



HEARST PARK AND POOL

37th Street, NW

Final Concept Design Book

December 1, 2017



OWNER



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TABLE OF CONTENTS

Design Narrative	3
Aerial Map	12
Existing Conditions Plan	13
Existing Site Photos	14
Proposed Plan	
- Concept Plan	15
- Enlarged Pool Area Proposed Plan	16
- Perspectives Renderings	17
- Site Sections	22
- Signage Plan	23
- Building Plans	24
- Building Sections	25
- Building Elevations	26
- Building Materials	28
- Site Furniture and Materials	30
- Plant Materials	31

HEARST PARK AND POOL IMPROVEMENTS PROJECT

Existing Conditions:

Hearst Park currently serves Ward 3 as a multi-purpose public open space suitable for passive and active recreation. The park currently includes the following amenities:

1. Three (3) tennis courts with a separate tennis practice wall.
2. A non-regulation natural grass field. The field is predominantly utilized for soccer, but the neighborhood frequently uses it as a dog run as well. An existing chain link baseball backstop is located at the southwest corner of the field. The backstop is in fair condition but seldomly used.
3. A concrete walking trail on the east side of the park connecting Idaho Avenue to Hearst Elementary School.
4. A series of heritage Willow Oak trees located along the east and south edges of the field. These trees are the most significant element of the park and provide a distinct identity for this space in conjunction with the steep slopes on the west and north side of the field.

Directly north of the park is the Hearst Recreation Center and playground as well as the Hearst Elementary School. The District Department of Parks and Recreation owns the existing heavily utilized playground situated just up the north slope from Hearst Park.

Currently there is on-street parking along all three ROW frontages to the park; 37th Street, NW, Quebec Street, NW and Idaho Street, NW. Sidwell Friends School is located directly across 37th Street, NW from the park. The school utilizes 37th Street heavily during morning and afternoon student drop off and pick up hours.

Background to Pool Project:

Ward 3 is the only ward in the District that does not have an outdoor public swimming pool. The need for a pool, in addition to the opportunity to upgrade the existing park, made Hearst a prime candidate for this joint project. Beginning in 2015, the District sent out a survey to the local community asking for ideas and needs for the park. The survey results gathered provided the base for the programming elements for the park project. As the project began to evolve, the District and the design team have held a series of public meetings at every step of the design process to ensure that community input is an integral part of the design. As the project continues to proceed, the community and local stakeholder meetings continue to be an essential part of the project process.

Accompanying Studies:

A series of accompanying studies have been done for Hearst Park as part of the concept design phase of this project. These studies include:

1. Tree inventory: Provided in October, 2016 by the design team's arborist, Don Zimar. In addition, both the District and the local community have hired their own respective arborists to provide separate studies on the potential impact each plan option could have on the existing heritage trees. These studies have been reviewed by the design team and taken into account towards the layouts presented in this schematic book.
2. Soil borings report
3. Site survey

Next Steps:

This concept book summarizes the conceptual-level plans for the project. From here, the plan will be further refined as part of the Schematic Design phase of the project. This phase will serve to price the project and provide the basis for the technical drawing and permitting phases of the project (design development and construction documents). Community meetings will continue to be held throughout this phase to provide regular updates of the design and progress of the project. Directly following the Design Development phase, the design team will move into the construction Documents phase of the project where final building permit plans will be developed. The construction documents will serve as the basis for construction of the project. Upon the completion of the Construction Documents, bidding and construction of the project may begin.

Overall Design Intent:

The project team has been directed by the District Department of General Services (DGS) and the Department of Parks and Recreation (DPR) to provide full design services for park improvements/ upgrades and a new outdoor pool with accompanying pool house for Hearst Park. The intent of the design is to maintain the passive character of the park, while providing enhanced facilities for structured/ organized sports including soccer and tennis.

The first task in the scope was to study the site and develop three (3) concept options for the potential layout of the program elements which include:

1. A high school regulation size soccer field
2. Maintain the existing mature Willow Oak heritage trees
3. New tennis courts and a tennis practice wall
4. Walking paths with benches

5. Bio-retention areas to capture drainage runoff from site
6. A six lane, 25 meter pool with accompanying pool house and zero-edge walk-in area
7. Upgrades to the playground including adding shade structures

The refined option included in this book has been selected by the District's Department of Parks and Recreation as the favorable layout for the project. Careful consideration to a variety of factors has been taken into account in this design including:

1. Zoning requirements
2. Accessibility
3. Safety
4. Loading and service
5. Preservation of the heritage trees
6. Maintenance
7. Sensitivity to the adjacent community
8. Capturing stormwater runoff
9. Cost

New walkways will be placed away from the roots of the existing heritage trees to ensure greater survivability of the majestic trees. It is currently envisioned that these walkways will be concrete. Where the walkways do cross near the trees, a raised walkway concept is envisioned to limit the impact on the existing roots.

The pool and pool building are situated along the southwest area of the site to allow for the center of the park to remain as a large open play field. Additionally, careful placement of the pool and pool building has been taken on both options so that the heritage trees will not be impacted by excavation and construction.

The tennis courts will share the south area location with the pool to take advantage of the existing tennis court locations. The slopes on the south and west side of the site will be cleared of invasive and replanted to enhance the visual character of the park.

Benches, trash and recycle bins, bike racks, sign kiosk and drinking fountains will be included in the design package per DPR standards.

The playground will receive new shade structures over selected play equipment offering protection from the harsh summer sun. In addition, the existing wood trellis structures will be covered with a solid roof likewise providing additional protection from the elements.



Discipline Narratives

The following narratives provide a summary for each discipline involved in the project including: architecture, Structural Engineer, Mechanical and Plumbing Engineering, Civil Engineering, Landscape Architecture and Pool Consultant.

ARCHITECTURE:

Pool House:

The pool house will serve the swimming pool alone and will not contain park related facilities such as restrooms and storage. The two-story pool house is configured for entry off of 37th St NW into an upper level lobby (street level). The upper level contains an elevator, check in desk, seating area and a stair to the lower level lobby. The lower level contains a lobby, male and female locker, rest and shower rooms, lifeguard office / first aid, storage and equipment rooms.

Due to existing grades, the pool house is built into the hillside in the southwest corner of the site with retaining walls branching out from the building to the north and east. Exterior materials under consideration are durable and low-maintenance.

Materials and Systems:

A. Structure

The buildings structure is proposed as concrete spread footings, concrete masonry unit bearing walls, steel framing (upper level), steel roof framing and concrete (lower level) and metal (upper level) roof deck.

B. Roofing

Green roofs are proposed for the lower level with a combination of extensive (sedum plantings in shallow soil) and intensive (grasses and ornamental plantings in deeper soil) roof types. The roofing system at the first-floor roofs will be fluid applied membrane combined with sheet membrane roofing and flashing at parapet walls. The roofing system at the upper level will be white PVC.

C. Fenestration

Painted aluminum pre-finished entry doors, storefront and curtainwall glazing with insulated glazing is proposed. Sun control louvers are proposed for the east facing windows.

D. Exterior materials

Retaining walls facing options include concrete, metal siding and stone. Stone facing is shown in the concept renderings and elevations. Building facing finish options include: upper level - cementitious wood look siding; lower level - various types of metal siding, ground faced

concrete masonry units and cast in place concrete.

E. Interior materials

Interior finishes will be durable and low-maintenance: concrete masonry unit bearing and non-bearing walls, galvanized metal window and door frames and doors, stainless steel doors and frames at pool equipment spaces, heavy duty door hardware and open ceilings with exposed piping, conduits and mechanical systems. All interior surfaces will be painted.

STRUCTURAL ENGINEERING:

Substructure:

Foundations

Foundation designs are based on the geotechnical report prepared by DMY Capitol dated November 17 2017. The report indicates that additional testing may be necessary during design/construction to confirm the report findings.

Lower Level Construction

At the lower level, with no basement, soil improvement is anticipated to make the site suitable for traditional spread footings. Rammed aggregate piers consisting of 18-inch to 36-inch diameter piers of highly compacted crushed stone can be designed and placed to achieve the required bearing pressure for spread footings. These piers will likely extend 10-feet to 15-feet below the existing grades and will be spaced at 7-feet to 8-feet on center. Building foundations will be designed for a bearing pressure of approximately 5,000-pounds-per-square-foot (psf). These piers must be completed by a specialty contractor as a delegated design at the start of construction. Spread footings will be placed below frost depth at a minimum of 2.5-feet below finished grade.

The slab on grade will likely be supported on natural soils. Undercutting unsuitable soils to a depth of 2-feet may be required in isolated locations. The slab on grades will be a minimum of 5-inches thick with a 6-inch thick stone aggregate layer & 10-mil thick impermeable plastic membrane placed directly below the slab.

Retaining Walls

Permanent soil retention systems will be required along 37th Street and Quebec Street. These walls will retain 12-feet to 16-feet of soil. There are two options being considered at this time.

Option 1: Traditional retaining walls

Soil below the retaining wall footings will require improvement using

rammed aggregate piers similar to the methods described above. Temporary soil excavation will be required to install concrete cantilevered retaining walls. The temporary soil excavation support system will be designed and installed by a specialty contractor and will likely consist of steel soldier piles with tieback anchors and wood lagging.

Option 2: Permanent soil retention system

A permanent soil retention system may be designed and installed by a specialty contractor. The system would likely consists of galvanized steel soldier piles with welded shear studs to the piles. Permanent tiebacks would be installed below 37th Street and Quebec Street. These tiebacks would likely require additional corrosion protection. Wood lagging would be used for the excavation and then a permanent concrete wall would be cast along the piles.

Basement Wall

A 12-inch thick basement wall will be used to retain the soil along 37th Street and Quebec Street. The wall will be braced at the upper floor/lower green roof slab at the top and a continuous strip footing at the base. A temporary soil excavation support system will be designed and installed by a specialty contractor and will likely consist of steel soldier piles with tieback anchors and wood lagging. The excavation support system will be set 3-feet to 4-feet back from the basement wall to allow for the installation of waterproofing, insulation and a foundation drain.

Superstructure:

Upper Floor & Lower Green Roof Construction

Concrete masonry unit (CMU) load bearing walls will support a steel frame for the upper floor. The CMU walls will also act as lateral shear walls for wind, seismic and unbalanced soil loads. Steel beams will likely be spaced at 6-feet to 9-feet on center. A 4 1/2-inch normal weight concrete slab on 3-inch, 20-gage metal deck will be used for the upper floor and the lower green roof. The steel sizes will be slightly larger than a typical office building due to the loads of the accessible green roof.

Roof Construction

The roof above the upper floor will consist of 1 1/2-inch, 20-gage type B metal roof deck steel beams spaced at 4-feet to 6-feet on center.

Lateral System

Lateral system will consist of CMU shear walls lines within the building and around the building perimeter for the lower level. Steel moment frames and steel braced frames will be used for the upper level structure.

Structural Building Codes and Design Criteria:

- Governing Building Code: International Building Code, IBC 2012 ASCE 7 provisions will be utilized for determination of snow, wind, and seismic loads
- ACI 318, Building Code Requirements for Structural Concrete (ACI)
- ACI 530, Building Code Requirement for Masonry Structures
- AISC Specification for Structural Steel Buildings – Allowable Stress Design and Plastic Design (AISC – ASD), or AISC Load and Resistance Factor Design for structural steel buildings (AISC – LRFD). The following values are specified by the applicable codes and standards or are higher values selected for use on this project:
- Where human comfort is the criteria for limiting pedestrian induced motion, floor framing vibration due to footfall vibrations will be verified. Where vibrations are caused by running machinery, they should be isolated by damping devices or by the use of independent foundations.
- The floor live load deflection of framing members shall not exceed 1/360 of span lengths.
- The floor live load deflection of perimeter spandrel beams and girders supporting exterior masonry wall elements shall not exceed the lesser of l/600 or 0.30”.
- Roof deflection under live snow or wind shall not exceed 1/240 of the span length or 1/360 if a plaster ceiling is suspended.

Structural Loads: The following preliminary values are specified by the applicable codes and standards or are higher values selected for use on this project (psf = pounds per square foot):

Occupancy or Use	Live Load(psf)	Concentrated Load
Lobbies/Assembly	100 psf	2000lbs/2.5ft ²
Stairs and Exits	100 psf	300lbs on stair treads
Offices	50 psf + 15 psf partitions	
Mech/Elev. Rooms ¹	150 psf	
Roof (Green Roof)	100 psf	
Roof (Limited Access)	30 psf	

- All loading conditions due to mechanical or elevator equipment shall be confirmed during the course of design coordination.

Quality Control:

K&H will determine the necessary special inspections required to satisfy the applicable building codes based on the trades and materials utilized in the selected structural scope items. A list of required special inspections shall be included in the design documents. Design documents shall indicate that it is the responsibility of the Owner to engage the special inspection agency, and the responsibility of the general contractor to notify the special inspector in advance of the anticipated construction schedule and activities.

MECHANICAL AND PLUMBING ENGINEERING:

Energy metering, financial cost, equipment procurement time, equipment maintenance requirements, physical space requirements, and other factors were considered in determining the recommended mechanical system to implement at the project.

The systems will be designed in accordance with the following codes, ASHRAE standards and guidelines:

- 2013 District of Columbia Mechanical Code
- 2013 District of Columbia Plumbing Code
- 2013 District of Columbia Energy Conservation Code
- 2013 District of Columbia Building Code
- 2013 District of Columbia Fire Code
- 2013 District of Columbia Green Construction Code
- 2011 National Electric Code
- ASHRAE 62.2-2010
- ASHRAE 62.1-2010
- ASHRAE 90.1-2010
- DC Green Communities

Outdoor Air Design Values

- A. Winter: 10°F DB
- B. Summer: 95°F DB/ 76°F WB

Outdoor Air Design Values for VRV Heat Pumps

- A. Winter: 0°F DB
- B. Summer: 110°F DB/ 78°F WB

Indoor Air Design Values

- A. Occupied:
 - 1. Winter Heating: 70°F DB
 - 2. Summer Cooling: 75°F DB/50% RH
- B. Unoccupied:
 - 1. Heating Setback: 60°F DB
 - 2. Cooling Setback: 85°F DB/ 60% RH must be maintained
- C. Mechanical Rooms, Storage Rooms, and Electrical Rooms:
 - 1. Winter Heating: 55-60°F DB for freeze protection
 - 2. Summer Cooling: Will be provided via mechanical forced ventilation Criteria

Ventilation

Outdoor and exhaust air provisions shall meet the requirements of the 2013 District of Columbia Mechanical Code, ASHRAE 62.1-2010 and ASHRAE 62.2-2010. The mechanical ventilation shall be designed to meet 100% of the requirement.

Heating, Ventilation and Air Conditioning (HVAC) Systems

HVAC Design Conditions

Load calculations are based on the following assumptions:

- Outdoor design conditions: 95°F DB/76°F WB summer design conditions, 10°F DB winter design conditions.
- Indoor design conditions: 75°F summer, 70°F winter.
- Infiltration: 0.3 air-changes per hour (ACH) in perimeter zones and 0.1 ACH in core zones.
- Perimeter heat loss (slab-on-grade): 0.73 Btu/h.°F. ft.
- Exterior walls: 0.048 Btu/h.°F. ft.
- Roof: 0.033 Btu/h.°F. ft.
- Glass: U-0.4 & SHGC-0.4

Ventilation

Minimum ventilation rates and indoor air quality shall meet the ASHRAE standard 62.2-2010 for residential units and 62.1.2010 for nonresidential units. The outdoor airflow rate per occupant is determined based on an established CO₂ generation rate per person. Ventilation will be provided to all zones, and will be used as a means for makeup air (with respect to exhaust) in order to maintain proper pressurization within the building at all times. Pressurization will be designed as neutral to slightly positive (approximately 0.5 percent).

Space Exhaust:

Exhaust fans discharging to atmosphere for the following areas will be included:

1. Storage Rooms
2. Pool Equipment Rooms
3. General Exhaust
4. Toilets
5. Chemical Storage Rooms

Assumptions for exhaust means currently utilize a combination of dedicated sidewall louvers, dedicated to each individual space type requiring exhaust. Exhaust fans will be required to operate continuously for chemical storage and pool equipment rooms, and will operate intermittently for general and restroom exhaust.

Proposed Mechanical System:

Based on good engineering principles and design experience, the following recommendations for HVAC component(s) are made:

1. A Variable Refrigerant Flow (VRF) system will be used to provide conditioned air for the occupied spaces of the Pool Building. The system will be a 2-pipe type, with heat pump condensing units to allow for simultaneous heating and cooling. The VRF system provides Individual zone control to each space, and provides flexibility to meet all space needs as use types, exposures, and envelope characteristics change. Space zoning is intended to be divided as

follows:

- a. The large entry atrium at the surface level will have a dedicated, ducted VRF unit, and will use linear slot diffusers to handle the radiant heat load introduced through the West facing glass storefront.
 - b. The office on the main level will have a dedicated VRF unit.
 - c. The office and lifeguard/firs aid station of the lower level will share a VRF unit given their similar use frequency and envelope exposures.
 - d. The lobby and corridor of the lower level will have a dedicated, ducted VRF unit.
- Total VRF systems is currently estimated at 10 Tons during peak cooling.

Control Systems:

Programmable thermostats and DDC controls will be used for the VRF systems throughout, and the exhaust fans that require intermittent occupancy scheduled use.

ELECTRICAL

Power Distribution:

The electrical power distribution system shall include all the electrical distribution equipment necessary to provide electricity in a Code compliant, safe manner to all lighting fixtures, receptacles, ventilating equipment, heating equipment, pool equipment, plumbing equipment, elevator, signal and communication equipment.

Service Entrance/Utility Incoming Power Service:

Preliminary electrical load calculations show a requirement for a new 600 amp, 208Y/120V, 3-phase, 4-wire electrical utility service to serve the pool building, pool and site lighting. Electrical load calculations will be revised as the design progresses. The electrical utility service for Hearst Park is proposed to be a 600A, 208/120 volt, 3-phase, 4-wire service. This will satisfy the electrical needs of the building and will be routed via a new underground concrete encased duct bank from PEP-CO pole or a Pad mounted transformer. This will be further analyzed during the design stage of the project.

Normal Power Distribution:

The main electrical room will house a C/T Cabinet, Service Trough, U.L. listed Service Disconnect Switch, and a Main Distribution Panel (MDP) that is rated for a 600 amp, 208/120V, 3-phase, 4-wire service. The MDP will be specified to have transient voltage surge suppression. Additional branch distribution panels installed within the main electrical

room will serve the local loads in the areas.

The proposed electrical power distribution infrastructure will include all the elements necessary to conduct electricity in an approved, safe manner to serve all lighting receptacles, HVAC, plumbing equipment, signal, communication, and miscellaneous equipment loads in the building.

Emergency Power Distribution:

It is unknown if Emergency Generators will be required at this time. Further discussion and coordination will be required in order to determine future requirements based upon storm and sanitary water management system, elevator design requirements, and fire protection requirements.

If a generator is provided, it will be diesel powered, and housed in a minimum Level 2 weatherproof enclosures with sound attenuations to meet the local governing authorities' sound restrictions, and will be located in the mechanical pit at grade level. The emergency equipment room will be in a minimum 2-hour fire rated space as per governing code requirements. A remote annunciator panel to monitor the generator status and functions including generator trouble and failure alarm notifications will be provided either in the Manager's office as required by the local Fire Marshall and/or approved by the owners.

Lighting System:

General Lighting

The lighting system for the building shall be designed to conserve energy and minimize glare while providing a pleasant, comfortable and functional environment. The guidelines set forth by the Illuminating Engineering Society (IESNA) shall be used to establish target-maintained illumination levels throughout all spaces. Specific influences of glare, task complexity, surface reflectance characteristics, ceiling brightness, and usage shall be addressed with this procedure.

To enhance energy savings, LED lighting will be considered as the basis of design for all the lighting fixtures throughout all the buildings. The fixtures may be recessed, surface or pendant mounted as required by the individual space layout and instructed by the architects. Select spaces may be equipped with specialty luminaries to address special functional requirements and create visual elements in the space. LEDs shall be RoHS compliant, 80 CRI (minimum), with a maximum of 2.5 step McAdam ellipse color consistency. LED data shall be tested in compliance with IESNA LM-70, LM-80 and TM-21 protocol. Lamp life shall carry a minimum rating of 50,000 hours at L70. Intended LED current (mA) and driver shall be fully compatible.

Emergency Lighting:

Emergency lighting shall be provided throughout all interior areas of egress using the selected fixtures. The fixtures designated for the emergency lighting are currently being design as battery backup, until emergency generator requirements have been confirmed. Emergency fixtures will also be provided at all egress discharge doors. Exit sign lighting fixtures will be provided throughout all interior areas of egress. The fixtures ace currently being specified with a LED light source and battery backup.

Site Lighting:

Exterior lighting will consist of a combination of building mounted lighting fixtures, step lights, low profile bollards or pole mounted light fixtures to illuminate exterior public walkways and gathering spaces throughout the park. Specification for the light fixtures serving these areas will be coordinated with the architects, as design progresses. Similar to the interior space, all exterior light fixtures will be specified with a LED light source. Fixtures attached to the building will be controlled via a photocell and time clock. The photocell will be located on the roof, facing north. Additionally, all exterior fixtures will be designed and specified as cut-off type luminaries with neighborhood friendly optics in accordance with LEED and IESNA guidelines to eliminate light pollution of properties adjacent to the project site.

Lighting Control:

All enclosed spaces such as the offices, and utility and storage closets will be controlled via localized vacancy sensors with manual override switches for all interior non-emergency light fixtures for manual-on and auto-off functions. The system will consist of wall or ceiling mounted sensor devices that will operate in conjunction with relay units, which in turn send the signals to control the lighting circuits serving the individual room.

In after-hours mode, local ceiling mounted occupancy sensors, programmed via the control system, will dim the light fixtures to 20% output level per zone basis to obtain energy savings.

Wiring Devices:

Duplex convenience receptacles will be provided throughout the building based on the furniture layout and space planning, and in accordance with the applicable codes. In addition to the receptacles provided to serve specific loads or equipment, the following convenience receptacles will be provided throughout the building:

- A. Corridors: Provide a minimum of one 125V, 20A duplex receptacle for every 50 linear feet of wall space.
- B. Mechanical, Pool Equipment, and Electrical Rooms: Provide one 125V, 20A duplex receptacle per 15 feet of wall space.

C. Storage Room: Provide a minimum of one 125V, 20A duplex receptacle.

D. Exterior Building Location: Provide one 125V, 20A duplex Ground Fault Interrupter (GFI) type receptacle with weatherproof cover on the exterior wall near each main entrance and exit door from the building. In addition, provide one 125V, 20A duplex weatherproof, GFI receptacle with weatherproof cover on the exterior wall or roof, where the mechanical equipment might be located. Those outlets will be located within 25 feet from each exterior mounted HVAC equipment, as required by the code.

All receptacles shall be listed, NEMA 5-20R, unless required otherwise. Special equipment, such as Dryers in the laundry rooms and special receptacles in the telecommunication rooms will be coordinated with the vendors for the required type of NEMA configuration.

All the motors will be provided with motor controllers and disconnect switches, unless controlled via Variable Frequency Drives (VFD). All major equipment will be provided with either fused or non-fused safety switches, based on equipment name plate load data/motor HP. All motor controllers/starters will be at minimum NEMA Size 1, in NEMA One enclosure unless required otherwise due to an environmental conditions. All disconnect switches will be heavy duty type, either NEMA Type 1 or 3R, depending on the environmental conditions at the installed location. All fans with fractional horsepower (under 1/2 HP) motors will be wired via motor rated switches with built-in thermal overload protection. Whenever a motor is controlled via VFD, it will be provided with a built-in fused disconnect switch, as a local disconnecting means, as required by the code.

All branch circuit wiring will be with 600 volt rated copper conductors, type THWN or THHN, minimum #12 AWG in minimum 3/4-inch conduits. All interior conduits will be Electrical Metallic Tubing (EMT) unless required otherwise by the code. All exterior exposed conduits will be Galvanized Rigid Steel (GRS) and all exterior underground conduits will be PVC Schedule 40, unless required otherwise by the code.

Fire Alarm System:

The new fire alarm system is proposed to be of an addressable type and designed to meet all the latest state, local, and ADA code requirements.

The system will include a new fire alarm control panel (FACP) located in the main electrical room. It is recommended for the new system to include audio and visual signal devices in all public areas. Manual pull stations will be provided by the egress doors as required by code. Duct mounted smoke detectors will be provided in all HVAC units as

required by code. The fire alarm system will also include a system annunciator and digital communicator with a connection to the fire department or monitoring agency as directed by the owner or as required by the fire marshal

PLUMBING:

Domestic Water:

A new 4-inch building water service will serve Hearst Park to supply the pool make-up and plumbing fixtures within the facility as well as any irrigation demands of the park. The domestic water service meter will be located outside as indicated on civil drawings. The water service will be protected via installation of a backflow preventer complying with ASSE 1015. The main service backflow device will have to be located in a heated space inside the building immediately once the service enters the structure. Additional backflow devices will be required on the pool make-up water connection as well as irrigation systems which will have to comply with ASSE 1013. Valves for domestic cold water supply will be installed to allow for sectional shutoff of branch piping, risers, and fixture groups.

Potable water distribution piping shall be copper tubing. Copper has been the standard material for many years, but it is subject to unpredictable cost variations. With proper construction methods, this material continues to be a good choice for water distribution piping.

Hot Water System:

A tank type electric water heater will be used to provide hot water to the locker room lavatories and showers, as well janitor's sink. The heater will store water at 140°F and have a master mixing valve to reduce the temperature to 120°F (ASSE 1017) before distribution to the fixtures. The water heater will be equipped with heat trap, expansion tank, vacuum relief valve, drip pan, and pressure and temperature relief valve. Water heater efficiency will comply with ASHRAE 90.1 Local mixing valves for lavatories shall be ASSE 1070 and for showers shall be ASSE 1016 which lower the temperature down further to appropriate levels.

Sanitary System:

A 6-inch sanitary lateral is anticipated for the Hearst Park pool building. Though the plumbing fixture load is not high, the anticipated pool filter backwash flow rates generally have much greater loads. Depending on the invert elevation of the sanitary lateral an ejector pump may be required to remove the sanitary waste from the building. To accommodate the pool filter backwash rate, the ejector pit shall be sized for the filter backwash volume. The ejector pit will hold the incoming waste before being discharged to the public sewer.

The sanitary piping system will collect all building sanitary waste and be piped to a point 5'-0" from the location the pipe exits the building. The civil site utility drawings will indicate the routing of the sanitary system beyond this point. All sanitary waste piping shall be cast iron, either no hub, or hub and spigot. All sewage ejectors shall be connected to the emergency backup power with alarms tying to the BMS. All floor drains will have trap primer connections tying to the nearest cold water branch line.

Each elevator shaft will be provided with a sump pump and oil minder system. The pumps will be sized as per code for 50 GPM per elevator and discharge to the sanitary system. The oil minder system and sump pump shall be supported by the emergency backup power system with all alarms tying back into the BMS.

Storm System:

Green Roof

It is common practice that runoff from the green roof bypass the storm management filtration, coordinated with the civil engineer is required for any additional detention or treatment required outside the building. Green Roof water evaporation and water soil absorption will not be included in the roof drain sizing and piping calculations. The roof drainage system will be sized per code along with secondary storm drainage system implemented as for standard membrane or other roof types. The secondary storm system may be internal rain leaders or scuppers. The same rain intensity of 3.2 inches will be used for the storm water calculations on this project.

Based on the available public sewer and coordination with the civil engineer, the green roof drains shall discharge to the public street main. Condensate drains from mechanical equipment will utilize local condensate pumps or sump pumps before discharging to the building storm drainage.

Natural Gas:

No provisions for Natural Gas services have been made at this time.

Plumbing Fixtures:

All new fixtures will be provided per architectural layout and programming. Plumbing fixtures will be high efficiency, water conserving type and with Water Sense label as required per Green Communities Criteria. ADA fixtures will be provided where required per architectural layout. All hand washing sinks and lavatories will have a Thermostatic Mixing Valve (TMV) installed to reduce the water temperature to 100°F, per ASSE 1070. Recessed wall hydrants with lockable covers will be provided in locker rooms and non-freeze units will be located around the perimeter of the structure. Hose bibs will be placed inside pool



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equipment rooms and near ejector basins for maintenance. Hose bibs and wall hydrants shall be provided with integral vacuum breakers. Floor drains will be provided in all gang toilet rooms and mechanical rooms.

High Efficiency Fixtures:

All water closets will be the wall mounted 1.28 Gallons per Flush water closets and flush valves. All urinals will have the Watersense label and 0.125 Gallons per Flush (GPF). Lavatories will have the Watersense label will be equipped with faucets with flow rates of 0.25 GPM.

FIRE PROTECTION

Fire Protection System:

Requirements for the Fire Protection are still being determined. This section will be updated once the Authority Having Jurisdiction has rendered a determination about Fire Protection requirements for the Pool Building.

CIVIL ENGINEERING:

Stormwater Management:

Stormwater management is necessary for any project proposing more than 5,000 sf of disturbance. The site will be required to meet the Districts latest stormwater management requirements that are in effect. This project per code must retain (store or reuse) the first 1.2" of runoff produced by the site, which equates to the 90 Percentile Storm. Additional retention of stormwater above the 1.2" requirement and up to the 1.7" threshold can be used to produce yearly stormwater credits, these credits can be sold or transferred to other project sites that cannot meet the full stormwater requirement on-site. If the credits are sold a yearly revenue stream can be obtained, the current market rate for one stormwater credit is approximately \$2.00 dollars. For the project site concept plan two stormwater practices have been recommended: Green Roof and Bio-Retention. A green roof has been incorporated on the proposed building. It is recommended that the green roof depth be designed to retain the stormwater runoff volume of 1.7". Bio-retentions have been placed to treat water runoff from the field and pool/tennis facility. Again the size and depth of the bio-retention facilities should be such to retain the 1.7" storm. The project geotechnical evaluation conducted one infiltration boring on site. This boring indicated that infiltration was possible at the project. By adding infiltration design to the bio-retention facilities the project could achieve a higher stormwater retention amount or reduce the size of the facilities over a non-infiltration facility. If infiltration design is requested additional soil borings located at each bio-retention facility will be required.

In addition to on-site stormwater management requirements, developments are required to treat stormwater along their public space frontage to the maximum extent practicable (MEP). Full stormwater management compliance is not expected, but a good faith effort to treat public space stormwater where practicable is required. For the concept plan, street side bio-retention swales and existing/proposed tree credits are recommended to treat the street runoff to the MEP on all public streets fronting the site.

Sediment and Erosion Control:

Sediment and Erosion Control is necessary for any project disturbing 50 sf of land or more. The plan will need to confirm to the latest District sediment and erosion control regulations. Due to the size of the disturbance it is recommended that several different practices be used to reduce, in as much as possible, sediment leaving the site. These practices include but are not limited to, super silt fence, silt fence, stabilized construction entrance, and inlet protection. Upon final design review additional practices may be necessary such as sediment trap, earth dike, temporary stone outlet structure, and swales.

Grading:

The main site is located on a series of stepped terraces that direct stormwater runoff from the north-west portion of the site towards the eastern portions of the site. Good engineering design principles specify that the grading of the site should safely direct water so that it can naturally flow off of the site with no low spots for potential back water and flooding concerns. In addition the general grading scheme of the site should limit the amount grading necessary, in as much as possible the existing grades should be maintained to limit the amount of grading and soil disturbance.

The recommended general grading scheme for the field is achieved by grading the field so that runoff conveys to the perimeter of the field where there will be a series of bio-retention areas which will retain the water prior to the water being conveyed to an existing storm drain system. For the pool/tennis facility grading should convey water to the east towards Idaho Avenue. Retaining walls will be necessary along Quebec Street and 37th Street to facilitate the full project build out. It is recommended to grade the site in such a fashion it limit the height of the walls in as much as possible.

Utility Infrastructure:

The site is currently not served by water, sanitary sewer, gas, electric, or communications. On portions of the site there is an existing storm sewer system. Good engineering design principles specify that the storm sewer and sanitary system connect to the separated system adjacent to the site. By connecting the storm and sanitary to the sep-

arated system the site eliminates some of the potential environmental impacts caused by combined sewer systems. These include sewerage overflows during storm events and reducing the amount of treatment needed by the treatment plant. By separating the storm system the site will also return clean treated storm water to the natural stream system in the area.

For the proposed building it is recommended that the sanitary sewer lateral connect to the separated system located in Quebec Street. Due to the elevation of the building in relation to the street the sanitary waste may need to be pumped up to the sanitary main located in Quebec Street. The water laterals for the proposed building should also be directed to Quebec Street. All stormwater for the proposed building and the pool/tennis facility should be directed to the separated sewer system in Idaho Avenue. All stormwater from the proposed field should be directed to the existing storm drain system. The existing system will be analyzed to ensure that it is sized corrected and can handle the runoff generated by the site.

LANDSCAPE ARCHITECTURE:

The park design will focus around the existing heritage Willow Oak trees and to maintain the park as natural looking as possible. Careful attention has been provided to avoid any grading and/or construction around the critical root zones of these trees. The design intent is to have these magnificent trees flourish as a continued majestic icon of Hearst Park. To this end, the existing concrete paths will be removed and new raised wood paths will be placed further away from the trees. The raised wood paths will be built on narrow footings which will greatly reduce the impact on the existing tree roots. Where the path poses no conflict with the trees, concrete will be utilized.

Site furniture will be distributed throughout the paths as well as along the tennis courts to ensure that visitors have plenty of seating options. Bike racks will be placed at park entrances. A drinking fountain will be placed at the tennis courts and another at the playground. A small picnic area will be situated on the southwest corner of the field. The picnic area will include a grill and two small tables/ chair combinations. All the site furniture will be per the District Department of Parks and Recreation standards.

Bio-retention areas will be located around the soccer field and at the eastern end of the tennis courts. The bio-retention areas will not only serve to capture and treat the run off from the park, but will be used as an educational experience for park visitors as well.



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LANDSCAPE ARCHITECT

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The soccer field will be a high-school regulation size natural turf field. The field will be irrigated. The existing bleachers and backstop will be removed to make way for the field and to reduce the built-clutter of the site.

The existing west and south slopes of the site are covered with undesirable tree species, mainly Ash, Elm and Black Walnut. These trees pose a maintenance and potential safety concern due to their susceptibility to ash borer disease and Dutch elm disease. The design intent is to remove the majority of these trees and replant both slopes with native tree species to establish the slope and bring in new and sustainable canopy trees to the park.

The tennis courts will be replaced with two (2) new regulation tennis courts and a separate practice wall area. A 12 foot fence will be placed around the tennis courts, matching the height of the proposed pool fence. Separating the tennis courts from the pool will be a 6 foot concrete wall with a 10 foot fence on top of the wall. All fences will be vinyl coated chain link fence.

Park entrances will receive a reinvigorated design to enhance the user experience. Along Idaho Avenue, a small decorative paver area with new entryway landscaping will welcome visitors to the park. A similar design is intended for the south entrance along 37th Avenue.

The existing playground directly north of the park will also receive improvements as part of this design. New shade structures will span over a portion of both play areas in addition to several new shade trees. A new tension-rope play structure will be introduced in the 5-12 year play area. The existing wood trellises likewise, will be reconfigured to include opaque roofs to provide additional protection from the elements.

POOL CONSULTANT:

General

The Hearst Park Pool will be designed to meet the needs of the community for the next fifty years. It is important to provide maximum flexibility for programming, which will be the key to maximum utilization.

The Hearst Pool will feature an outdoor lap pool, as described in Section 2. The pool(s) will be constructed of cast-in-place or pneumatically applied concrete. The interior of the pools will be tile & Diamond Brite/Pebble Tec. All loose and deck equipment will be as required by the applicable Health Department Regulations and the requirements of the DPR, i.e., ladders, grab rails, safety ropes and anchors, lifeguard chairs, stanchions, deck anchors, etc. The filtration

system will be a high rate pressure sand system. Miscellaneous maintenance and first aid equipment will be provided that meets the applicable Health Department Regulations. The swimming pool will meet the following performance standards:

1. Overhead lighting: Recreation Pool = 50 foot candles
2. Turnover Rate of Filtration System: Lap Pool = 5.0 Hours
3. Free Chlorine Level = 1.0 to 3.0 ppm
4. pH level = 7.4 - 7.6

Programming:

The outdoor lap pool with dimensions of approximately 75'-1 1/2" x 45' with a minimum depth of 4'-0" and a maximum depth of 6'-7" inches. Five 9'-0" wide lanes will be marked with black floor markers across the pool. A 12" deep roll-out gutter system will be provided around the perimeter of the pool for recirculation of pool water. Wall targets and floor markers will be provided for a competitive race course. Rope anchors will be provided in the pool for floating lane lines. A zero entry for easy entry and exit will also be provided. Equipment to be provided will include (not all inclusive): starting blocks, portable guard stands, pace clocks, handicap lift, maintenance equipment, and safety equipment.

Systems:

Pool shell of cast-in-place or pneumatically applied concrete will be provided depending on the results of the geotechnical investigation, construction staging, cost, and site access. An option to use either method may be included if appropriate for the soil conditions. Different swimming pool contractors use different methods of concrete pool shell construction.

Hydrostatic Relief System:

A means of stabilizing the pool shell when abnormal subsurface hydrostatic pressure occurs will be provided, which otherwise can cause the pool shell to float when the swimming pool is empty. This hazard is minimized if a full basement surrounds the pool tank; however, if the pool walls rest in an unexcavated mass, the danger does exist.

The design of a hydrostatic relief system is usually based upon the predictable levels of the subsurface water table. Because other developments can also create a hazardous situation when the pool is empty, it is important to understand these various dangers and to design a comprehensive system that will prevent destructive forces from developing. Various systems have been developed including automatic check valves, concrete ballast, dehydration systems, refilling systems and gravity drains. The primary issue, as in any preventative action task, is to understand the various kinds of hazard and damage that may occur.

Even a benign water table is not justification to dismiss the potential problem. An unnatural hydrostatic pressure condition can develop if a break occurs in a water pipe in either the fresh water system or the pool water system. This rapid introduction of water into the otherwise "dry" substrata can create an unstable condition for the pool shell. In the case of the fresh water line, the condition can go undetected for months in certain circumstances. For this reason the pool will feature some means of draining the substrata below the pool shell.

In addition to a conventional automatic hydrostatic relief mechanism(s), it is recommended that a sight well be provided in the pool deck, adjacent to filter room or immediately outdoors of the natatorium. Such a feature will allow the visual inspection of the water table under the pool and in the case of the outdoor sight sump, dewatering can be conveniently executed.

Pool Finish:

The interior finish for the outdoor lap pool will be Diamond Brite/Pebble Tec. Specialty tile will be provided for the perimeter tile band, gutter nosing, wall targets, recessed steps, floor lane markings, depth markings, warning signs, and construction joint installation bands.

Deck Signage:

Depth markings and warning signs for the pool deck will be required by code in ceramic tile. Depth markings will be shown in standard and/or metric measurements. "NO DIVING" signs will be provided at all pool areas with a depth of water 5'-0" or less. Depth markers will be provided per code at not more than 25 ft intervals.

Overflow Recirculation Systems:

In modern swimming pools, the purpose of the perimeter overflow system is to receive and capture water at the pool surface. This water is then transferred to the filter plant, either by direct suction connection, or through a surge tank, which helps stabilize the water displacement in the swimming pool. A 12" deep rollout gutter will be installed on the lap pool.. A surge tank will be required for all pools utilizing a gutter system.

Filtration Systems:

The filters will be high rate pressure sand filters operating at a flow rate of up to 15 GPM per square foot of filter area. While many manufacturers rate their system at 20 GPM/sq. ft., field experience has shown that the lower flow rate results in better water quality. The system will be designed to completely turn over the lap pool water every 5.0 hours, the recreation pool water every 3 hours, and the spa every 15 minutes. Filter room and filter face piping will be PVC



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Schedule 80 piping used throughout the pool piping system (8in. or smaller) because of its non-corrosive quality; however, only molded fittings are recommended. All flanges will be reinforced with a steel ring molded into the flange to avoid cracking due to vibration. Heat exchanger by-pass piping will be copper or CPVC

Pumping Equipment:

Horizontally mounted centrifugal pumps will be utilized for all the pool recirculation pump and will be certified by the National Sanitation Foundation (NSF) and bear the certification mark. Pump casing will be cast iron fitted with a replaceable bronze case wear ring. Pump impeller will be enclosed type of cast bronze, statically and dynamically balanced, and trimmed for the specified design conditions. A hair and lint strainer will be provided, for each pump, constructed of fiberglass or epoxy coated stainless steel construction with a clear observation top. Pressure gauges will be installed on the discharge of the pumps and compound gauges will be provided at the intake port of the pumps, after the hair and lint strainer.

Variable Frequency Drive motor starters shall be provided for the pool recirculation pump. These VFD's shall provide the ability to adjust the flow rate of its respective system as well as communicate with the other pool filtration and chemical treatment and monitoring equipment specified.

Piping Systems:

Exposed piping in the filter room and surge tank will be Schedule 80 PVC for strength and resistance to corrosion. All piping below the floor of the pool shell will be encased in concrete and will be Schedule 40 PVC.

All valves will be identified in the filter room. Valves will be described as to their function and referenced in the operating instruction manual and wall mounted piping diagram to be prepared by the contractor. The pool will utilize a combination of floor and wall inlets.

Chemical Treatment Systems:

Sodium Hypochlorite will provide the primary chemical sanitizing for the pools and spa. The halogen requirement of the pools will be automatically monitored and controlled by a chemical controller capable of monitoring 0 to 6 parts per million of chemical and showing Oxidation Reduction Potential (ORP) in addition to the traditional readings of sanitizer and pH.

CO2 will be provided as the pH Buffering System. The CO2 system shall consist of CO2 storage tank(s), a lockable fill box for bulk delivery, a pressure reducing/regulating system, automatic tank changeover

system, a feed and rate of flow adjustment control system, injection or mass transfer system, and all valves, tubing, fittings and appurtenances required for a complete and operable system. The system is to include the following components.

An Ultraviolet Dechloramination and Disinfection System will be provided so that the pool water will be monitored and treated by UV sterilization in the range of 220nm to 400nm to kill bacteria, viruses, molds and their spores and to continuously remove chloramines. The concentration of free chlorine residual will at all times meet the requirements of the Health Department authority having jurisdiction over the swimming pool. Any proposed UV system must have a UL listing on the complete system and be listed under NSF Standard 50.

Water Chemistry Controller:

A programmable chemical automation system will be furnished for the pool for continuous monitoring of water chemistry (ORP/HRR, PPM, pH and Temperature), Langelier Saturation Index, and for automatic control of the chemical feeders, heater, and water level. Installation of the system will be as specified by the manufacturer. A factory-authorized representative will provide training to the owner and the training will be video taped per the specifications. Such a system will not only improve the water quality of the pool, but will also improve the overall environment of the natatorium because of the greater degree of chemical balance of the water. This can result in much less aggressive atmospheric conditions.

A wiring box (pool systems interlock) will be specified as part of the water chemistry controller which will allow either a 4-20 mA or line voltage connection from all respective pool systems (chemical feeders, pool pump motor starters, VFD, filter control panel, pool flow meter sensor, pool heat exchanger, pool HVAC/DH unit). Swimming Pool Contractor will be responsible for electrical connections that are less than 110V line voltage (4-20 mA) and the Electrical Engineer shall call for the line voltage connections from the respective equipment to the wiring box.

Inserts and Anchor Sockets:

- A. Anchors for grab rails and stair railings will be provided.
- B. Anchors for backstroke stanchions will be provided.
- C. Heavy-duty cup anchors for floating lane lines will be provided.
- D. Anchors for starting blocks will be provided.
- E. Anchors for the handicap lift will be provided.

Deck Equipment:

- A. Grab rails and recessed steps for the pool will be provided as required. These will be provided by stainless steel grab-rails set in

chrome plated bronze wedge anchors and escutcheons with set screws. Recessed steps in the pool wall will be provided.

- B. Backstroke and recall rope stanchions will be provided. The backstroke stanchions will be fitted with pennants and the recall stanchions with a rope.

- C. 24" x 32" track start starting platforms will be provided for the pool. These may be removed from the deck when not in use. Diving from the starting platforms should be restricted to supervised practice or competition of athletic teams.

- D. Lifeguard chairs to meet the minimum standards of state regulations will be provided in portable (wheeled) units that may be stored out of the way during periods when lifeguards are not required.

- E. A surge tank access hatch will be furnished and installed over the surge tank. The access hatch will be a single door 2 ft.-6 in. x 2 ft.6 in with 1" fillable pan to receive ceramic tile and grout or concrete deck fill. The frame will be 1/4 inch extruded aluminum with built in neoprene cushion and continuous anchor flange. Door will be 1/4" aluminum plate reinforced with aluminum stiffeners as required.

- F. Surge tank ladder rungs will be 1/2 inch Grade 60 steel encased with co-polymer polypropylene plastic.

- G. Handicap lift(s) will be provided to meet ADA guidelines.

Loose Equipment:

- A. 6" diameter floating lane lines will be provided with an adequate number of storage reels.
- B. Lane line storage reels will be fabricated from a heavy-duty aluminum reel joined together by a 1-1/2 inch aluminum axle. This unit must ride easily on four hard rubber wheels.
- C. 31" octagonal pace clocks will be provided on portable carts with battery power.

Maintenance Equipment:

- A. Wall brush will be a flexible polyethylene material with five (5) rows of nylon bristles. Pool brush holder will be permanent mold cast aluminum with hydrofoil flap.
- B. Skimming net head will consist of one-piece molded plastic frame with a reinforced, integral handle bracket suitable for quick attachment to a standard 1 1/4 or 1 1/2 inch diameter handle using bolts and wing nut.
- C. Adjustable telescopic and stainless steel poles to will be provided.
- D. Testing kit to feature liquid reagents, color comparator, waterproof instructions and treatment charts, chemistry guide and watergram. Test kit to have the ability to test for free and total chlorine (0.5 – 5.0 ppm), bromine (1-10 ppm), pH (7.0 – 8.0), acid and base

- demand, total alkalinity, calcium hardness and cyanuric acid.
- E. A vacuum cleaner will be provided with pump and strainer.
- F. Stainless steel cleaner will be provided.

Safety Equipment:

- A. Ring buoys and extension ropes will be provided.
- B. Life hook and an aluminum extension pole will be provided.
- C. Spineboards will be provided with head immobilizer, head strap, body straps, side roll ups, adhesive strips and required staples.
- D. A first aid kit will be a 24 unit kit per American Red Cross standards as manufactured by Swift First Aid, or equal.
- E. Rescue tubes for each lifeguard chair will be provided.
- F. A safety eye wash station will be a self-contained system in which eyewash bottles are securely positioned in a portable holder. Eyewash bottles will be 32 ounces and easily removable from case, and will contain a sterile, saline solution with the ability to neutralize a varying quantity acids or caustics.
- G. A safety eyeglasses dispenser station containing ten (10) pairs of safety glasses will be provided.



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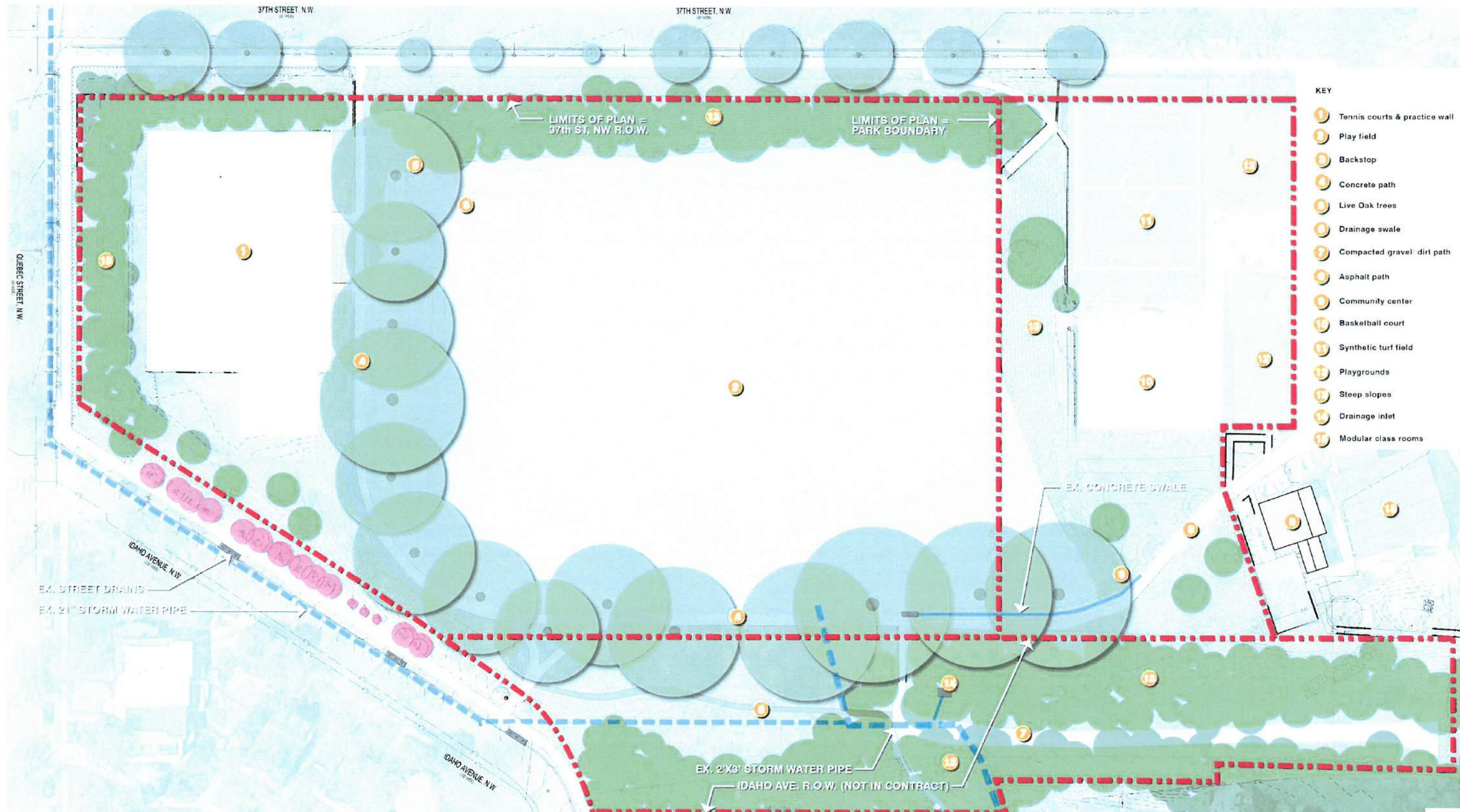
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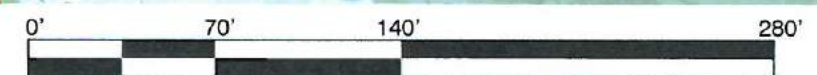
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- KEY**
- 1 Tennis courts & practice wall
 - 2 Play field
 - 3 Backstop
 - 4 Concrete path
 - 5 Live Oak trees
 - 6 Drainage swale
 - 7 Compacted gravel/ dirt path
 - 8 Asphalt path
 - 9 Community center
 - 10 Basketball court
 - 11 Synthetic turf field
 - 12 Playgrounds
 - 13 Steep slopes
 - 14 Drainage inlet
 - 15 Modular class rooms



Existing Conditions Plan

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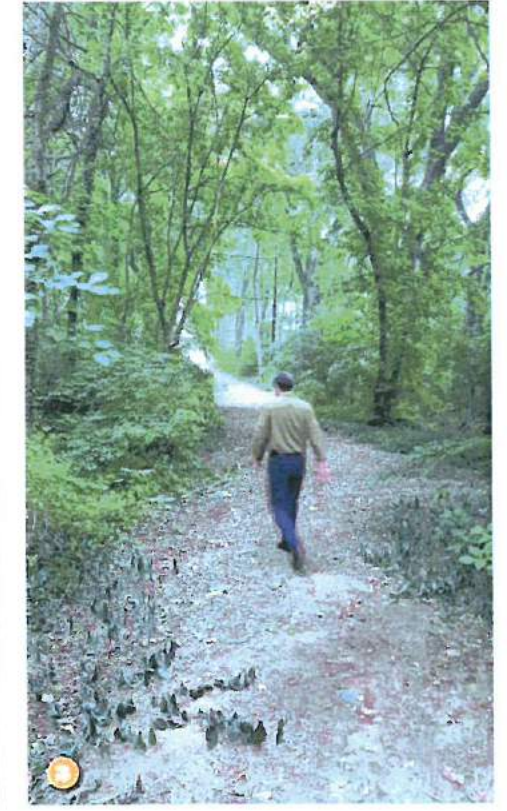
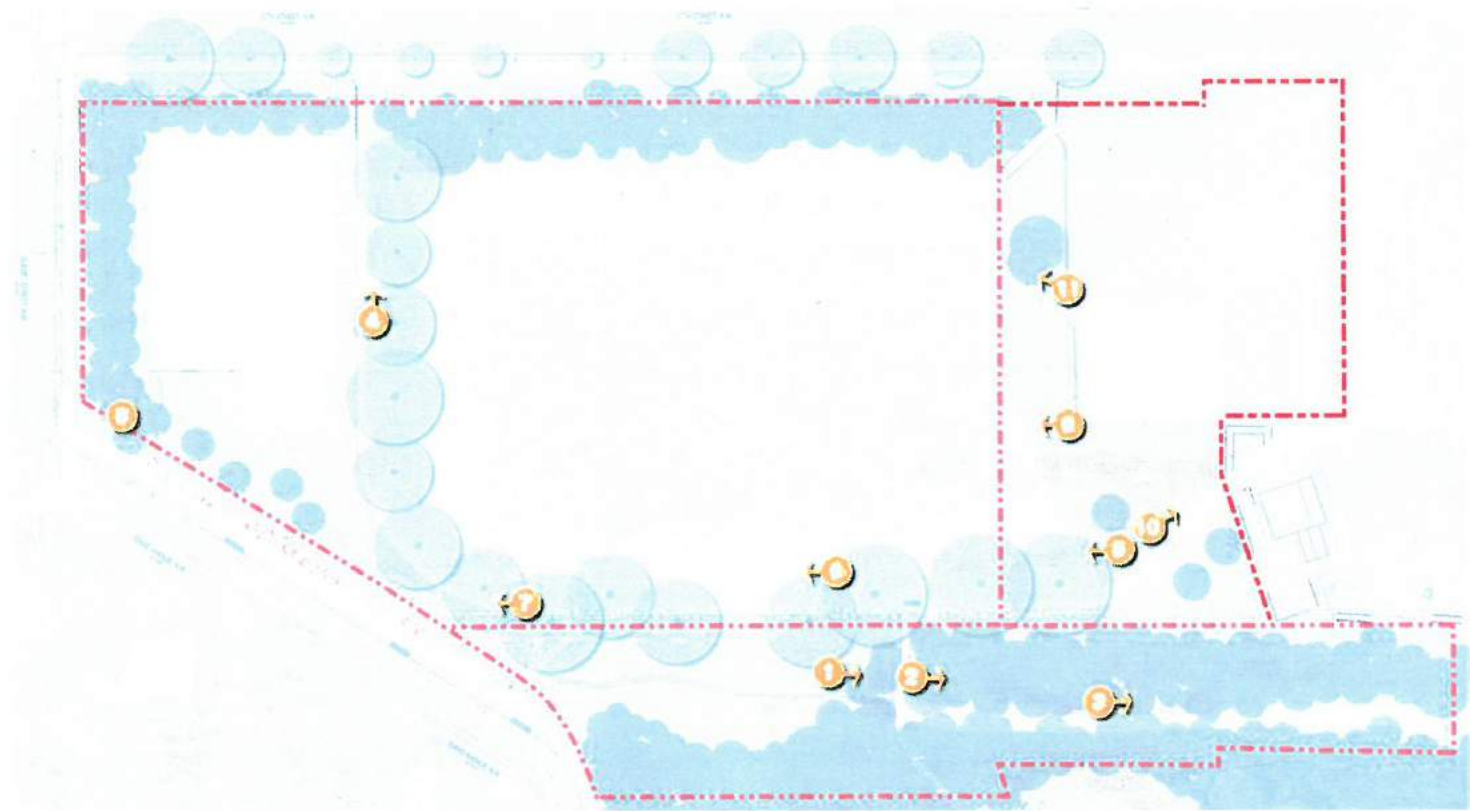


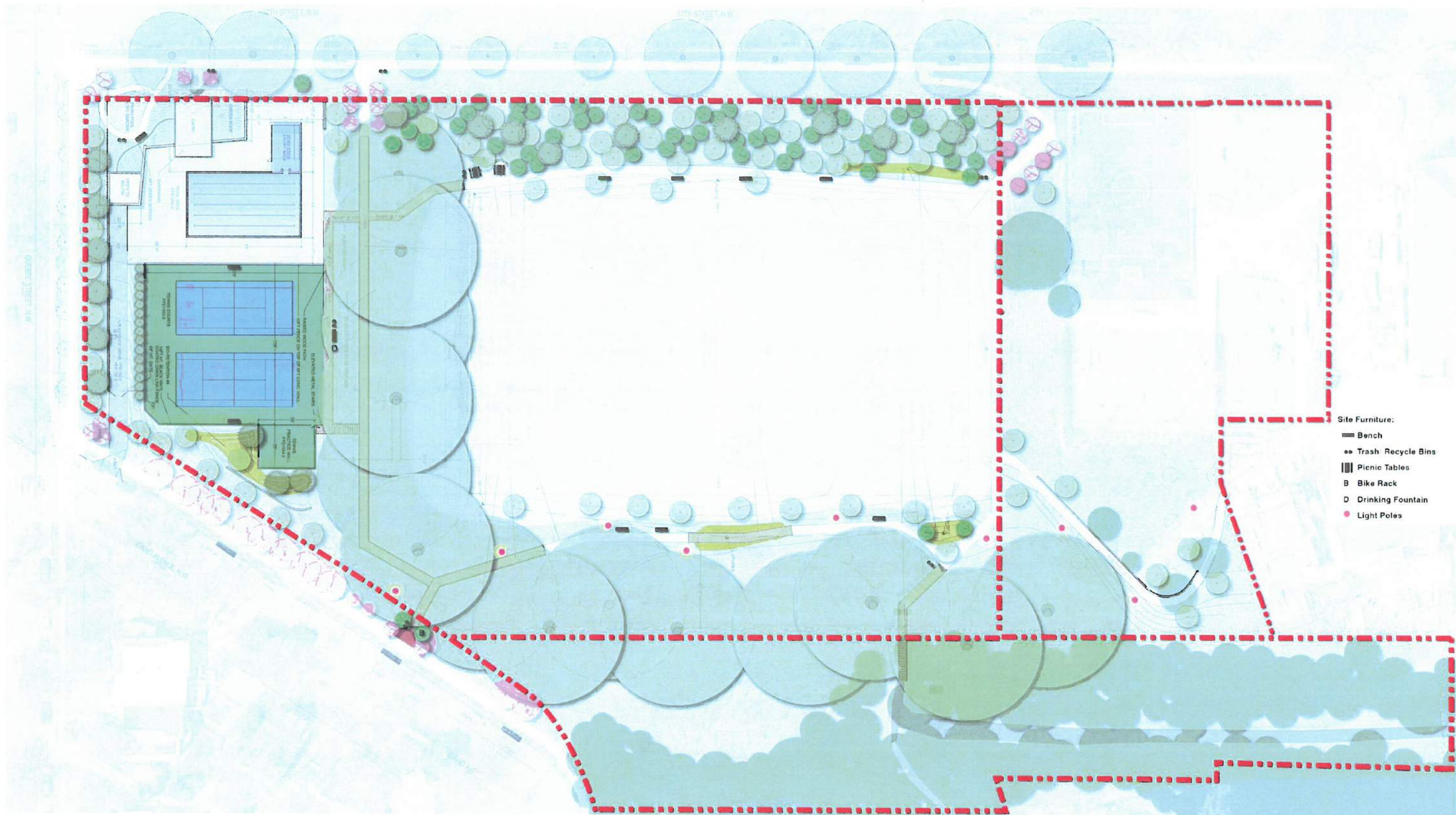
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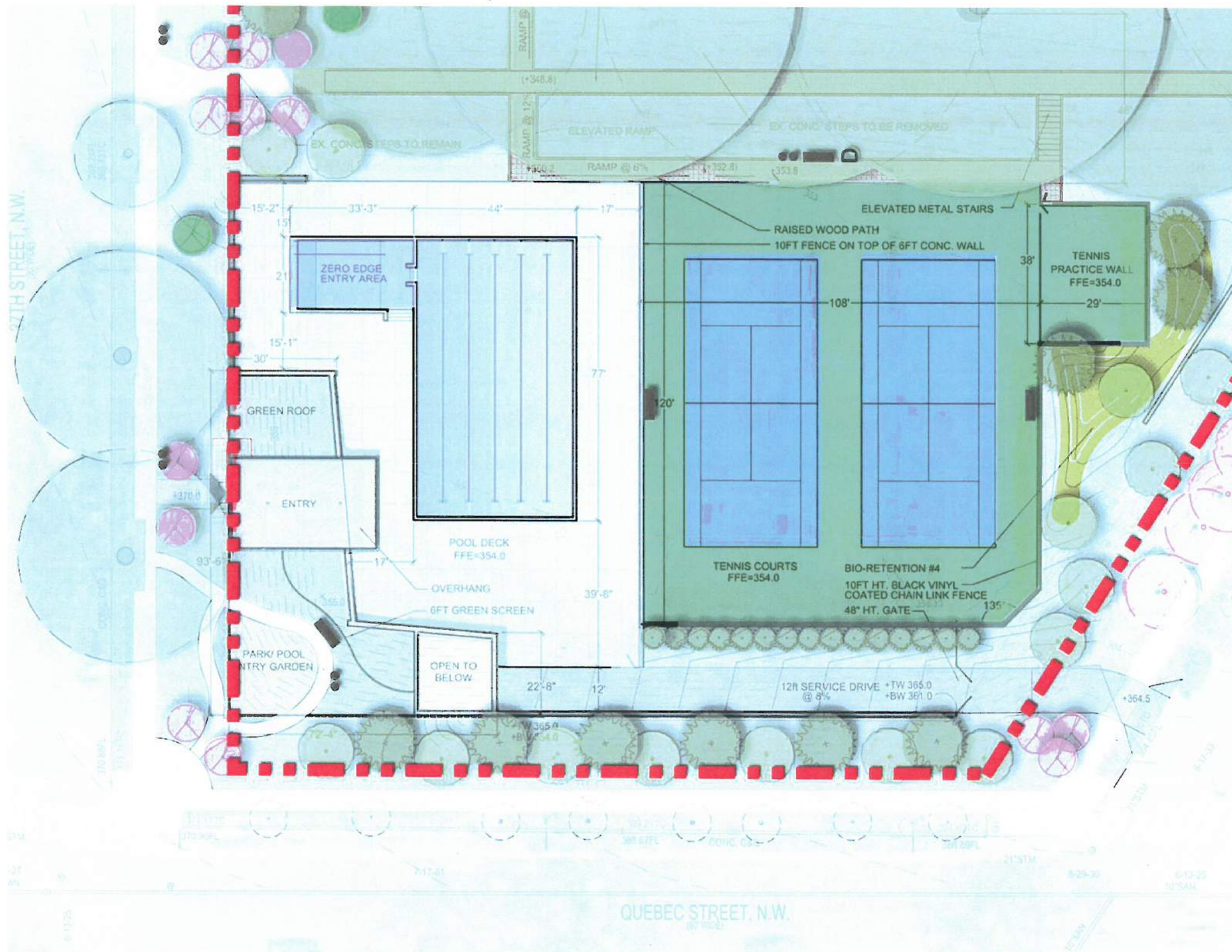
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- Site Furniture:
- Bench
 - Trash Recycle Bins
 - ▢ Picnic Tables
 - B Bike Rack
 - D Drinking Fountain
 - Light Poles





OPPORTUNITIES AND CONSTRAINTS

OPORTUNITIES:

1. Creates an celebratory open space at gateway of neighborhood and park
2. Keeps excavation away from existing heritage trees
3. Provides proximity to drop off and on-street parking for pool users from NW 37th Street
4. Keeps two tennis courts and separate practice wall area
5. Provides a high school regulation size soccer field
6. Utilizes building as a retaining wall on west slope
7. Includes public bathrooms outside of pool building for park users
8. Provides ADA access to pool, bathrooms, and tennis courts
9. Direct access to building from service drive
10. Provides a large bio-retaining area east of the soccer field to capture site run off.
11. Provides a circuitous multi-purpose path around field with benches
12. Provides a picnic area at the southwest side of the soccer field in a shaded area for group gatherings
13. Provides additional plantings on north, south and west slopes for increase visual buffering
14. Enhances overall park usability while maintaining a natural appearance.

CONSTRAINTS:

1. Creates the need for a +/- 15ft tall retaining wall along the south side of the property
2. Increases vehicular use along NW 37th Street
3. Lengthy service drive to reach pool building

