 OW
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

	General Borings, Inc.		SHEET 1 OF 1
CLIENT: GNCB Consulting Engineers, P.C.	P. O. BOX 7135 PROSPECT, CT 06712		
FOREMAN/DRILLER: James Casson			SOIL ENGINEER
	PROJECT NAME:	Improvements to Mill Pond Park	
INSPECTOR: Garry Jacobson	LOCATION:	Newington, CT	DESIGN ENGINEER
Surface Elevation: 78.8	GBI JOB NO.	269-20	

	TYPE		Casing	Sampler	Core Bar	
Date Started: 12/28/20		S Auger	Casing	Sampler	Core Bar	**Hole No.** B-8
Date Finished: 12/28/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	18	SS	3	2	3	10	.5' FILL	1) Medium-Top-Dark brown loamy SILT, trace gravel.
		2.0-4.0	2	24	20	SS	3	6	8	9		Bottom-Red-brown SILT. 2) Very stiff-Red-brown SILT.
5		5.0-7.0	3	24	20	SS	4	6	7	10		3) Stiff-Red-brown SILT.
10		10.0-12.0	4	24	14	SS	7	8	8	9		4) Very stiff-Same as above
											SILT	
15		15.0-17.0	5	24	20	SS	5	6	8	10		5) Very stiff-Same as above
20		20.0-22.0	6	24	20	SS	4	6	6	7		6) Stiff-Same as above
		22.0-24.0	7	24	24	SS	6	5	6	8	24.0'	7) Stiff-Same as above
25											EOB	END OF BORING 24.0'
30												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 6'
35												
40												

From Ground Surface to Feet Used in. Casing Then in. Casing For Feet

Feet in Earth 24 Feet in Rock 0 No. of Samples 7 **Hole No.** B-8

SAMPLE TYPE CODING: SS = DRIVEN C = CORE A = AUGER U = UNDISTURBED PISTON

PROPORTIONS USED: TRACE = 1-10% LITTLE = 10-20% SOME = 20-35% AND = 35-50%

	General Borings, Inc. P. O. BOX 7135 PROSPECT, CT 06712		SHEET 1 OF 1
CLIENT: GNCB Consulting Engineers, P.C.			
FOREMAN/DRILLER: James Casson			SOIL ENGINEER
	PROJECT NAME:	Improvements to Mill Pond Park	
INSPECTOR: Garry Jacobson	LOCATION:	Newington, CT	DESIGN ENGINEER
Surface Elevation: 77.7	GBI JOB NO.	269-20	

	TYPE		Casing	Sampler	Core Bar	
Date Started: 12/30/20		S Auger	Casing	Sampler	Core Bar	**Hole No.** B-9
Date Finished: 12/30/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	14	SS	12	7	3	2	.2'	Asphalt Pavement
											2.0' FILL	1) Medium-Mottled brown SILT, little fine sand.
		2.0-4.0	2	24	16	SS	5	4	6	7		2) Medium-Red-brown SILT.
5		4.0-6.0	3	24	20	SS	6	7	7	8		3) Stiff-Same as above
10												
		10.0-12.0	4	24	16	SS	5	4	6	8	SILT	4) Medium-Same as above
15												
		15.0-17.0	5	24	18	SS	4	3	5	4		5) Soft-Same as above
		17.0-19.0	6	24	20	SS	4	5	6	8		6) Stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 5'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock	0	No. of Samples 6	**Hole No.** B-9
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712		SHEET 1 OF 1
FOREMAN/DRILLER: James Casson			SOIL ENGINEER
	PROJECT NAME:	Improvements to Mill Pond Park	
INSPECTOR: Garry Jacobson	LOCATION:	Newington, CT	DESIGN ENGINEER
Surface Elevation: 76.8	GBI JOB NO.	269-20	

Date Started: 12/30/20	TYPE	S Auger	Casing	Sampler	Core Bar	**Hole No.** B-10
Date Finished: 12/30/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	18	SS	3	3	4	3		1) Medium-Mottled brown SILT, trace fine sand, roots.
		2.0-4.0	2	24	16	SS	3	2	2	3	ALLUVIUM	2) Medium-Brown SILT, trace fine sand, roots.
5		4.0-6.0	3	24	18	SS	2	3	2	2		3) Medium-Brown fine sandy SILT, trace roots.
		6.0-8.0	4	24	18	SS	4	6	9	10		4) Very stiff-Same as above, with dark brown loamy silty layers.
											8.0'	
											EOB	Red-brown SILT.
10												END OF BORING 8.0'
15												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 5'
20												
25												
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	8	Feet in Rock	0	No. of Samples 4	**Hole No.** B-10
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712		SHEET 1 OF 1
FOREMAN/DRILLER: James Casson			SOIL ENGINEER
INSPECTOR: Garry Jacobson	PROJECT NAME:	Improvements to Mill Pond Park	DESIGN ENGINEER
Surface Elevation: 78.9	LOCATION:	Newington, CT	
	GBI JOB NO.	269-20	

	TYPE		Casing	Sampler	Core Bar	
Date Started: 12/30/20	S Auger		Casing	Sampler	Core Bar	**Hole No.** B-11
Date Finished: 12/30/20	H Auger		HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT 4.0 AFTER 0.0 HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	20	SS	2	3	5	5		1) Medium-Dark brown loamy SILT.
											FILL	Bottom-Brown SILT, trace fine sand.
		2.0-4.0	2	24	12	SS	2	3	2	3		2) Medium-Dark brown fine sandy
											4.0'	SILT, trace roots.
5												
		5.0-7.0	3	24	20	SS	4	6	9	10		3) Very stiff-Red-brown SILT.
10												
		10.0-12.0	4	24	20	SS	5	7	12	13	SILT	4) Very stiff-Same as above
15												
		15.0-17.0	5	24	20	SS	10	7	9	10		5) Very stiff-Same as above
		17.0-19.0	6	24	14	SS	9	12	12	11		6) Very stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
25												
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock 0	No. of Samples 6	**Hole No.**	B-11
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712	SHEET 1 OF 1
FOREMAN/DRILLER: James Casson	PROJECT NAME: Improvements to Mill Pond Park	SOIL ENGINEER
INSPECTOR: Garry Jacobson	LOCATION: Newington, CT	DESIGN ENGINEER
Surface Elevation: 79.5	GBI JOB NO. 269-20	

	TYPE		Casing	Sampler	Core Bar	
Date Started: 12/28/20		S Auger	Casing	Sampler	Core Bar	**Hole No.** B-12
Date Finished: 12/28/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	24	SS	2	2	4	4	1.0' FILL	1) Loose-Top-Dark brown loamy SILT.
												Bottom-Red-brown SILT.
		2.0-4.0	2	24	20	SS	9	7	11	10		2) Stiff-Red-brown SILT.
5												
		5.0-7.0	3	24	16	SS	5	8	12	15		3) Very stiff-Same as above
10											SILT	
		10.0-12.0	4	24	20	SS	6	8	9	10		4) Very stiff-Same as above
15												
		15.0-17.0	5	24	20	SS	4	4	4	9		5) Medium-Same as above
		17.0-19.0	6	24	18	SS	9	10	14	13		6) Very stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 4'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock	0	No. of Samples 6	**Hole No.** B-12
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

			SHEET 1 OF 1
CLIENT: GNCB Consulting Engineers, P.C.	**General Borings, Inc.** P. O. BOX 7135 PROSPECT, CT 06712		
FOREMAN/DRILLER: James Casson			SOIL ENGINEER
INSPECTOR: Garry Jacobson	PROJECT NAME:	Improvements to Mill Pond Park	
Surface Elevation: 79.3	LOCATION:	Newington, CT	DESIGN ENGINEER
	GBI JOB NO.	269-20	

Date Started: 12/28/20	TYPE	S Auger		Casing	Sampler	Core Bar	**Hole No.** B-13
Date Finished: 12/28/20		H Auger		HA	S . S.		Line & Station
Groundwater Observations	Size I. D.			3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer				140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall				30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	4	SS	2	3	5	5	1.0' FILL	1) Medium-Top-Dark brown loamy SILT.
												Bottom-Red-brown SILT.
		2.0-4.0	2	24	6	SS	8	8	10	10		2) Very stiff-Same as above
5												
		5.0-7.0	3	24	14	SS	6	9	10	13		3) Very stiff-Same as above
10												
		10.0-12.0	4	24	20	SS	4	5	8	10	SILT	4) Very stiff-Same as above
15												
		15.0-17.0	5	24	20	SS	4	6	8	9		5) Very stiff-Same as above
		17.0-19.0	6	24	20	SS	8	7	10	12		6) Very stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
25												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 4'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock	0	No. of Samples 6	**Hole No.** B-13
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

General Borings, Inc.

P. O. BOX 7135 PROSPECT, CT 06712

SHEET 1 OF 1		
CLIENT: GNCB Consulting Engineers, P.C.		
FOREMAN/DRILLER: James Casson		SOIL ENGINEER
	PROJECT NAME: Improvements to Mill Pond Park	
INSPECTOR: Garry Jacobson	LOCATION: Newington, CT	DESIGN ENGINEER
Surface Elevation: 79.7	GBI JOB NO. 269-20	

	TYPE	S Auger	Casing	Sampler	Core Bar	
Date Started: 12/29/20						Hole No. B-14 OW
Date Finished: 12/30/20		H Auger	HA	S . S.		Line & Station
Groundwater Observations	Size I. D.		3-1/4"	1-3/8"		Offset L R
AT 5.3 AFTER 6.0 HRS	Hammer			140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall			30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	18	SS	2	2	4	7	1.0' FILL	1) Medium-Top-Dark brown loamy silt.
		2.0-4.0	2	24	18	SS	6	8	7	6		Bottom-Red-brown fine sandy SILT.
												2) Medium-Red-brown silty fine SAND.
5												
		5.0-7.0	3	24	20	SS	6	6	7	12		3) Stiff-Red-brown SILT.
10												
		10.0-12.0	4	24	8	SS	5	7	10	10	SILT	4) Very stiff-Same as above
15												
		15.0-17.0	5	24	20	SS	4	4	7	7		5) Stiff-Same as above
		17.0-19.0	6	24	20	SS	9	7	8	9		6) Very stiff-Same as above
											19.0'	
20											EOB	END OF BORING 19.0'
												installed 2" Observation Well at 15.0'
25												
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	19	Feet in Rock	0	No. of Samples 6	**Hole No.** B-14 OW
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

	SHEET 1 OF 1
CLIENT: GNCB Consulting Engineers, P.C.	
FOREMAN/DRILLER: James Casson	SOIL ENGINEER

General Borings, Inc.

P. O. BOX 7135 PROSPECT, CT 06712

INSPECTOR: Garry Jacobson	PROJECT NAME:	Improvements to Mill Pond Park					
	LOCATION:	Newington, CT					DESIGN ENGINEER
Surface Elevation: 79.7	GBI JOB NO.	269-20					
Date Started: 12/30/20	TYPE	S Auger		Casing	Sampler	Core Bar	**Hole No.** B-15
Date Finished: 12/30/20		H Auger		HA	S . S.		Line & Station
Groundwater Observations	Size I. D.			3-1/4"	1-3/8"		Offset L R
AT AFTER HRS	Hammer				140 LBS.	Bit	N Coordinate
AT AFTER HRS	Fall				30"		E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. IN	REC. IN	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0-6	6-12	12 18	18 24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
		0-2.0	1	24	2	SS	3	3	5	5	1.0' FILL	1) Medium-Dark brown loamy SILT,
												Change estimated from cuttings.
		2.0-4.0	2	24	18	SS	6	6	6	7		2) Stiff-Red-brown SILT
5												
		5.0-7.0	3	24	20	SS	7	6	7	9		3) Stiff-Same as above
10												
		10.0-12.0	4	24	20	SS	5	5	6	7	SILT	4) Stiff-Same as above
15												
		15.0-17.0	5	24	22	SS	2	2	3	5		5) Medium-Same as above
20												
		20.0-22.0	6	24	22	SS	4	5	7	9		6) Stiff-Same as above
											22.0'	
											EOB	END OF BORING 22.0'
25												
												NOTE: Water not observed in test boring at completion, however soil samples were saturated below 4'
30												
35												
40												

From Ground Surface to		Feet Used	in. Casing Then	in. Casing For	Feet
Feet in Earth	22	Feet in Rock	0	No. of Samples 6	**Hole No.** B-15
SAMPLE TYPE CODING:	SS = DRIVEN	C = CORE	A = AUGER	U = UNDISTURBED PISTON	
PROPORTIONS USED:	TRACE = 1-10%	LITTLE = 10-20%	SOME = 20-35%	AND = 35-50%	

Appendix 04—Potential Phasing Approach

November 12, 2018
Revised May 2021
Mill Pond Park – Preliminary Master Plan Summary

To: William A. DeMaio, CRPA – Newington Superintendent of Parks and Recreation
From: Michael P. Fortuna, AIA
Copy: file

Re: Mill Pond Park Preliminary Master Plan – March 2018

Bill,

The Mill Pond Park Preliminary Master Plan, prepared by TLB Architecture, LLC in March 2018 is intended to help guide the future development of the Park. Particular emphasis was placed on the swimming pool and bathhouse, as they are known to be in failing condition and in need of substantial renovation or complete replacement. Over the course of several walk-throughs of the Park and meetings with Town Staff, a conditions assessment of existing park amenities and structures was completed, a program of requirements developed and several options for potential renovations were presented.

After much discussion, an option was selected and further developed to present to the Town, along with Probable Project Costs. The Plan allows for phasing of the project with the greatest emphasis on the highest priority programs. The currently planned Town Hall and Community Center construction also provides an opportunity to enhance the functionality, appearance and safety of Garfield Street. A recently received grant will provide solar lighted crosswalks to link the Community Center with the Park, which further enhances synergies for recreation programs, pedestrian patterns and vehicle parking.

The goal of the Preliminary Master Plan is not necessarily for the Town to "approve" the Plan, but to accept the Plan as a living document to guide development. As needs and priorities change, so too must the Plan. The composition of the plan also allows for a phased construction, as both a tool to control budget outlays, but also as a practical matter to ensure minimal disruption of Park programs.

Overall Park Conceptual Plan:

The large existing spaces that define the geometry and natural features of the Park, including the Pond and Mill Brook, the Baseball Field and the Soccer Fields remain in their current location. The existing playground, known as "Our Children's Place", also remains in its current location.

The proposed plan groups other functions by type and uses. Court sports are reconfigured in the general location of the existing tennis courts. The Pool facility is located on Garfield Street, across the street from the planned recreation center.

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This approach works well with Camp and other recreational programs offered across the street and provides good access to parking and alignment of crosswalks with new curb cuts.

This plan also preserves open park space in the center of the Park by moving "constructed" program closer to the public street.

Access to utilities and good visibility for security are also key benefits of this plan, as it relates to the Pool.

This location contributes to the "complex" of Town facilities being developed at the site across the Street, as approved at the referendum in November 2017.

This scheme also allows easier phasing of improvements, because the placement of the pool and bathhouse near the street does not displace any other program elements, resulting in minimal disruption to current Park activities during construction.

Key Elements of the Design:

- Create a recognizable streetscape at the edges of the Park that abut public streets.
- Establish recognizable Gateways at Park entrance points.
- Protect wetlands and bio-diversity within the Park
- Link Park to active and passive recreation opportunities around the Park.
- Respect buffers to neighbors with regard to noise, lighting, parking and activity.
- Do not modify topography or install improvements in the Floodway or the Floodplain

The Master Plan Document details various aspects of the proposed design. Subject to further review, the Park Renovation is contemplated as two phases, with primary elements as described below:

Phase 1:

The focus of Phase 1 is to complete the highest priorities, accomplish the work along Garfield Street and complete the programmatic spaces that link to the new Community Center programs. Specifically, these are as follows:

A. Swimming Pool and Splash Pad:

The proposed swimming pool and splash pad provides a variety of aquatic programs, water depths and activities for swimmers of all ages and abilities.

The main swimming pool incorporates a zero-depth entrance with water spray features, a 25-yard lap pool, ranging in depth from 3'-6" to 5'-0" and a deeper end incorporating a water slide, aquatic climbing walls and a 1-meter diving board, as well as starting blocks.

Adjacent to the pool is an aquatic splash pad, with a variety of water spray features. This splash pad would operate with a touch-button bollard, so it can be activated only when in use saving significant water and energy costs.

The bathhouse building design would complement the new construction on Garfield Street and contribute to the overall development. The bathhouse includes Locker and Shower Rooms, Special Needs / Family Changing Rooms, Lifeguard Office, First-Aid Room and ample Storage. A Concession Are is also planned within the building.

Sustainable features include solar hot water/photovoltaics, natural daylight, passive ventilation and planted "green roofs" to manage stormwater and reduce impervious area.

The pool area would be enclosed by fencing and would include lawn areas, hard decks, shade structures and plantings to provide comfortable space for extended visits.

Adjacent to the swimming pool is a soft-paved, fenced in play area to allow summer camp children the opportunity to move outdoors from the Community Center across the street, as well as provide event space when the campers are not using the area.

Pool decks surround the pool and are more generous in areas where patrons will tend to gather. Separate lawn areas are provided to attract swimmers for longer periods of time.

Trees and shade structures should be provided in strategic locations to provide protection from the sun and visual buffers between the pool area and the Park as a whole. The entire pool must be enclosed by fencing.

B. Soft-pave Playground Surface:

Adjacent to the pool and splash pad area, a soft-paved play area is proposed as an extension to indoor play areas at the Community Center and for general use during unprogrammed times. This area is enclosed by fencing for security of organized groups, and due to proximity of the play area to the pool and pond.

C. Baseball Field and Open Space, Northwest:

The baseball field currently occupies a significant portion of the Park's open space, at the northeast quadrant of the Park. It is not heavily used and it's location significantly reduces the functionality of a large portion of the Park. It is also unfenced and poses a hazard to other Park uses and as such, it is proposed to be removed,

The open space between the current baseball field and Garfield Street is used for unprogrammed activities much of the year but is also the space occupied by events such as The Life, Be In It Extravaganza, Motorcycle Madness and similar community organized events.

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The Master Plan anticipates that open space will be graded and drained appropriately to accommodate these activities, as well as be striped (as needed) for Flag Football, Ultimate Frisbee and Soccer.

Phase 2:

The completion of Phase 1 allows the demolition of the existing pool and bathhouse, and makes space for other park improvements, as follows:

A. Court Sports:

Active participation in a variety of Court Sports, including Tennis, Basketball, Sand Volleyball, Pickleball and Bocce are planned.

The relocation of the Saputo Fitness Center and the MDF Drinking Fountain from the area of the existing pool bathhouse complements programming for this area of the park. A small building is planned for storage of equipment necessary for this area.

This existing toilet building and concessions adjacent to the courts and playground provides needed amenities for this area of the park.

As this is anticipated to be a heavily used area, access to existing parking infrastructure is available. Direct access to walking trails to complement the recreational and fitness aspects of the activities is also in close proximity.

B. Area Adjacent to Mill Pond:

Mill Pond plays a significant role in the layout and the identity of the Park. A goal of the master Plan is to use the Pond to organize activities and provide meaningful active and passive recreation.

Existing walking trails remain and are extended to provide a walkway along Mill Brook, east of the pond. Bridges are replaced for vehicle access to enhance maintenance and public safety.

At the south side of the pond, there is a significant drop off in grade, near the walking trail, down to the bus yard. Railings and plantings should be added here to provide safety for walkers.

A new bandshell in the location of the removed swimming pool and adjacent to the pond, takes advantage of the natural grade of the site, to provide an amphitheater type landscape. This can be left natural or be more formalized with tiered seating. An overlook at the Pond's edge provides an additional passive recreational opportunity. Should the Town consider access to the water for activities such as kayaking, canoeing or paddleboats, a dock can be added to facilitate these activities.

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Development Common to, and Distributed Between Both Phases:

A. Walking Trails and Parking:

Existing walking paths are maintained, and additional paths proposed to provide a variety of distances and types of experiences. Trail maps and markings can be used to identify short walks of 1/3 or 1/2 mile and longer walks of up to 1 1/4 mile. Defined trails can be combined to lengthen the walk.

The experience varies from the more natural Brook Loop and Pond Loop to walks along the roadway.

Existing connections to the lower park area at the base of the falls is maintained, utilizing existing stairs for access.

To provide additional parking, without taking space from the Park, a number of smaller parking lots have been proposed at locations that provide access points to the park at specific program areas, including the following:

a. A parking area and drop-off zone is added at the intersection of Browning Avenue and Hillcrest Ave. on a small parcel of land, owned by the Town.
b. A parking area adjacent to the park at the lower level near the base of the falls provides access to that area, away from the main park.
c. A small parking lot is improved at the end of Brookdale Ave., which is a dead-end road. At the intersection of Brookdale Ave. and Wilson Ave. a small lot is added that can serve trail-head access to the newly proposed water woods walk. Improvements are also proposed at the existing parking lot at the intersection of Moreland Avenue and Cross Street.

Opinion of Cost:

The Opinions of Probable Construction Cost on the following pages are broken down by specific area of the Park and does not necessarily relate to individual Phases of the Work.

Factors affecting costs of any defined phase of work include economies of scale, temporary protection and controls, mobilization costs, access to the site, escalation and labor & material costs at the time of the Work.

Included in the Opinions of Probable Construction Cost are the following multipliers:

General Conditions:	8%
Overhead and Profit:	8%
Design Contingency:	10%

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All costs in the attached Opinion of Probable Cost, dated November 12, 2018, are escalated to reflect construction in 2019-2020, anticipating the mid-point of construction in June 2020. We have anticipated escalation costs to be 4 ½% per year.

A logical phasing plan might include completion of proposed improvements at the west side of the site, along Garfield Street in conjunction with the Community Center and Town Hall as Phase 1. Phase 2 would be enabled by the relocation of the pool and the improvements to park access and parking which would be completed in the earlier phase. Several factors will need further evaluation, but an allocation of approximately $8M for Phase 1 and $4M for Phase 2 seems to be viable.

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