Maryland Stadium Authority

MLS NEXT Pro Multi-Use Soccer Stadium

Preliminary Design Report
May 2025

Moody Nolan

PENDULUM

Organizational Chart

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Introduction

Introduction

On March 12,2024, the Maryland Stadium Authority (MSA) advertised the Request for Proposals for architectural and engineering preliminary design services for a potential future MLS NEXT Pro multi-use soccer stadium in Baltimore, MD. Moody Nolan was selected as the prime architect to lead the preliminary design phase in which two predetermined sites would be studied for the future 7,500 seat stadium capable of expanding to 10,000 seats. The two sites advertised in the Request for Proposal were Carroll Park Golf Course and Swann Park. The scope of the preliminary design phase included the following:

- Preliminary Design (10% to 15% SD)
- Site Development and Planning
- Infrastructure Analysis
- Environmental Impact Analysis
- Archaeological Impact Analysis
- Geotechnical Analysis and Engineering
- Ingress/Egress Impact Analysis: Pedestrian and Vehicular
- Project Scheduling
- Cost Estimating
- Value Engineering
- Quality Assurance
- Assisting MSA with Professional and Technical Service Procurements as requested

Moody Nolan led a team of consultants to perform the scope of work described above. The design team worked closely with the Maryland Stadium Authority and DC United throughout the preliminary design phase, starting with an initial kickoff meeting, and continuing with biweekly progress meetings.

During a project meeting early in the preliminary design phase (July 22, 2024) with Baltimore Gas and Electric (BGE), Moody Nolan and the Maryland Stadium Authority were informed that a project to run an underground electrical transmission line from the Westport substation to the Port Covington substation through the middle of Swann Park was underway and planned to be constructed within the next eighteen months. As a result, the Maryland Stadium Authority reached an agreement with MAG Partners, the developer of Baltimore Peninsula, to change the site from Swann Park to the former Baltimore Sun printing facility located at 300 E McComas St. On August 5, 2024, the Maryland Stadium Authority Board of Directors formally approved the change.

This preliminary design report provides the findings of these studies and various analyses to guide the State of Maryland, DC United and potential future investors in selecting the most appropriate site for the proposed multi-use soccer stadium project.

Nashville SC Training Facility entrance lobby, designed by Moody Nolan

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Preliminary Design Process

Preliminary Design Process

Kick-Off Meeting

Ahead of the kickoff meeting, Moody Nolan met with the Maryland Stadium Authority during a pre-kickoff meeting to go over the agenda and logistics for the kickoff meeting. This kickoff meeting occurred in-person on July 9, 2024 at the office of the Maryland Stadium Authority. Representatives from the Maryland Stadium Authority, DC United, Moody Nolan, Pendulum, the Maryland Office of Tourism, the City of Baltimore, and MAG Partners met throughout the day to go over coordination items, logistics, questions, a project introduction, and project goals.

Predesign Site Analysis

A large portion of the scope of work for the preliminary design phase was to complete numerous existing site analyses. These various site analyses had to be completed early on so that any results that would affect the conceptual design of the stadium could be taken into consideration. Please refer to the specific site section in this report for a more detailed narrative description of each analysis.

Infrastructure Analysis

Carroll Engineering analyzed the existing site documents available to identify the extent of on-site utilities for both sites.

Environmental Impact Analysis

DMY Engineering performed a Phase 1 Environmental Site Assessment for both sites under consideration.

Archaeological Impact Analysis

Applied Archaeology and History Associates performed a Phase 1A Archaeological Assessment for both sites.

Geotechnical Analysis and Engineering

DMY Engineering completed geotechnical explorations consisting of five borings on each site.

Ingress/Egress Impact Analysis

Symmetra performed a preliminary traffic assessment of on-site traffic conditions based on each site's capacity and the expected amount of traffic entering and exiting the site.

Needs Assessment

The needs assessment phase laid the groundwork for designing a state-of-the-art MLS NEXT Pro Soccer Stadium and Training Facility, purpose-built to serve as a critical bridge between the youth academy and Major League Soccer (MLS) first teams. Through extensive interviews with key stakeholders, including DC United and the Maryland Stadium Authority (MSA), the project team identified the project's primary goal: to create a professional-grade environment where local youth talent can gain invaluable experience competing at the NEXT Pro level, preparing them for the demands of MLS. Additionally, the team recognized the need to investigate the integration of complementary uses, including hosting other home teams, concerts, and additional sports events, to maximize the facility's functionality and community impact. This phase highlighted the importance of training facilities, flexible multi-use spaces, and a stadium atmosphere that mirrors professional standards. By addressing these needs, the program ensures that the facility develops future MLS stars and becomes a vibrant hub for diverse events, fostering stronger connections between the club, its community, and the next generation of players. During this phase, we completed the following:

Stakeholder Interviews

These discussions revealed several key needs, such as creating a facility that bridges the developmental gap between youth academies and MLS first teams in addition to offering players a environment to refine their skills and gain valuable competition experience. Stakeholders highlighted general challenges, including optimizing training schedules to balance youth development and team performance, ensuring the facility supports year-round use, and integrating modern technologies for player analysis and recovery. Additionally, challenges related to facility operations, such as designing spaces that can accommodate multiple teams of different genders, providing flexible spectator engagement, and generating revenue through multi-use capabilities like hosting concerts and community events, were thoroughly explored. These insights formed the foundation for a targeted approach to creating a facility that addresses the team's unique needs while supporting long-term operational success.

Site Visits

The design team met with DC United to tour their existing team training facility and MLS Stadium. The team also visited other NEXT Pro training facilities and stadiums.

Programming

During this prelimnary design phase, the design team established a base program and expanded program for the MLS NEXT Pro Stadium and Training Facility by gathering detailed information about the project's needs and goals. Functional requirements were established and the relationship between spaces were defined. Important quantitative parameters have been set moving into the schematic design phase. Essentially laying the groundwork for the design decisions to be made later on. Key elements include site analysis, user interviews, space needs analysis, and adjacency diagrams were presented and discussed.

The design team met biweekly with MSA and DC United to establish the space and staffing needs of the Training Facility. In addition, the Stadium building program was developed and refined with valuable input provided by DC United given their experience managing Audi Field. The design team documented the program through a formulized written program narrative supported by a spreadsheet identifying square footage takeoffs. Please refer to appenxdix f for these documents. The process of developing the program consisted of the following steps:

Formalized Written Program and Space Diagrams

The team met with DC United representatives, consultants and the Maryland Stadium Authority (MSA) on a biweekly basis to review further and refine the information in the needs assessment phase.

Stadium Programming

The MLS has not formalized the space requirements of a NEXT Pro Soccer Stadium with the seating capacity of 7,500 to 12,000 seats. Therefore, the design team documented, itemized and reviewed the requirements expected of a first team MLS stadium. The design team along with DC United honed the stadium program to define the space needs of a smaller venue while keeping the fan and team experience at a high level. Also identified was the need to create a flexible venue that appealed to other sports, concerts and community events. A written program narrative was created that defined the needs of the spectator spaces, front of house offices, team back of house, and building operations as well as the adjacencies, and major equipment needs of the stadium.

Training Facility Programming

Concurrently the design team discussed with DC United the space requirements expected of a facility that is focused on providing daily training for the NEXT Pro team. A written narrative was developed identifying the training, nutrition, education and staffing for a NEXT Pro Team. The team also considered the needs of a women's professional soccer team when developing the training facility program.

When comparing the stadium and training programs side by side, the team began to identify redundancies with the two facilities spaces that could be shared or optimized. During this phase the team continued developing the working spreadsheet and narrative, blending the space needs of both to define the space requirements, anticipated staffing and programming adjacencies. The programming spreadsheet and narrative defined furniture, staffing and equipment. Consideration was given to the square footage of support spaces, structural, circulation, and mechanical requirements that contribute to the total building area. The design team also identified spaces that could perform multiple functions to expand the use of the facility beyond sporting events. Clubs, conference rooms and event spaces were earmarked with flexible uses and adjacencies to be utilized by outside entities as a revenue stream. Team spaces such as locker rooms and training areas are identified and sized to be used by multiple teams. The practice field with its small pavilion can be used as a stand-alone space, making it ideal for use by local community groups.

After site visits to the DC United training complex and stadium, the design team finalized the program. The final programming documents serve as a basis for the site studies, preliminary design and budgeting. These program documents will serve as the roadmap for furthering the conceptual design and ultimately the construction documentation.

Stadium event parking and staff and player parking requirements were identified and illustrated for each site incorporating traffic flow input from consultants

Bubble Adjacency Diagrams
Utilizing the program document, the team developed a series of scaled adjacency diagrams that communicate the organization flow and functionality of the project for each site. A series of options were developed to identify the configuration for the building on each of the proposed project sites. These diagrams were presented to validate the building program. Adjustments were made to the diagram and program based on the feedback we received. The process bubble diagram can be found in appendix g.

Concept Planning

Once the initial predesign site analyses, needs assessment, and programming activities were complete, the design team began test-fitting initial concepts on each site. The design team studied many iterations taking into consideration the orientation of the pitch and the location of parking on site.

Based on the information provided by DC United during the needs assessment portion of the project, the team provided multiple options to be priced by the cost estimator for each site. The approach was to break the building program into a base program and expanded program and have the cost estimator provide pricing for two (2) add alternates. To clarify, the program indicates Gross Square Footage (GSF) which can include open air space which is partially enclosed, seating areas, or internal spaces such as locker rooms, restrooms, concessions, and offices.

Base Program:

217,120 GSF (includes conditioned areas, stadium concourse, and 7,500 seats) + 161,800 GSF (2 artificial turf fields) = 378,920 GSF

Expanded Program:
230,866 GSF (includes conditioned areas, stadium concourse, and 7,500 seats) + 161,800 GSF (2 artificial turf fields) = 392,666 GSF

* The extra 13,746 GSF of conditioned space includes additional home and visitor team locker rooms, officials locker rooms, public restrooms, home team treatment, hydrotherapy, and training rooms, and equipment manager spaces at the practice pitch. It also includes additional administration offices for a second home team, and the academy/ community center.*

Please note that the size of the stadium remains 7,500 seats regardless of whether the base program or expanded program is accepted. Refer to Figure 1.

Alternate #1:
4,500 additional stadium seats (12,000 total) + 13,286 GSF of concessions and restrooms (required by code due to additional seats).

Refer to Figure 2.

Alternate #2:
(dependent on acceptance of Alternate #1)
Canopy over East and North grandstands (34,875 GSF)

By organizing the program this way, it allows the stakeholders to consider (6) options for each site and understand the cost implication of each option:

- Option 1: Base Program

  Refer to diagrams in appendix g

- Option 2: Expanded Program
- Option 3: Base Program + Alternate #1
- Option 4: Base Program + Alternate #1 + Alternate #2
- Option 5: Expanded Program + Alternate #1
- Option 6: Expanded Program + Alternate #1 + Alternate #2

Refer to diagrams in appendix g

As previously mentioned, DC United communicated to the design team that this facility would primarily serve the DC United MLS NEXT Pro men's team and a women's USL Super League 1 team. They expressed an interest

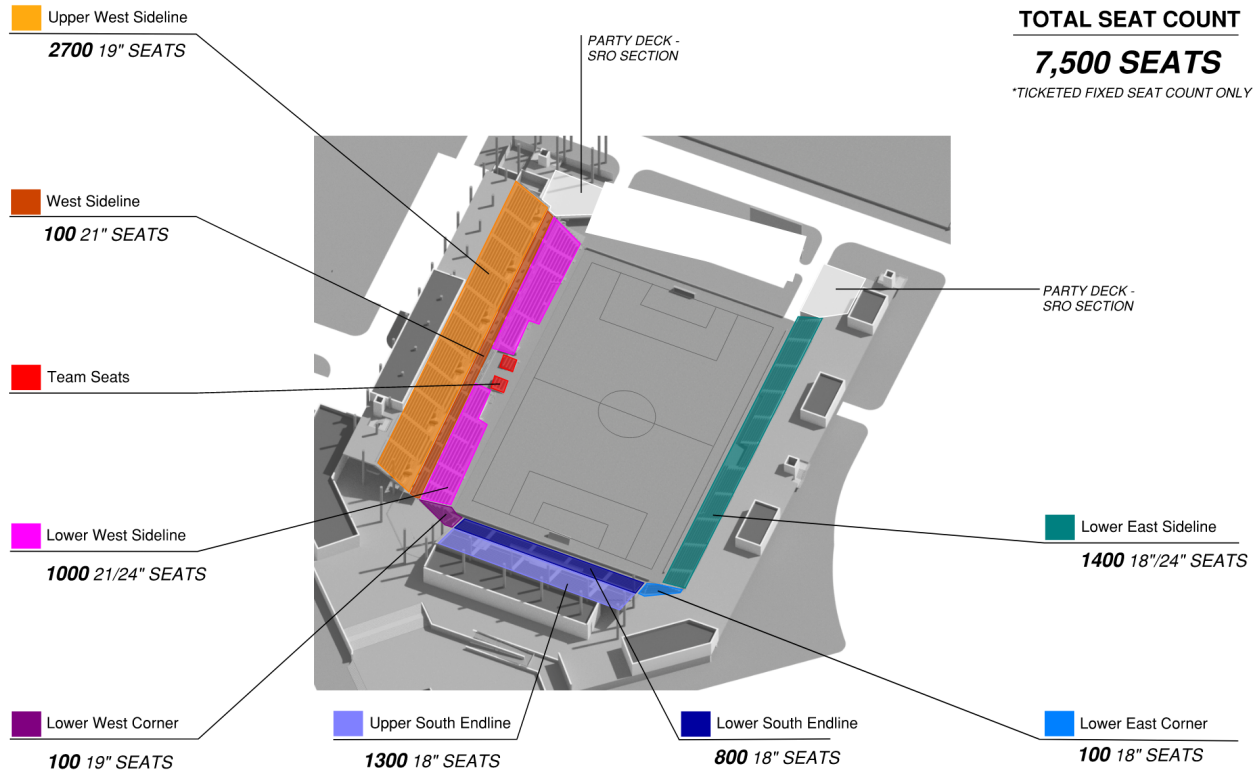

Figure 1: Axonometric diagram of 7,500 seat stadium

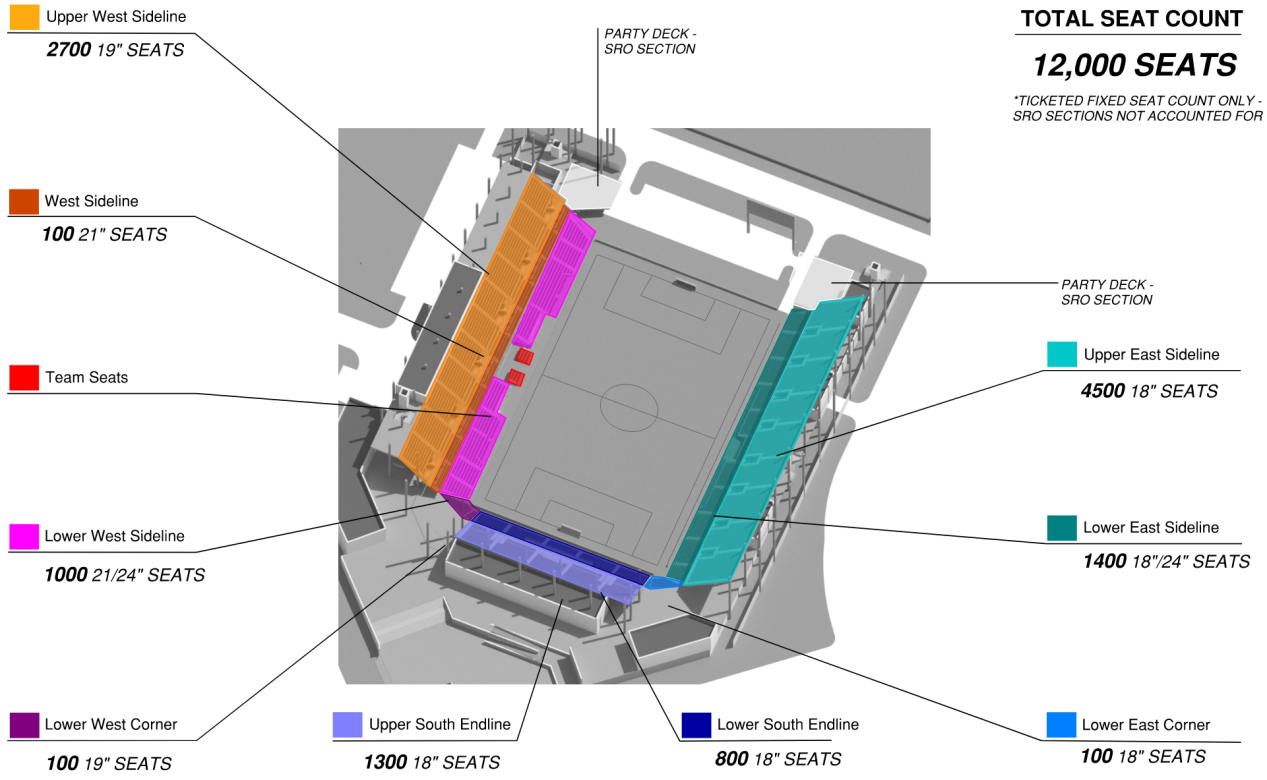

Figure 2: Axonometric diagram of 12,000 seat stadium

in studying whether their youth academy program would fit on each site which is why the program is broken down into a base and expanded version. The expanded program takes into consideration the spatial needs of accomodating the youth academy program, while the base is strictly intended to be a stadium to play home matches and a practice facility to train for the two primary teams.

Given the rapid growth of women's soccer, DC United requested the design team to study how many seats could fit on each site and quantify the price of increasing the capacity of the stadium. Alternate #1 addresses this request by providing an approximate cost of adding 4,500 seats and the associated concessions and restrooms required by code. By providing this cost as a separate line item, the stakeholders can begin to get a rough understanding of how much it would cost to increase the stadium capacity at certain increments.

The overall design approach for the stadium was consistent for both sites. The overall strategy was to raise the main concourse a level so that the lower bowl seating is accessed by walking down from the main concourse. This approach requires stairs and an accessible ramp outside the main entries to get up to the main concourse level. There are multiple benefits to this strategy:

1. Provides an opportunity to create a plaza that not only serves as an entrance to the stadium on gamedays, but also serves as an active community asset on non-gameday's.
2. Allows for a clean separation between the private and service-related programmatic elements (below main concourse) from the public spaces (at main concourse level and above).
3. Allows visibility from the concourse to the pitch on three of four sides, so fans can circulate and not miss any of the game action.
4. Minimizes costly excavation that could also result in environmental remediation.

Most of the premium seating options would be located along the West sideline, including premium sideline seats, club seats and suites on the main concourse level. Above would be the West grandstand, accessible by stairs from the main concourse. A supporter section with fixed drink rails and no fixed seats would be located behind the south goal, with standing room only party decks on either side in the corners, and general admission seating will be provided behind the north goal. The location of the program supporting the stadium is based on-site conditions and will be explained in further detail in the site-specific section of this report.


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Carroll Park Golf Course Site

Carroll Park Golf Course Site
a. Existing Conditions

One of the sites studied during this prelimnary design phase was Carroll Park Golf Course, one of Baltimore's "Historic Five" public courses. The general area around the site is densely developed and highly industrial. For the sake of this narrative, the Washington Blvd frontage shall be designated as the eastern side. The site allotted is roughly "L" shaped with one leg running north-south and the bottom leg running east-west (see Figure 3). Overall, the site is approximately 60 acres. Roughly one-third of the lower portion of the site is within the flood plain of the Gwynn's Falls which exists on the south and a portion of the west side of the property. Along the remaining west side and a portion of the north side is an active rail line. The "L" shaped lot is surrounded by private property which creates a partial northern and eastern boundary.

Based on the Baltimore City GIS, the site has some significant grades. There is a hillock in the northwest corner, the top of which is listed at elevation(el) +78. From there, grade falls in all directions to el +44 near the northeast corner and to el +40 along the southern edge before it drops off into the Gwynns Falls. The existing site entrance is at approximately el 34 (refer to appendix a).

The site is zoned OS, which is an Open Space Zoning District designed to "enhance the quality of life for City residents by permanently preserving public open space as an important public asset and critical environmental feature." It should be noted that this is a State project and typically those are not subject to local zoning requirements. However, the following information is offered:

Permitted Use and Setbacks
The OS does not specify a stadium as an allowed use but does list "Recreation Indoor" as a conditional use and "Recreation Outdoor" as a permitted use. "Government Facilities" are also a permitted use. Setbacks are noted to be twenty (20) feet on the front and corner sides and twenty-five (25) feet on the rear and interior sides. On the north side, the railroad tracks will require a 50' building setback and a negotiated parking setback. Building heights are limited to fifty (50) feet for public primary structures or thirty-five (35) feet for private primary structures.

Parking
Parking for a stadium is listed as 1 space per 10 persons of fire-rated capacity. The various uses inside the building shall be calculated separately and added thereto. However, per the "Market, Site Fit and Economic Impact Analysis" report conducted by Crossroads Consulting and Populous, this project shall assume a ratio of 1 space per 3 persons. A certain amount of bicycle parking, both interior and exterior, will also be required.

Loading
A minimum of one (1) off-street loading space will be required which may not be in a front yard.

Utilities
Water
Baltimore City plans show a 20" water line in Washington Blvd. which feeds an existing 3" meter for the golf course. The water main will likely be adequate but the hose connection, meter, and vault will require upgrading to a minimum of 4" domestic and 8" fire.

Sanitary
Baltimore City plans show an existing 27" gravity sanitary sewer and a 78" sanitary pressure sewer along the southern edge of the site roughly following the alignment of the Gwynns Falls. The exact size and location of the easement for those lines will need to be determined upon site boundary and topo survey. It is anticipated proposed development will be able to discharge to the gravity line. An older city plan indicates a 12" sanitary connection to the adjacent building which runs across the site. This would require verification and, if it is active, relocation and a brief shutoff at that building for changeover. There are existing mains as described but new connections to the existing mains would be required.

Electrical
Old City plans also show large electric lines through the site however, plans provided by BGE show lines only in Washington Blvd. The possible existence of a BGE easement shall be confirmed in the next phase along with the existence of any active lines. Although BGE does not typically extinguish easements once they have them, if there are no active lines, MSA may very likely be able to secure permission to construct within the easement.

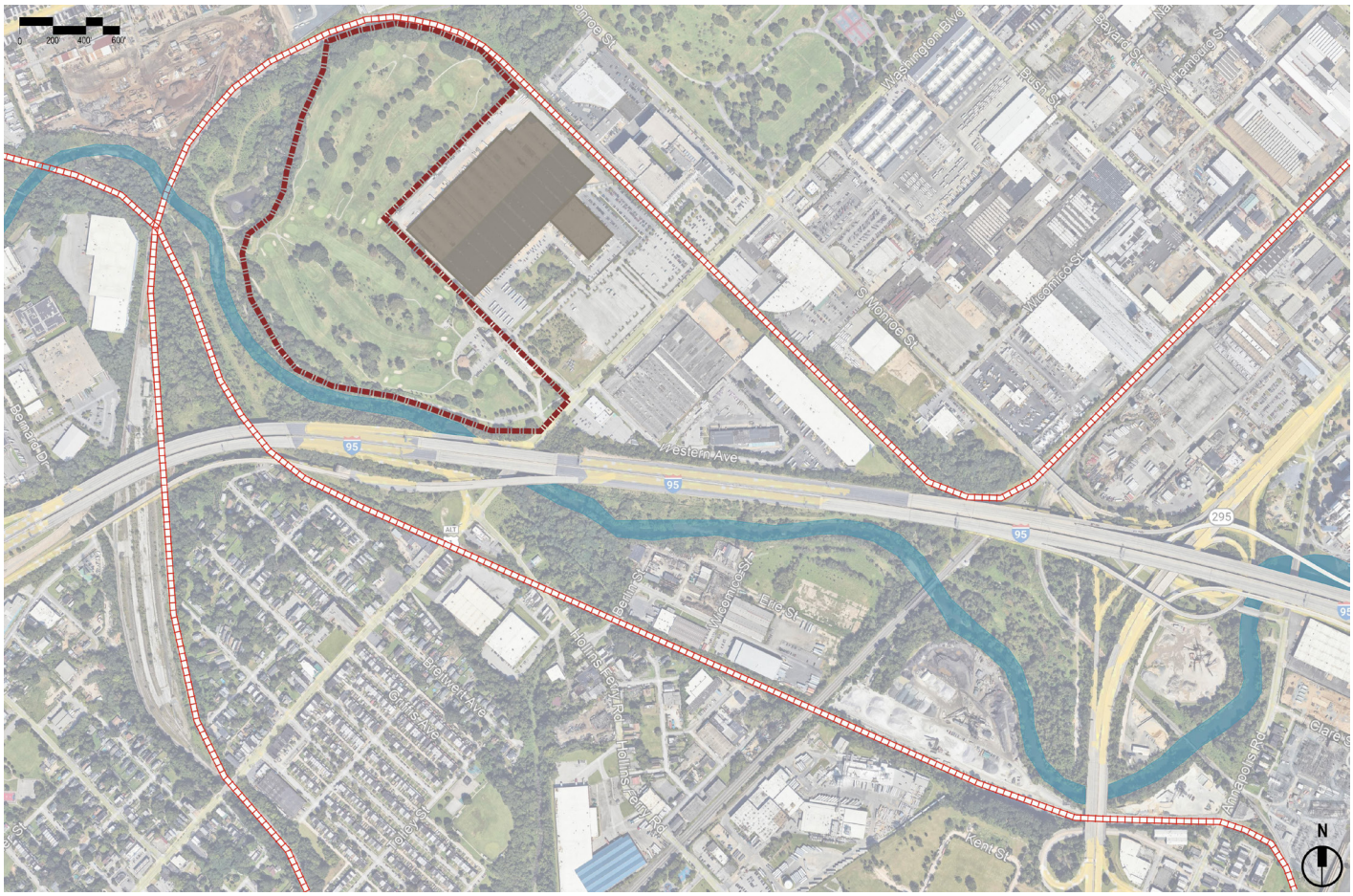

Figure 3: Carroll Park Golf Course site diagram, illustrating the existing surroundings.

Base map from https://www.google.com/maps

SWM and Storm Drains

The City plans show existing storm drain (SD) lines in Washington Blvd. The project will include all new SD connections in conjunction with new grading and new Storm Water Management (SWM) which will need to meet current regulations. There may be suitable outfalls for the system in nearby manholes or in the Gwynns Falls.

SWM will be required for both Quantity and Quality treatment for the site along with 100-year storm attenuation which is required in the Gwynns Fall watershed. Review and approval will be by the Maryland Department of the Environment (MDE). It likely will be classified as "new development" thereby requiring 100% treatment of impervious area. Preliminarily the system will likely be a hybrid of surface and underground treatment with storage underground. Any fields that are not natural turf will be considered as impervious areas.

A more cost-effective system could include larger devices such as Submerged Gravel Wetlands which would fit well near the waterway. These devices can take much larger tributary areas but also take up much more surface area on the site thereby impacting the amount of parking that can be achieved.

The size of the site will require that it comply with the afforestation regulations of the Maryland Department of Natural Resources (DNR) and possibly, with the Baltimore City Landscape Design Manual. Given the plans for the site, it is likely that this compliance will be sought by fee-in-lieu or off-site planting. Landscaping will be planned for in the green areas shown and trees along the Washington Blvd frontage in sidewalk pits. Screening by way of tree planting is recommended between the subject site and the industrial building on the adjacent site.

Carroll Park Golf Course Site
b. Geotechnical Impacts and Structural Recommendations

Based on the geotechnical explorations and evaluations, the recommendations for the foundation types at the Carroll Park Golf Course Site are as follows:

Considering the subsurface condition based on the limited geotechnical investigation, the geology of the site, the preliminary anticipated structural loading, our preliminary engineering analyses and discussions below, it is recommended either Option 1 Driven Piles or Option 3 Shallow Foundations Over Ground Improvement be considered for this preliminary design phase. Other foundation systems including auger-cast in place piles were considered. These piles typically rely on skin friction for the capacity and validated by load testing. End bearing is typically neglected.

All below-grade walls should be designed to withstand lateral earth pressures and any surcharge loads from the adjacent traffic load from the street and the parking lot. The below-grade walls should also be designed to withstand any applicable hydrostatic pressure unless an appropriate drainage system is installed to effectively eliminate hydrostatic pressures behind the walls.

Selecting the right foundation system for a structure depends on the final structural loads, soil conditions, and construction constraints such as proximity to nearby structures. The final foundation type will be selected in the next phase of the project after the site selection is finalized and a full geotechnical investigation is performed.

Please refer to appendix D for the full preliminary geotechnical engineering report.

Slab-on-Grade
The slab-on-grade is anticipated to be 5”- 6” thick concrete on structural fill reinforced with 6x6-W4.0xW4.0 W.W.F. or with #3@12” o/c.

Concourse Level: Concrete Framing
The concourse level is anticipated to be framed with concrete columns resting on the foundation and supporting the upper-level steel columns for the grandstands. The framing system is assumed to be based on a max center-to-center column spacing of 30’-0”. For this column spacing, the size of the columns is assumed to range from 24”x24” to 30”x30”. Column sizes may decrease if max center-to-center spacing is reduced.

The floor slab is anticipated to be conventionally reinforced concrete slab with drop panels. The slab shall be 10” thick with 12’-0”x12’-0”x8” or 10” deep drop panels. There may be continuous drop panels of 8” thick at columns with higher loads or larger spans exceeding 30’-0”, if required. Alternatively, it could be 12”-14” thick concrete flat slab with thicker continuous portions as required for larger spans or higher loads.

Grandstand and Canopy: Steel Framing
The grandstand is planned to consist of seats comprising of SPS, Dant Clayton (or equivalent) system supported on steel raker beams spanning and framing over steel columns. There will be mechanical, press or other areas that would require horizontal floors and/or roofs, which will consist of 3” deck with 4.5” normal-weight concrete, supported by composite steel beams. The steel columns framing the grandstands are assumed to continue and align with the concrete columns or shear walls in the concourse level below.

The steel columns at the rear of the grandstands will extend to support the canopy. The main girders will be built-up members to be tapered as required, while the canopy itself will consist of 3” metal deck supported by filler beams at 10’-0” spacing. To enable the canopy to cantilever over and protect the seating areas, the columns are anticipated to be trussed-up vertical members or built-up sections. Some tension members or anchor members may be required to provide enough back-span anchorage to control deflections.

Lateral System
The lateral system for the concourse level is anticipated to consist of concrete shear walls and concrete and/or concrete moment frames. The shear walls would be the 10”-12” thick while the moment frame members could be 24” deep beams framing into the columns described above. In the grandstand structure above, the lateral system will consist of steel concentrically braced frames and/or steel moment frames. The steel columns, rakers and beams described above will comprise the moment frame elements, with braces included as required in some bays.

Design Loads
The following are the basic design loads for the project:

Design Live Loads

- Snow on roofs: 30 psf min (25 psf + snow drift)
- Amenity, Concessions: 40 psf
- Seating: 100 psf:
- Stairs and Corridors: 100 psf
- MEP, Storage, Service, Trash: 150 psf
- Loading Area: 250 psf

Lateral Loadings

- Seismic Loading: per IBC, 2015 (2017 DC Building Code)
- Wind Loading: per IBC, 2015, 115 mph basic wind speed (2017 DC Building Code)

Materials

Concrete

Minimum Ultimate Compressive Strength at 28 Days:

- Elevated Slab: 5,000–8,000 psi
- Concrete Columns: 4,000–6,000 psi
- Slab-on-grade: 5,000 psi
- Drilled Shaft, Piles: 4,000 psi

All concrete exposed to weather shall be air-entrained 6%±1%.

Reinforcing Steel

Reinforcing bars shall be deformed billet steel conforming to ASTM A615, Grade 60. Welded wire fabric shall conform to ASTM A-185.

Structural Steel

All miscellaneous steel such as plates, angles and channels shall conform to ASTM-A36

Fy = 36ksi. Steel beams and columns (W sections) shall conform to ASTM-A992 Fy = 50ksi. Built-up sections shall be ASTM-A572, Fy = 50 ksi steel.

Masonry

Hollow and solid CMU: ASTM C90 Type 1 (f'm=1,500 psi)

Mortar: ASTM C270 Type M for below grade, Type S for all others.

Grout: ASTM C476 (f'm=2500 psi)

Deformed Bars: ASTM A615, Grade 60

Cold Formed Metal Framing

Metal stud wall framing: ASTM A525 (fy=50 ksi)

Carroll Park Golf Course Site
c. Environmental Impacts

The subject Property is an approximate 60 acre, 9-hole golf course, containing a golf Club House and four (4) associated support structures. The golf course was originally constructed circa 1923 and may have been previously developed with at least one (1) dwelling prior to 1923. The subject Property contains two (2) tenants, the City of Baltimore Department of General Services which maintains and runs the golf course and several associated structures, and the City of Baltimore Recreation and Parks Department which utilizes several storage units and maintains a small office on the subject Property. The subject Property is located on the northern side of Washington Boulevard and Interstate 95, on the eastern side of Gwynns Falls creek, on the southern side of the BandO Railroad, within the Carroll Park neighborhood of the City of Baltimore, Maryland. According to tax records, the subject Property contains the physical address: 2100 Washington Boulevard (Parcel Id No. 073 001); however, the tax address for the subject Property is 1500 Washington Boulevard and owed by the Mayor and City Council of Baltimore. The Phase I Environmental Site Assessment (ESA) was conducted in general conformance with the Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Standard Practice, as defined by the American Society for Testing and Materials (ASTM), Designation E1527-21.

Identified Environmental Items and Conditions

The Phase 1 ESA identified several environmental items and conditions during the assessment for Carroll Park Golf Course.

Aboveground Storage Tanks

The environmental assessment of the subject Property identified a total of eight (8) petroleum Aboveground Storage Tanks (ASTs) ranging in size from 250 gallons to 1,000 gallons. The ASTs are used and operated by both City of Baltimore tenants of the subject Property. The golf course owns and operates five (5) ASTs, and the Recreation and Parks Office owns and operates three (3) ASTs. Most of the ASTs did not have secondary containment and a spill compliance plan has not been completed. Although most of the ASTs did not have secondary containment, they were overall in good condition. The existence of these tanks on the subject Property is considered a Business Environmental Risk (BER).

Historical Underground Storage Tank (UST) and Leaking Tank Cases

Historically, there have been two (2) historical Maryland Department of the Environment (MDE) Oil Control Program (OCP) leaking tank cases reported for the subject Property; OCP Case No. 99-2867BC1 opened on May 28, 1999, and closed on March 20, 2000, was associated with the closure and removal of a 2,000-gallon gasoline UST in December 1998, and OCP Case No. 00-1938BC1 opened on May 23, 2000 and closed on June 4, 2001 and was associated with the closure and removal of a former 2,000-gallon heating oil UST in May 2000 from the subject Property. According to the MDE, minor soil contamination was associated with both closed UST systems; however, they did not exceed the action level criteria of the MDE and were granted case closures. The former MDE OCP cases identified for the subject Property are considered Historical Recognized Environmental Conditions (HRECs).

Used Vehicle Tire Storage

A large pile of vehicle tires, approximately 50 was observed staged on the northern exterior side of the Recreation and Parks Office. The tires are believed to be associated with the Recreation and Parks vehicle maintenance activities and not from the golf course activities. The tires appear to be spent and are no longer of use. The staging of these tires in such quantity is considered a BER.

Petroleum Staining

During the environmental assessment, the floor of the maintenance shop was observed to be moderately stained with petroleum products. However, none of the stains noted appeared to be significant environmental concern at this time and all appear to be de minimis in nature.

Older Fluorescent Light Ballast

The subject Property was built in the early to mid-20th Century and contained numerous fluorescent lighting fixtures of various ages and installation dates. Fluorescent light ballasts manufactured prior to 1979 may contain small quantities of PCBs. Due to access limitations, the light ballasts were not examined for labels identifying their potential PCB content;

however, due to age of the structures, they may potentially be PCB-containing. In addition, fluorescent light tubes utilized by the fluorescent light ballast may contain low concentrations of mercury that may classify them as a hazardous waste and must be disposed of as a Universal Waste. The existence of these items at the subject Property is considered a BER.

Potential Asbestos-Containing Materials (ACMs) and Lead-Based Paint (LBP)

Based on the age of the structures on the subject Property (1923 and 1971), ACMs and LBPs may be present. Based solely on the age of the structures, the older finishes and coverings may potentially contain ACMs and LBPs, and may be present in areas that have been covered or are otherwise not visually apparent. On the rear exterior of Recreation and Parks Office Building, an area of transite siding (a potentially asbestos-containing cement board product) was observed. Transite was used as a popular building product from the late 1920s through early 1980s when it was phased out. Although not a REC,ACMs and LBP materials should be properly managed, if present. The existence of the suspect ACM material and age of the structures is considered a non-ASTM Scope Finding.

Environmental Findings and Recommendations

The findings of Phase I ESA identified no current regulatory violation files or citations for the subject Property. Historically, there has been 11 environmental records identified on government database and Maryland MDE FOIA file reviews at the subject Property. In addition, several neighboring properties were identified during the assessment as having historical environmental records; however, upon evaluation, they were assessed as low environmental threats to the subject Property at this time. The findings of this environmental site assessment have identified no current recognized environmental conditions (RECs), or controlled RECs (CRECs) associated with the subject Property at this time. This assessment identified a historical REC (HREC), potential business environmental risks (BERs), a de minimis condition, and non-ASTM scope findings associated with the subject Property.

Historical Recognized Environmental Condition

Historical UST System and OCP Cases

Historically, there have been two (2) Maryland MDE OCP leaking tank cases reported for the subject Property; OCP Case No. 99-2867BC1 opened on May 28, 1999, and closed on March 20, 2000, was associated with the closure and removal of a 2,000-gallon gasoline UST in December 1998, and OCP Case No. 00-1938BC1 opened on May 23, 2000 and closed on June 4, 2001 and was associated with the closure and removal of a former 2,000-gallon heating oil UST in May 2000 from the subject Property. Minor soil contamination was associated with both closed UST systems; however, they did not exceed the action level criteria of the MDE and were granted case closures.

Based on the findings of the environmental assessment, DMY does not recommend any further environmental investigations for the subject Property at this time related to the former petroleum UST systems. No recent Maryland MDE correspondence indicated any current violations exist with the subject Property. However, the User should be aware that although the Maryland MDE has closed the former leaking UST cases at the subject Property and has met the minimum cleanup criteria set by the state, pockets of petroleum hydrocarbons (contamination) likely still exist on the subject Property in the soil and groundwater near the former UST basins. Should future excavation occur in these areas and petroleum contaminated soils are encountered and excavated, it will be necessary to properly manage and dispose of this impacted material in accordance with state and federal regulations.

Potential Business Environmental Risks

Various Petroleum ASTs on the subject Property

The environmental assessment of the subject Property identified a total of eight (8) petroleum ASTs ranging in size from 250 gallons to 1,000 gallons. The ASTs are used and operated by both City of Baltimore tenants of the subject Property. The golf course owns and operates five (5) ASTs, and the Recreation and Parks Office owns and operates three (3) ASTs. Most

of the ASTs did not have secondary containment and a spill compliance plan has not been completed. Although most of the ASTs did not have secondary containment, they are overall in good condition.

DMY recommends that the ASTs be maintained in good working order and that an SPCC Plan and spill containment be installed for each of the ASTs that does not have proper secondary containment. Any AST that is no longer of use to the Property should be properly closed and removed from the subject Property by a MDE certified tank removal company.

Older Fluorescent Light Ballasts

The subject Property was built in the early to mid-20th Century and contained numerous fluorescent lighting fixtures of various ages and installation dates. Fluorescent light ballasts manufactured prior to 1979 may contain small quantities of PCBs. Due to access limitations, the light ballasts were not examined for labels identifying their potential PCB content; however, due to age of the structures, they may potentially be PCB-containing. In addition, fluorescent light tubes utilized by the fluorescent light ballast may contain low concentrations of mercury that may classify them as a hazardous waste and must be disposed of as a Universal Waste.

DMY recommends that Hazardous Materials Survey be conducted on the subject Property prior to any planned renovation or demolition activities. The HazMat survey should identify any potential PCB containing equipment, ballasts, and mercury containing items. During any proposed renovation or demolition activities which may require the removal of lighting, any assumed PCB or Mercury-containing equipment should be handled and disposed of in accordance with USEPA Universal Waste and other applicable environmental regulations, or until inspection or testing can confirm otherwise.

Used Vehicle Tire Storage

A large pile of vehicle tires, approximately 50 was observed staged on the northern exterior side of the Recreation and Parks Office. The tires are believed to be associated with the Recreation and Parks vehicle maintenance activities and not from the golf course activities. The tires appear to be spent and are no longer of use.

DMY recommends the proper removal and disposal of the used tires from the subject Property. The tires should be removed and disposed of at a used tire recycling facility.

No significant environmental concerns are anticipated from the current storage of the tires.

De Minimis Conditions

Petroleum Staining

The floor of the maintenance shop was observed to be moderately stained with petroleum products. None of the stains noted appeared to be significant at this time and all appear to be de minimis in nature.

DMY does not recommend any environmental investigations associated with the minor staining of the floor at this time. The staining appear surficial and not at a level anticipated to have penetrated the floor into the soils below. However, DMY does recommend better shop management practices for the handling of petroleum products in the shop area.

Non-ASTM Scope Findings

Potential Asbestos-Containing Materials (ACMs) and Lead-Based Paint (LBP)

Based on the age of the structures on the subject Property (1923 and 1971), ACMs and LBPs may be present. Based solely on the age of the structures, the older finishes and coverings may potentially contain ACMs and LBPs and may be present in areas that have been covered or are otherwise not visually apparent. On the rear exterior of Recreation and Parks Office Building, an area of transite siding (a potentially asbestos-containing cement board product) was observed. Transite was used as a popular building product from the late 1920s through early 1980s when it was phased out. Although not a REC, ACMs and LBP materials should be properly managed, if present.

DMY recommends that an asbestos and lead paint survey be conducted on the structures prior to any future disturbance, renovation, or demolition activities if such an assessment has not been performed. The development of an asbestos OandM Plan may also be necessary for the subject Property.

Please refer to the appendices for the full Phase I ESA Report for the Carroll Park Golf Course.

Carroll Park Golf Course Site
d. Archaeological Impacts

In September 2024, Applied Archaeology and History Associates, Inc (AAHA) conducted a Phase IA archaeological assessment of the Carroll Park Study Area (Study Area) in Baltimore City, Maryland. The Carroll Park Study Area is one of two locations in the city of Baltimore under review for the construction of a new multi-use stadium by the Maryland Stadium Authority (MSA). This Phase IA assessment is intended to partially satisfy the requirement for an Archaeological Impact Analysis (AIA) stated in Section 3.3 Scope of Work—Preliminary Design in a request for proposals issued by MSA on March 12, 2024. The principal goal of a Phase IA archaeological assessment is to assess the likelihood that archaeological resources may be present within the Study Area. This investigation consisted of background research. All work was conducted by a qualified professional archaeologist in compliance with the MHT Standards and Guidelines for Archeological Investigations in Maryland.

The Study Area is located west of South Baltimore and is bounded to the north by a railroad right-of-way, to the west and south by the Gwynns Falls Trail, and to the east by industrial properties. The entire Study Area is currently maintained as an operating public golf course. Two streams, Gwynns Run and Gwynns Falls, are located in close proximity to the Study Area. Access to the property is provided by a road connecting to Washington Boulevard and parking and maintenance facilities are located in the southern portion of the property. No previously identified archaeological sites or historic resources are located within the Study Area while three archaeological surveys include small portions of the current Study Area.

Precontact Resources

The Study Area includes an upland, modified terraces, and interstream divides that slope down toward Gwynns Falls to the south and west. Natural soils across the Study Area are well-drained and characteristic of stable landforms that could support intensive occupation. Two precontact archaeological sites have been recorded within one mile of the Study Area, including the Gwin Site, located to the immediate west. The environmental setting of the eastern and northern portions of the Study Area on terraces near the fall line of the Patapsco River and along Gwynns Falls would have provided an attractive environment for precontact occupation due to their proximity to fresh water, terrestrial and riverine food resources, and proximity to navigable waterways.

Significant landform modification has occurred in portions of the Study Area during the nineteenth and twentieth centuries. Clay extraction occurred for an unknown length of time during the late nineteenth century, with three clay pits and a brick manufacturer within the Study Area on an 1897 topographic survey map. The construction of the golf course included the installation of tee boxes, fairways, greens, sand traps, and cart roads, along with the artificial leveling of the landscape in some areas. The cut-and-fill analysis highlighted areas modified by the clay pits and landscape modification of the golf course. While significant landform modification has occurred in portions of the Study Area, approximately 23.6 acres possess conditions that are conducive to precontact occupation and may not have been significantly modified (Figure 4).

Portions of the Study Area with minimal evidence for disturbance are considered to have a high probability for precontact archaeological resources. Portions of the Study Area with documented disturbance are considered to have a low probability for historic archaeological resources.

Historic Resources

The Study Area was part of a large plantation owned by the Carroll family from the mid-eighteenth century through 1890. Mount Clare, the original plantation house, is located on a low rise east of Study Area and Mount Clare Mill, a grist mill built in 1731, was located immediately outside the Study Area to the southwest. The BandO right-of-way, station, and maintenance yard were constructed on the Carroll property, with the Mount Clare station located to the immediate north of the Study Area. The BandO makes a broad curve around the northern boundary of the Study Area. Camp Carroll, a Civil War-era encampment, was located west of Mount Clare across the BandO right-of-way from the Study Area. The 1869 Sachse map (The Sache map was a panoramic map of the City of Baltimore produced by E. Sachse and Co) shows a brick yard to the immediate south

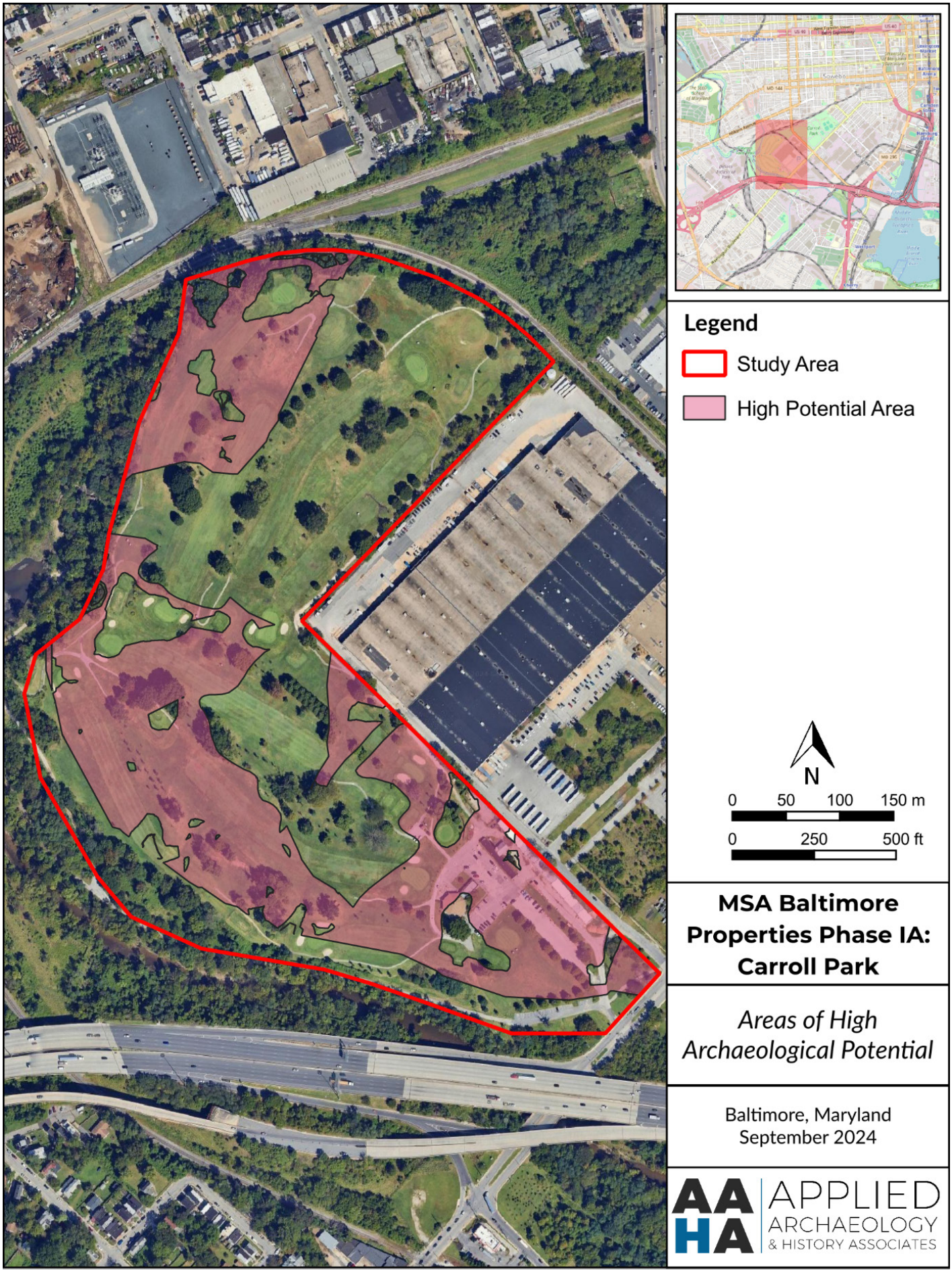

Figure 4: Aerial photograph showing areas of high archaeological potential within the Study Area.

and a collection of structures in the northeastern portion of the Study Area. Clay extraction occurred in the Study Area in the mid- to late-nineteenth century, with several brickyards located within and in the vicinity. The Carroll Park Golf Course currently occupies the Study Area. Founded in 1923, the Carroll Park Golf Course was a nexus for Civil Rights activities in the city of Baltimore in the mid-twentieth century. In addition to the golf course, a one-story brick storage building and a small brick structure with an attached chimney are also present along with a row of single-story brick storage bays that may be related to former nineteenth-century brickyards lining the course's driveway.

Archaeological evidence from the property's agricultural or industrial outbuildings, the adjacent Civil War encampment, or the late nineteenth-century brick yards may be present within the Study Area. The disturbances from late nineteenth-century clay mining and the construction of the golf course could have impacted historical archaeological deposits, but the 23.6-acre portion of the Study Area that appears to have been minimally disturbed is considered to have a high probability for historic archaeological resources.

Recommendations

A 23.6-acre portion of the Study Area is considered to have high probability for precontact and historic archaeological resources. A Phase IB survey is recommended in this area prior to ground disturbance. The remainder of the Study Area has been subjected to multiple documented disturbances or has been shown by elevation comparisons to have been cut more than 3 feet from its original surface or filled over to the point that archaeological deposits could not be reached by conventional shovel testing. Judgmental testing is recommended in these areas to confirm the degree of disturbance as part of the Phase IB survey.

The brick structures in the southeastern portion of the Study Area appear to exceed 50 years of age. The Carroll Park Golf Course, founded in 1923, likewise exceeds 50 years of age. The brick structures may be remnants of the former brick industries common in the area, examples of which no longer exist in the immediate area. The Carroll Park Golf Course is related to important Civil Rights activity in Baltimore in the mid-twentieth century. Documentation of the Carroll Park Golf Course and other structures exceeding 50 years of age within the Study Area for the MIHP is recommended.

Carroll Park Golf Course Site
e. Transportation Assessment

Regional Access

Regional access to the Carroll Park site is provided via I-95, MD 295, US 1, and Washington Blvd:

I-95

The site is located less than 500 feet from I-95 via Washington Boulevard (Alternate Route 1). A partial interchange provides direct access to and from the south. However, there is no direct access to or from the north via I-95. Southbound access from I-95 requires a circuitous route via either MD 295 South or I-895 South to connect to I-695 and approach from I-95 North. Similarly, access to northbound I-95 involves a 1.5-mile route via Washington Boulevard, Monroe Street, and MD 295.

MD 295

Access to the site from MD 295 is approximately one mile away, using Monroe Street and Washington Boulevard.

US 40

The site is located about two miles south of Route 40, with access provided via US 1 and Washington Boulevard.

Site Access and Circulation

Vehicular access to the Carroll Park Site will be limited to a singular entrance on Washington Blvd, just north of I-95.

Multimodal Access

The Carroll Park study area is generally walkable, with sidewalks present on both sides of Washington Boulevard. Consistent with the City of Baltimore's Complete Streets Manual (March 2021), the pedestrian subzone of sidewalks meets the minimum width requirement of 5 feet north of the site. However, pedestrian conditions south of the site, closer to the I-95 interchange, are less favorable. While sidewalks exist, there is no pedestrian buffer between the sidewalk and the roadway. There are no crosswalks at the site entrance, the I-95 on- and off- ramps on Washington Blvd, or at the intersection of Washington Blvd-Hollins Ferry Road. Curb ramps with truncated domes are present along Washington Blvd, except at the intersection of Washington Blvd and Hollins Ferry Road.

The CityLink Yellow line runs along Washington Blvd with the closest bus stops by the I-95 off-ramps approximately 830 feet south of the site entrance. MTA Route 26 runs along S Monroe Street, with stops near the intersection with Washington Blvd. The closest intercity bus station is at 2110 Haines St, which can be accessed by Route 26. To increase transit usage for events, enhanced pedestrian connections to bus stops and increased transit service frequency would be beneficial.

A shared-use path is present on Washington Blvd from S Monroe Street to the site entrance and along the edge of the golf course. The shared-use path is connected to a shared-road path on the other side of S Monroe Street. The 2015 Bike Master Plan has proposed bike lanes and buffered bike lanes along Washington Blvd, but it has not been prioritized for planning and design. There may be an opportunity to implement bicycle facilities on Washington Boulevard as part of capacity roadway improvements required for the corridor.

Trip Generation and Mode Split

This transportation assessment evaluates traffic and trip generation associated with a proposed 7,500-seat stadium with a build year of 2030. Key assumptions are based on research and methodologies from local and national sources.

Transit Usage

Approximately 2% (based on nearby MandT Bank Stadium) of patrons are expected to use transit (e.g., bus), with the remaining 98% traveling by private vehicles.

Vehicle Occupancy Rate

A vehicle occupancy rate of 3.0 persons per vehicle has been applied (vehicle occupancy provided by MSA).

Peak Hour Arrival

It is assumed that 60% of vehicle trips will arrive during the peak hour (Buzzard Point, DC United Stadium Soccer Stadium Transportation Analysis Report, November 2014).

Directional Distribution

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition for Land Use Code (LU) 462 (Professional Baseball Stadium) was used, applying a directional distribution of 92% inbound and 8% outbound vehicle trips during the peak hour.

Based on these assumptions, the resulting trip generation for evening and Saturday peak hours is:

- 1,470 inbound peak hour vehicle trips
- 128 outbound peak hour vehicle trips

These estimates form the basis for evaluating the impact on the surrounding roadway network.

Traffic Analysis

The capacity analysis for the study intersections was conducted using SYNCHRO 11 software based on the Highway Capacity Manual 2000 Edition. The analysis evaluated the Level of Service (LOS), which measures average control delay per vehicle and is categorized from "A" (best conditions) to "F" (worst conditions).

Baltimore City considers intersections operating at LOS "D" or better as acceptable. The LOS thresholds for delay are summarized in Table CP2:

LOS	Unsignalized	Signalized
A	0–10 sec	0–10 sec
B	>10–15 sec	>10–20 sec
C	>15–25 sec	>20–35 sec
D	>25–35 sec	>35–55 sec
E	>35–50 sec	>55–80 sec
F	>50 sec	>80 sec

Table CP2: Intersection Level of Service Threshold for Delay

The LOS analysis was conducted for the following three scenarios:

1. Existing Conditions

Traffic counts were collected during:

Thursday, October 10, 2024: 4:00 PM to 7:00 PM (weekday PM peak period).

Saturday, October 12, 2024: 11:00 AM to 2:00 PM (weekend peak period).

2. Future Background Conditions

Traffic projections account for a 4.2% annual regional growth rate over six years, based on historical traffic data.

No known pipeline development projects are located near the site.

3. Future Conditions

Site-related traffic is added to the future background conditions to evaluate the total impact of the proposed development.

Table CP3 below outlines results of the Level of Service analysis for the five study area intersections along with required mitigation measures.

Intersection	Direction	Existing Conditions		Background Conditions		Future Conditions		Future Conditions w mit.		Mitigation Measures
		PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	
Washington Blvd @ I-95 Off Ramp	Overall	A/9.6	A/7.4	B/10.8	A/8.3	**E/77.2**	F/122.6	C/21.1	B/16.7	Widen ramp for a second left turn lane
Washington Blvd @ I-95 On Ramp	Overall	A/6.7	A/3.9	A/8.1	A/4.3	A/6.4	A/2.9	A/6.8	A/3.2	N/A
Washington Blvd @ Monroe Street	Overall	**E/69.8**	D/37.6	F/197.3	**E/76.3**	F/259.9	F/404.6	F/126.3	**E/70.6**	Widen Monroe Street from a shared thru-left and a shared thru-right lane to also have a left turn lane; Signal optimization for Weekend
Monroe Street @ Wilkens Avenue	Overall	B/15.8	C/25.3	B/16.8	C/23.7	B/17.1	C/23.1	B/17.1	C/23.1	N/A
Washington Blvd @ Stadium Entrance	Overall							**E/67.1**	D/43.5	Widen driveway from two lanes to five lanes, with three reversible lanes
	Eastbound	B/10.4	A/8.7	B/12.0	A/9.3	F/707.5	F/361.4	**E/55.1**	C/23.1	
	Westbound	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	**E/66.2**	**E/73.9**	
	Southbound	C/24.5	B/12.0	**E/48.8**	B/14.0	F/>999	F/>999	F/228.5	**E/56.9**	

Table CP3: Summary of Intersection Capacity Analysis

Mitigation Measures

Developers are responsible for mitigating site-related traffic to maintain LOS conditions equivalent to those under Future Background Conditions (without the development). The following mitigation measures should be considered to obtain adequate LOS:

Site Entrance Mitigation Measures (Washington Boulevard)

1. Widening the Site Entrance

Expand the site entrance from two lanes to five lanes.

Design lanes as reversible to support event traffic:

- Four inbound lanes and one outbound lane before events.
- Four outbound lanes and one inbound lane after events.

2. Traffic Control Devices

Use temporary traffic control devices (e.g., traffic cones) to create two left-turn lanes starting at the I-95 on-ramp intersection on eastbound Washington Boulevard leading into the site.

3. Traffic Signal Installation

Install a traffic signal at the site driveway to regulate vehicle flow and enhance safety. (A traffic signal warrant study will be required.)

Although the site entrance would operate below the acceptable LOS "D" standard during the PM peak hour, the City may consider accepting a lower standard due to the nature of the venue. As a special event facility with infrequent events, drivers are generally more tolerant of delays in these circumstances.

Off-Site Intersection Mitigation Measures

Washington Boulevard @ I-95 Off-Ramp

Widen the off-ramp to accommodate a second left-turn lane onto Washington Boulevard. Note: This improvement requires significant structural modifications to the interchange ramp to allow for the necessary widening.

Washington Boulevard @ Monroe Street

Widen Monroe Street to add a northbound left-turn only lane at this intersection. There are currently two lanes, a shared thru-left and a shared thru-right lane.

Note: This improvement would necessitate acquiring additional right-of-way and would impact adjacent properties.

Perform signal optimization to improve traffic flow during the weekend peak period.

Transportation Management

The mitigation measures outlined in the previous section are based on the assumptions of 98% automobile usage and a vehicle occupancy rate of 3.0 for trips to the site. However, the scale of required mitigation could be reduced if vehicle demand is lowered through the implementation of transportation management strategies.

An effective strategy to reduce congestion in the immediate vicinity of the stadium is the use of satellite parking facilities, coupled with efficient shuttle services. A potential location for satellite parking is the MandT Bank Stadium, located approximately 1.3 miles northeast of the proposed stadium site. Shuttles should operate frequently, aligned with event schedules, to ensure convenient access. Clear signage and app-based navigation can help direct fans to satellite parking locations. Offering incentives, such as discounted or free parking at satellite lots, can further encourage their use. Satellite parking not only reduces traffic congestion near the venue but also minimizes the required roadway and intersection improvements.

Dedicated drop-off zones for ride-shares, taxis, and private vehicles are essential to improving traffic flow and pedestrian safety near stadium entrances. These zones reduce illegal stopping near stadium entrances, improve pedestrian safety, and help maintain steady traffic flow. By separating drop-off areas by mode of transportation and providing clear wayfinding signs or app-based directions, stadium operators can enhance efficiency. Staffed zones with attendants can further ensure orderly operations during peak times. Potential drop-off zones are the Plano-Coudon Construction parking lot across from the site entrance and the Montgomery Park Blue Lot one driveway north of the site entrance.

By increasing transit use, implementing satellite parking, and organizing efficient drop-off zones, the overall traffic demand at the stadium site can be reduced. This could decrease the need for certain mitigation measures, alleviate congestion, and improve the overall event-day experience for attendees.

Carroll Park Golf Course Site
f. Preliminary Site and Building Design Concept

Given the existing grades, significant earthwork is expected on the site. The preliminary concept shows the stadium on the south-eastern portion of the site, fronting Washington Blvd. To accommodate the flood plain, the study team suggests a finished floor and pitch elevation at +40. The restriction on fill in the flood zones is 600 cubic yards per acre which equates to about 4" of fill. Given this limitation, siting the major portion of the building outside of the flood zone will be critical. Even with siting outside of the flood zone, some waterproofing of the building will likely be required. Grading will be required to create a "plateau" on which the building will be constructed. On-going discussions will be required with the regulatory agencies as there are locations in this southern leg of the "L" that may require up to 10 feet of fill.

There is only one (1) access point to the site and that is from Washington Blvd along the southeast border of the site. Access is not viable from the south due to the presence of the Gwynns Falls nor from the north or west due to the presence of the rail line. The project team investigated the potential whether a second access point could be added from the north from South Monroe Street. The team met with CSX and learned that CSX is engaged in reducing on-grade crossings, and adding an at-grade crossing would need significant cause and require being offset by eliminating other crossings. The team also evaluated the opportunity to create an overhead crossing from Monroe Street. Monroe is at a grade that would allow the overhead crossing (approximately 25-30' above the railroad tracks) which would meet the required 20 foot overhead clearance over the tracks. The challenge is that because the site also drops off from north to south, a considerable portion of the site in the range of 450 feet at a 5% gradiant would be required to provide the length of sloped roadway to get back down to grade.

Given the total site acreage, on-site surface parking will be substantial but will not fulfill all the requirements of the program. Based on the preliminary design concept, it is believed that approximately 1,500 spaces will be possible allowing room for grade changes without retaining walls, required green spaces, and storm water management. The construction of the parking will also require significant earthwork although preliminarily it appears that the cut and fill will balance. The hillock in the north-west corner will need to be flattened and that material used to create the parking terraces.

Preliminary Site Design Concept

Considering the site limitations mentioned-above, the design team has proposed that the stadium be located parallel and adjacent to the existing warehouse within the East-West bar of the "L" (refer to appendix g). This location provides the following benefits:

Most efficient use of the site
It is worth noting that the forty-five-degree angle of orientation is outside the recommended range of twenty-five to thirty-five degrees per FIFA standards, however, given the spatial requirements for parking on site, this appears to be the most appropriate approach. The design team does not believe that sun glare would be an issue for views from the press box and broadcast booth and there would be little disadvantage to either goalkeeper looking North-West and South-East given that most professional matches will take place after noon.

On-site surface parking is tucked out of sight
This prioritizes the stadium and allows for marketing and branding to be visible to the community.

Flat area of the site
Minimizes earth-moving required for the actual construction of the stadium and associated building

Creates a natural buffer between Washington Blvd. and stadium
The site offers an entrance sequence past a generous green/lawn acting as a buffer between the boulevard and the stadium. This space offers an area for festivals or other community gatherings.

Preliminary Building Design Concept

Spectator Entrance Sequence

The stadium offers four entrances two of which are adjacent to the north entry plaza. The north entrance plaza is situated between the Stadium and the Practice pitch allows for festivals and events to be held as well as an ample gathering area for stadium goers. Access to the ticket booth and Supporters Pub is in this area.

The southeast entrance offers a dedicated entrance for the Spirited Supporters Section and east side ticket holders.

Once past security all ticket holders travel up stairs to a main concourse plinth that provides a view down to the pitch and lower bowl seating area.

The main concourse provides access to concessions, restrooms, club/suite spaces/stadium pub and multi-purpose rooms.

Spectator Seating

The lower seating bowl offers most seating options with direct access from the main concourse.

West Side Seating

The west side of the stadium provides access to the premium seats offered by the Suites and Club experience. Stairs leading to the Mezzanine level provide access to the upper grandstand seating and press level. The west seating section is covered by a metal canopy and will offer generous views of the Baltimore skyline.

South End Seating

The dedicated Supporter section is situated behind the goal.

East Seating area

The East lower bowl seating area is accessed from the main concourse with access to concessions and restrooms. The east concourse offers an unobstructed view to the pitch. This space can be utilized/ticked for special events. Alternate #1 provides expansion seating and if accepted, Alternate #2 which is for a canopy overtop the East grandstand can be considered.

North End

The concourse at the north end of the stadium will be the location of the video scoreboard and general admission seating.

Field Level +0'-0" = finished grade
Mechanical, back of house storage, stadium loading dock and Building Ops, Commissary, Team Lockers and Team Training Spaces.

Team Lockers can be found on the west side of the stadium at field level. Shared Team Training areas are located off the concourse at the North Plaza with ample opportunities for natural light and close access to practice pitch at ground level.

Main concourse: +/- 14'-0"
Circulation, Lower Bowl Seat Access, Team Store, Concessions, Restrooms, Supporters Pub, Club and Suites, Party Deck seating options in corner.

Mezzanine Level +/- 28'-8"
Access to grandstand seating

Press Level +/- 61'-4"
The press box and broadcast booth will be located at the top of the west grandstand.

The practice field is situated north of the stadium across the plaza with access to the shared training spaces. The pitch is oriented at the same angle of the Stadium Field.

Stadium operations are primarily located to the east of the stadium facility. This allows for direct access to the stadium drive for ease of loading, storage, and ventilation. Facility Operation offices will have ample opportunity for natural light.

An Alternate Expansion option provides a dedicated building adjacent to the Practice pitch for Academy Expansion program and services such as restrooms adjacent to practice pitch.

Carroll Park Golf Course Site
g. Site Evaluation

Based on the RFP and our meetings with the MSA and DC United throughout the preliminary design phase, the following parameters were established to evaluate each site; site access and traffic impact, site size, parking, flood plain, easements, setbacks, existing utilities, visibility, future expansion and development potential, community relations and neighborhood integration, cost impact, geotechnical impact, environmental impact, and archaeological impact.

Based on the information provided in this report, the project team has categorized each parameter as an opportunity or a challenge for the Carroll Park Golf Course site:

Site Access and Traffic Impact: Challenge
Only having a singular access point to this site is a significant weakness of this site. There are very limited options to solve this problem since the site is surrounded by severe grade change sloping to the Gwynn's Falls, railroad tracks, and the existing warehouse buildings on every side except the side that fronts Washington Blvd.

Site Size: Opportunity
In comparison to the Baltimore Peninsula site, the Carroll Park Golf Course site is approximately three times larger, which allows for more of the project program to fit on site.

Parking: Opportunity
Per the RFP, we shall assume a ratio of three people per vehicle and the "Market, Site Fit and Economic Impact Analysis" report conducted by Crossroads Consulting and Populous indicated that 90% of fans would be traveling to the stadium by car. This ratio equates to 2,250 parking spaces minimum for a 7,500-seat stadium or approximately 18 acres of space for parking. As mentioned in the preliminary site design concept narrative, the site can likely only accommodate 1,500 surface parking spaces due to the existing topography. While this site is not able to accommodate all the parking required by the original RFP, we are still listing parking as an opportunity given how many more parking spaces can fit on it than on the Baltimore Peninsula site.

Flood Plain, Easements, Setbacks: Challenge
Roughly one-third of the lower portion of the site is within the flood plain of the Gwynn's Falls which exists on the south and a portion of the west side of the property. The flood plain limits the area on site where the stadium and practice pitch can be located.

The location of existing sanitary lines and potential electrical lines could result in easements on site that are unknown at this time. If there are easements that are due to active utilities, it could limit the area of development on site.

While the building setbacks are not a concern given the size of the site, the potential railroad setbacks could limit where parking can be located on site, which could lead to a further reduction of spaces. The railroad setback is unknown at this time and would need to be verified with CSX.

Existing Utilities: Opportunity
There are existing utilities on site. While modifications will be required for this project, there is no need to bring new utilities to the site.

Visibility: Challenge
The Carroll Park Golf Course site has limited visibility and community presence due to its surroundings, and limited access. While visible to an extent from I-95, you can only catch a glimpse of the site above the existing trees as you travel southbound. The surrounding industrial park, railroad tracks, and Gynn's Falls further isolates the site from any neighboring communities.

Future Expansion and Development Potential: Challenge
While there is plenty of space for the stadium to expand in the future on site to accommodate more seats, it comes with the drawback of eliminating a significant number of parking spaces. Adding seats and removing parking is counterproductive.

There is very limited potential for future development around the stadium due to the size of the site and the parking needs of this project. In addition, there are no known plans for development on or around the project site.

Community Relations and Neighborhood Integration: Challenge

Carroll Park Golf Course has been in existence for over one hundred years and is an active golf course and public amenity. The proposed potential future stadium project has already been reported to receive public pushback from members of the Baltimore community. Given how isolated the site is, there is little opportunity for it to integrate well with the surrounding neighborhoods. In addition, this project would pave over much of an open space which is often a desired amentity in urban environments.

Cost Impact: Challenge

Per the cost estimate completed by RLB (see appendix H), the project would be approximately $16,000,000 more expensive at this site than at the Baltimore Peninsula. This is largely due to site improvements required because of the size of the site and extent of on-site parking.

Geotechnical Impact: Opportunity

The preliminary borings that were completed did not identify any concerns beyond the expectations for this site. The soils analyzed do not appear to limit the options for structural foundations of the building.

Environmental Impacts: Opportunity

The findings of Phase I ESA identified no current regulatory violation files or citations for the subject Property.

DMY recommends that Hazardous Materials Survey be conducted on the subject Property prior to any planned renovation or demolition activities and that an asbestos and lead paint survey be conducted on the structures prior to any future disturbance, renovation, or demolition activities if such an assessment has not been performed. The development of an asbestos OandM Plan may also be necessary for the subject Property.

Archaeological Impacts: Challenge

1/3 of the site is considered to have high probability for precontact and historic archaeological resources. It is recommended that a Phase 1B survey is completed prior to ground disturbance. This will be an additional expense to the owner, and if significant archaeological resources are identified, it could impact the viability of the project.

4

Baltimore Peninsula Site

Baltimore Peninsula Site
a. Existing Conditions

This site is the location of the former Baltimore Sun printing facility. That building has been demolished back to the slab and the site is left for development. The developers of the larger Baltimore Peninsula area have provided plans for future work. At the time of this report, it is understood that the future projects will not be completed at the time of the soccer venue construction. The site, which is the subject of this narrative, is depicted in Figure 5.

Based on the plans provided, and without benefit of a field-run survey, the portion of the site south of Distillery Drive appears relatively level in its present condition with grades varying largely from elevation(el). +19 to el. +23. There is a grade drop along the south edge to el +15.5. At the northern section, where the practice pitch is shown in the attached exhibit, there is a hill with a swale along the northern edge. The grades along the northern rise about five (5) feet to reach the elevation of the adjacent railroad property. As per the existing environmental reports, it appears that the north portion of the project site was capped as part of a Voluntary Cleanup Program.

Specific to the northern portion of the site, further discussion is needed with the railroad and with BGE. BGE has indicated during a meeting with the project team, the need for a sixty-foot (60') easement for their duct bank installation. This final route and easement needs to be established. The railroad spur along this edge of the site is still in use, which requires a minimum 25' building setback. Any grade improvements within 50' of the spur will need further negotiation and coordination. (refer to appendix a).

The site is zoned PC-2, which is specific to the Port Covington area "intended to establish the standards to accommodate the transition of the Port Covington area from a heavy industrial area to a high intensity, mixed use, waterfront-oriented area over time." It should be noted that this is a State project and typically those are not subject to local zoning requirements. However, the following information is offered:

Permitted Use and Setbacks
The PC-2 allows for a stadium as a permitted use and there are no setback requirements. There is a minimum height requirement of twenty (20) feet.

Parking
Parking for a stadium is listed as 1 space per 10 persons of fire-rated capacity. The various uses inside the building shall be calculated separately and added thereto. However, per the "Market, Site Fit and Economic Impact Analysis" report conducted by Crossroads Consulting and Populous, this project shall assume a ratio of 1 space per 3 persons. While parking is required, off-site parking is allowed in this zone provided it is in another PC zone. It is likely that this project will comply. A certain amount of bicycle parking, both interior and exterior, will also be required.

Loading
A minimum of one (1) off-street loading space will be required, which may not be in a front yard.

Utilities
Water
The demolition plans provided show an existing 12" private water main running in a loop around the former Sun building and call for the connections to the building to be shut off but the main and the meter to remain. If this is the case, there may be some relocation required depending on the final footprint of the stadium, but the size of the service will likely be adequate. Whether the stadium operator will be using this main may depend on any agreement between them and the developer as the main is designated as private.

Sanitary
The demolition plans provided show an existing sanitary sewer along the southern edge of the site but call for the pipes to be plugged at the manhole on the southwest corner. New sanitary connections will be required throughout.

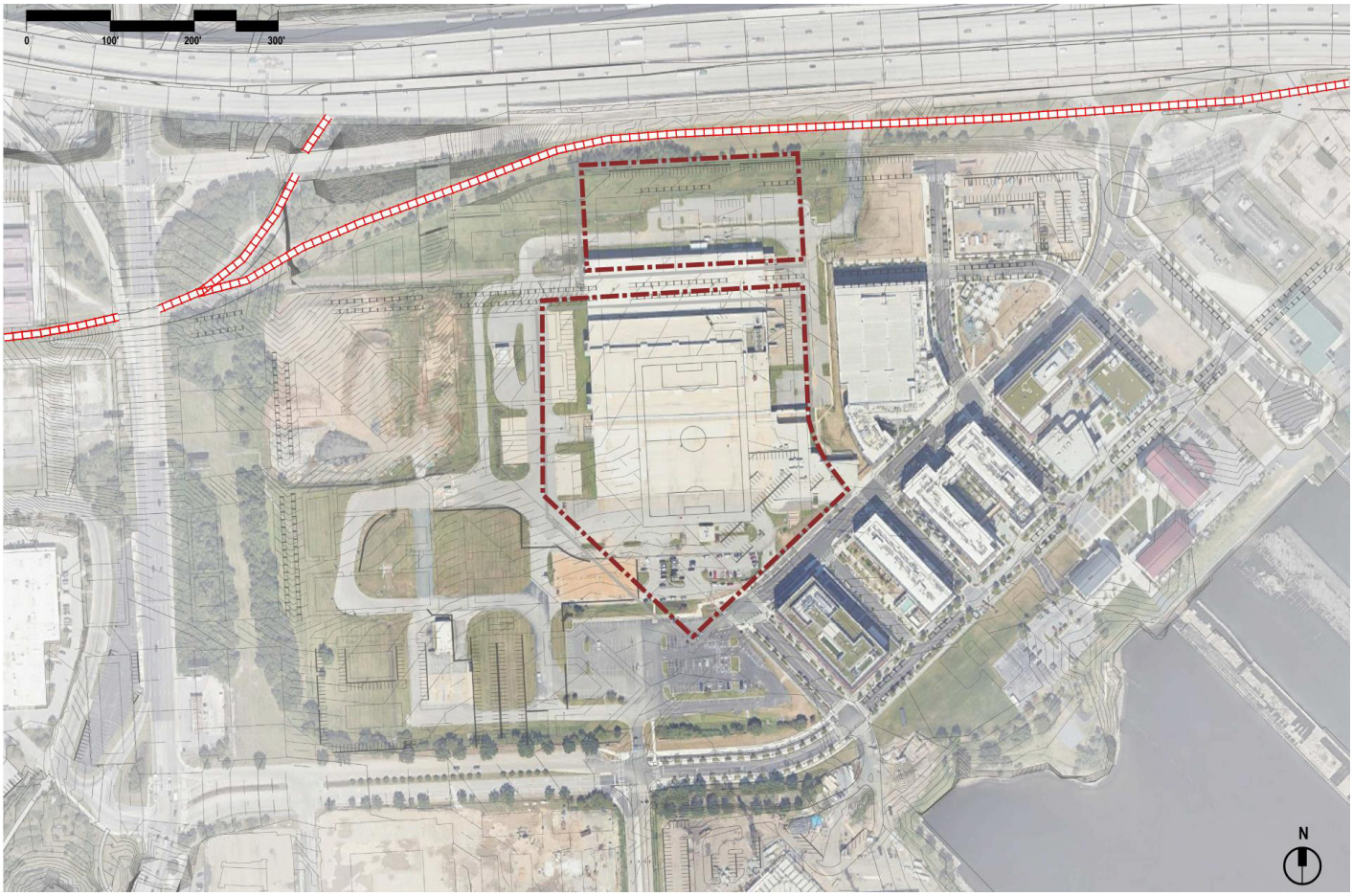

Figure 5: Baltimore Peninsula site diagram, illustrating the existing surroundings.

Base map from https://www.google.com/maps

Storm Water Management and Storm Drains

Storm Water Management (SWM) will be required for both Quantity and Quality treatment for the site. Review and approval will be by the Maryland Department of the Environment (MDE). It likely will be classified as "redevelopment" thereby minimizing the amount of treatment needed. Given the tightness of the site, it is anticipated the system will be a hybrid of surface and underground treatment with storage underground. Any fields that are not natural turf will be considered as impervious area. All new SD connections in conjunction with new grading and new Storm Water Management (SWM) will need to meet current regulations. There may be a suitable outfall for the system in a manhole at the intersection of Mission Blvd and Terrapin way.

Based on the geotechnical explorations and evaluations, the recommendations for the foundation types are as follows:

Considering the subsurface condition based on the limited geotechnical investigation, the geology of the site, the preliminary anticipated structural loading, our preliminary engineering analyses and discussions above, we recommend either Option 1 Driven Piles, Option 2 Auger Cast piles, or Option 3 Shallow Foundations Over Ground Improvement be considered for the preliminary design phase.

All below-grade walls should be designed to withstand lateral earth pressures and any surcharge loads from the adjacent traffic load from the street and the parking lot. The below-grade walls should also be designed to withstand any applicable hydrostatic pressure unless an appropriate drainage system is installed to effectively eliminate hydrostatic pressures behind the walls.

Selecting the right foundation system for a structure depends on the final structural loads, soil conditions, and construction constraints such as proximity to nearby structures. The structural engineer or the designer should evaluate the uplift forces or buoyancy. The final foundation type will be selected in the next phase of the project after the site selection is finalized and a full geotechnical investigation is performed.

Please refer to appendix D for the full preliminary geotechnical engineering report.

Slab-on-Grade

The slab-on-grade is anticipated to be 5”- 6” thick concrete on structural fill reinforced with 6x6-W4.0xW4.0 W.W.F. or #3@12” o/c.

Concourse Level: Concrete Framing

The concourse level will be framed with concrete columns resting on the foundation and supporting the upper-level steel columns for the grandstands. The framing system is assumed to be based on a max center-to-center column spacing of 30’-0”. For this column spacing, the size of the columns is assumed to range from 24”x24” to 30”x30”. Column sizes may decrease if max center-to-center spacing is reduced.

The floor slab is anticipated to be conventionally reinforced concrete slab with drop panels. The slab shall be 10” thick with 12’-0”x12’-0”x8” or 10” deep drop panels. There may be continuous drop panels of 8” thick at columns with higher loads or larger spans exceeding 30’-0”, if required. Alternatively, it could be 12”-14” thick concrete flat slab with thicker continuous portions as required for larger spans or higher loads.

Grandstand and Canopy: Steel Framing

The grandstand will consist of seats comprising of SPS, Dant Clayton (or equivalent) system supported on steel raker beams spanning and framing over steel columns. There will be mechanical, press or other areas that would require horizontal floors and/or roofs, which will consist of 3” deck with 4.5” normal-weight concrete, supported by composite steel beams. The steel columns framing the grandstands are assumed to continue and align with the concrete columns or shear walls in the concourse level below.

The steel columns at the rear of the grandstands will extend to support the canopy. The main girders will be built-up members to be tapered as required, while the canopy itself will consist of 3” metal deck supported by filler beams at 10’-0” spacing. To enable the canopy to cantilever over and protect the seating areas, the columns are anticipated to be trussed-up vertical members or built-up sections. Some tension members or anchor members may be required to provide enough back-span anchorage to control deflections.

Lateral System

The lateral system for the concourse level is anticipated to consist of concrete shear walls and concrete and/or concrete moment frames. The shear walls would be the 10”-12” thick while the moment frame members could be 24” deep beams framing into the columns described above. In the grandstand structure above, the lateral system will consist of steel concentrically braced frames and/or steel moment frames. The steel columns, rakers and beams described above will comprise the moment frame elements, with braces included as required in some bays.

Design Loads

The following are the basic design loads for the project:

Design Live Loads

- Snow on roofs: 30 psf min (25 psf + snow drift)
- Amenity, Concessions: 40 psf
- Seating: 100 psf
- Stairs and Corridors: 100 psf
- MEP, Storage, Service Areas, Trash: 150 psf
- Loading Area: 250 psf

Lateral Loadings

- Seismic Loading: per IBC, 2015 (2017 DC Building Code)
- Wind Loading: per IBC, 2015, 115 mph basic wind speed (2017 DC Building Code)

Materials

Concrete

Minimum Ultimate Compressive Strength at 28 Days:

- Elevated Slab: 5,000–8,000 psi
- Concrete Columns: 4,000–6,000 psi
- Slab-on-grade: 5,000 psi
- Drilled Shaft, Piles: 4,000 psi

All concrete exposed to weather shall be air-entrained 6%±1%.

Reinforcing Steel

Reinforcing bars shall be deformed billet steel conforming to ASTM A615, Grade 60. Welded wire fabric shall conform to ASTM A-185.

Structural Steel

All miscellaneous steel such as plates, angles and channels shall conform to ASTM-A36

Fy = 36ksi. Steel beams and columns (W sections) shall conform to ASTM-A992 Fy = 50ksi. Built-up sections shall be ASTM-A572, Fy = 50 ksi steel.

Masonry

Hollow and solid CMU - ASTM C90 Type 1 (f'm=1,500 psi)

Mortar - ASTM C270 Type M for below grade, Type S for all others.

Grout - ASTM C476 (f'm=2500 psi)

Deformed Bars - ASTM A615, Grade 60

Cold Formed Metal Framing

Metal stud wall framing – ASTM A525 (fy=50 ksi)

Baltimore Peninsula Site
c. Environmental Impacts

The subject Property is an approximate 18.96 acre, former industrial facility parcel, that previously operated as the Baltimore Sun main newspaper printing facility from 1990 to 2022 and as a former rail yard since at least 1904 to approximately 1990. The former approximate 256,033 square foot industrial building was demolished in December 2023, and all that remains at the subject Property is the large, poured concrete slab foundation of the former building footprint and associated asphalt parking lots. The subject Property is a portion of the larger original 60.18 acre parent parcel that has been parceled out over the past several years for redevelopment. The subject Property is located to the north of East Cromwell Street, South of McComas Street, west of Mission Boulevard, and east of South Hanover Street, on the Port Covington Peninsula, northwest of Winans Cove. According to tax records, the subject Property contains the physical address: 300 East Cromwell Street (Parcel Id No. 1053 001) and is owed by 300 East Cromwell Street, LLC. The Phase I Environmental Site Assessment (ESA) was conducted in general conformance with the Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Standard Practice, as defined by the American Society for Testing and Materials (ASTM), Designation E1527-21.

Identified Environmental Items and Conditions

The Phase I ESA identified several environmental items and conditions during the assessment for the Baltimore Peninsula.

Historical USTs and OCP Case on the Neighboring Associated Property

Historically, three (3) former underground storage tanks (UST)s, two (2) 10,000-gallon gasoline, and one (1) 10,000-gallon diesel were closed and removed from the Baltimore Sun parent parcel located to the southwest of the Sun building. These former USTs were located in a tank basin near the fuel dispenser and canopy. This location is not within the current subject Property study area boundary and is considered neighboring off-site. In addition, a 6,000-gallon diesel AST was also located in this area that replaced the removed USTs. Petroleum impacted soils were observed during the closure of the USTs and approximately 42 tons of soil was disposed off-site. Groundwater collected as part of closure activities also detected concentrations of petroleum compounds. The Maryland Department of the Environment (MDE) reviewed the closure documentation and concluded on August 30, 2004, that residual contamination remains on site; however, it appears that the contamination may not pose a risk to human health and the environment and closed the case. The former MDE OCP case identified for this neighboring and adjoining area to the subject Property is considered a Historical Recognized Environmental Condition (HREC).

History of the Subject Property as a Former Rail Yard and Manufacturing Facility

Historically, the subject Property has been utilized for rail yard use since at least 1904 to approximately 1990, and as a newspaper manufacturing and printing facility from 1990 to 2022. The rail yard was constructed and utilized by the Western Maryland Railroad Corporation. Two (2) former fuel oil tanks were located near the center of the subject Property. In addition, historically, the Baltimore Sun operations also utilized chemicals, inks, and fuel for fleet vehicles in their daily operations. These operations required the facility to register with MDE and EPA for petroleum fuel tanks, as a RCRA hazardous waste generator, for controlled air emissions, and included engineering controls and various environmental cleanups programs. In 2015 a comprehensive Phase II ESA was performed on the subject Property including the neighboring adjoining associated parcels, that are part of the Sun parent parcel. A series of soil borings and test pits were completed to collect representative samples for soil, groundwater, and soil vapor. A total of three (3) soil vapor samples were collected from within the Sun building, and two (2) on the exterior near the former truck fueling station and former UST area. In addition, a total of nine (9) test pits were completed within the subject Property boundaries, with an additional 31 on the associated neighboring parcels on the Sun parent parcel. The results of the Phase II ESA indicated a groundwater sample collected on the western portion of the subject Property contained petroleum hydrocarbons, and four (4) of the test pits samples contained elevated metals and two (2) contained elevated petroleum compounds indicating contamination historically associated with the past use

as a rail yard and manufacturing facility. The historical documented contamination in these areas is considered a HREC.

Neighboring Contaminated Soil Stockpile
Large soil stockpiles reported to contain petroleum and chemical impacted soils are located on the neighboring parcel to the west. The soil stockpiles are managed in accordance with the Comprehensive Soil Management Plan (CSMP) that was prepared for the Property in April 2016. Two (2) soil stockpiles are currently staged and located at 100 East Cromwell Street: impacted soil from approved properties associated with the overall Port Covington development, and MDE-approved certified clean fill for use within the overall Port Covington development are staged at this location. Impacted soil that is not reused within the subject property or neighboring developments are relocated to the impacted soil stockpile at 100 East Cromwell Street. The staging of this soil near the subject Property is considered a potential Business Environmental Risk (BER).

Environmental Findings and Recommendations

The findings of Phase 1 ESA identified no current regulatory violation files or citations for the subject Property. Historically, there has been 19 environmental records identified on government database and Maryland MDE FOIA file reviews at the subject Property. In addition, several neighboring properties were identified during the assessment as having historical environmental records; however, upon evaluation, they were assessed as low environmental threats to the subject Property at this time. The findings of this environmental site assessment have identified no current recognized environmental conditions (RECs), controlled RECs (CRECs), de minimis conditions, or non-ASTM scope findings associated with the subject Property at this time. This assessment identified several historical RECs (HRECs) and a potential business environmental risk (BER) associated with the subject Property.

Historical Recognized Environmental Condition (HREC)

Historical USTs and OCP Case on the Neighboring Associated Property
Historically, three (3) former USTs, two (2) 10,000-gallon gasoline, and one (1) 10,000-gallon diesel were closed and removed from the Baltimore Sun parent parcel located to the southwest of the Sun building. These former USTs were located in a tank basin near the fuel dispenser and canopy. This location is not within the current subject Property study area boundary and is considered neighboring off-site. In addition, a 6,000-gallon diesel AST was also located in this area that replaced the removed USTs. Petroleum impacted soils were observed during the closure of the USTs and approximately 42 tons of soil was disposed off-site. Groundwater collected as part of closure activities also detected concentrations of petroleum compounds. The MDE reviewed the closure documentation and concluded on August 30, 2004, that residual contamination remains on site; however, it appears that the contamination may not pose a risk to human health and the environment and closed the case.

Based on the findings of the Phase I ESA, DMY does not recommend any further environmental investigations for the subject Property at this time related to the former petroleum UST systems. The review of the former tank basin indicated that it was not located within the boundary of this current environmental assessment. No recent Maryland MDE correspondence indicated any current violations exist with the subject Property or parent parcel. However, the User should be aware that although the Maryland MDE has closed the former leaking UST cases at the subject Property and has met the minimum cleanup criteria set by the state, pockets of petroleum hydrocarbons (contamination) likely still exist near the former UST basin in the soil and groundwater. Although not part of the subject Property, should future excavation occur in these areas and petroleum contaminated soils are encountered and excavated, it will be necessary to properly manage and dispose of this impacted material in accordance with state and federal regulations. It may also be possible to utilize the existing Environmental Management Plan (EMP) or Comprehensive Soil Management Plan (CSMP) to manage any excavated impacted soils that have been prepared for the subject Property and associated parcels as part of past MDE agreements.

History of the Subject Property as a Former Rail Yard and Manufacturing Facility

Historically, the subject Property has been utilized for rail yard use since at least 1904 to approximately 1990, and as a newspaper manufacturing and printing facility from 1990 to 2022. The rail yard was constructed and utilized by the Western Maryland Railroad Corporation. Two (2) former fuel oil tanks were located near the center of the subject Property. In addition, historically, the Baltimore Sun operations also utilized chemicals, inks, and fuel for fleet vehicles in their daily operations. These operations required the facility to register with MDE and EPA for petroleum fuel tanks, as a RCRA hazardous waste generator, for controlled air emissions, and included engineering controls and various environmental cleanups programs. In 2015 a comprehensive Phase II ESA was performed on the subject Property including the neighboring adjoining associated parcels, that are part of the Sun parent parcel. A series of soil borings and test pits were completed to collect representative samples for soil, groundwater, and soil vapor. A total of three (3) soil vapor samples were collected from within the Sun building, and two (2) on the exterior near the former truck fueling station and former UST area. In addition, a total of nine (9) test pits were completed within the subject Property boundaries, with an additional 31 on the associated neighboring parcels on the Sun parent parcel. The results of the Phase II ESA indicated a groundwater sample collected on the western portion of the subject Property contained petroleum hydrocarbons, and four (4) of the test pits samples contained elevated metals and two (2) contained elevated petroleum compounds indicating contamination historically associated with the past use as a rail yard and manufacturing facility.

Based on the findings of this environmental assessment, DMY does not recommend any further environmental investigations for the subject Property at this time related to the history of the subject Property. It is likely during any proposed redevelopment activities of the subject Property that some petroleum and metals impacted soils will be encountered and will need to be properly managed and dispose of this impacted material in accordance with state and federal regulations. It may also be possible to utilize the existing Environmental Management Plan (EMP) or Comprehensive Soil Management Plan (CSMP) to manage any excavated impacted soils that have been prepared for the subject Property and associated parcels as part of past MDE agreements.

Potential Business Environmental Risk (BER)

Neighboring Contaminated Soil Stockpile

Large soil stockpiles reported to contain petroleum and chemical impacted soils are located on the neighboring parcel to the west. The soil stockpiles are managed in accordance with the CSMP that was prepared for the Property in April 2016. Two (2) soil stockpiles are currently staged and located at 100 East Cromwell Street: impacted soil from approved properties associated with the overall Port Covington development, and MDE-approved certified clean fill for use within the overall Port Covington development are staged at this location. Impacted soil that is not reused within the subject property or neighboring developments are relocated to the impacted soil stockpile at 100 East Cromwell Street.

DMY does not recommend any further action or investigations related to these neighboring soil stockpiles. Contaminated soil has the potential to leach and contaminate other adjoining areas that have not been previously impacted, if good soil management practices are not observed. The silt barrier fencing should be maintained in good operational condition around he impound lot and care should be observed not to let contaminated soil wash onto neighboring parcels during storm events or from metals laden dust blowing onto the subject Property.

Please refer to the appendices for the full Phase I ESA Report for the Baltimore Peninsula.

Baltimore Peninsula Site
d. Archaeological Impacts

In August and September 2024, AAHA conducted a Phase IA archaeological assessment of the Baltimore Peninsula Study Area in Baltimore City, Maryland. The Phase IA assessment is intended to partially satisfy the requirement for an Archaeological Impact Analysis (AIA) stated in Section 3.3 Scope of Work—Preliminary Design in a request for proposals issued by MSA on March 12, 2024.

The principal goal of a Phase IA archaeological assessment is to assess the likelihood that archaeological resources may be present within the Study Area. This investigation consisted of background research. All work was conducted by a qualified professional archaeologist in compliance with the MHT Standards and Guidelines for Archeological Investigations in Maryland.

The Study Area is located south of I-95 in a formerly industrial part of Baltimore that has recently been redeveloped to include residential apartment buildings and associated amenities (Figure 6). The property primarily contains an industrial building and associated parking lots. At the time of the assessment, the Study Area contained a large, extant structure and associated roadways and parking lots. Historic aerial photographs provide additional detail not available on historic maps. The earliest photo of the Study Area is from 1957 and shows the entirety of the Study Area within the Port Covington railyard (Figure 7). Dozens of railroad cars are visible west of the docks. The surrounding area is heavily developed by the railyard and adjacent industries. Little change was noted in 1981; the Study Area remains within the railyard.

By 1989, the railyard has been demolished, with the entire area either stripped to subsoil or displaying cleared fill. Construction of a large building in the center of the Study Area, the present extant structure, had begun. By 1994, the current structure had been completed, with associated parking lots to the south.. Roads had been built in the surrounding area and the old railyard and industrial structures had been demolished. By 2021, the Study Area includes a large commercial structure with associated roadways and parking lots. Additional commercial or industrial structures are present in the vicinity, with the immediate vicinity, both to the west and east, under active construction. The large residential and commercial structures currently present to the southeast of the Study Area were constructed after 2021. No previously identified archaeological sites or historic resources are located within the Study Area. One archaeological survey that includes the boundaries of the current Study Area was conducted in 1990.

Recommendations

Due to continuous development in the Study Area, including extensive landform modification in the late 1980s, it is unlikely that significant archaeological resources exist within the Study Area. Any archaeological deposits that may have existed within the Study Area have likely been impacted by mid-nineteenth-century clay mining, the late nineteenth-century expansion of an inlet extending northwest from the Patapsco River, the twentieth-century infilling of that inlet and subsequent construction of a rail yard, and regrading after the rail yard's demolition. The Study Area has low potential for archaeological resources. No further archaeological investigation is recommended.

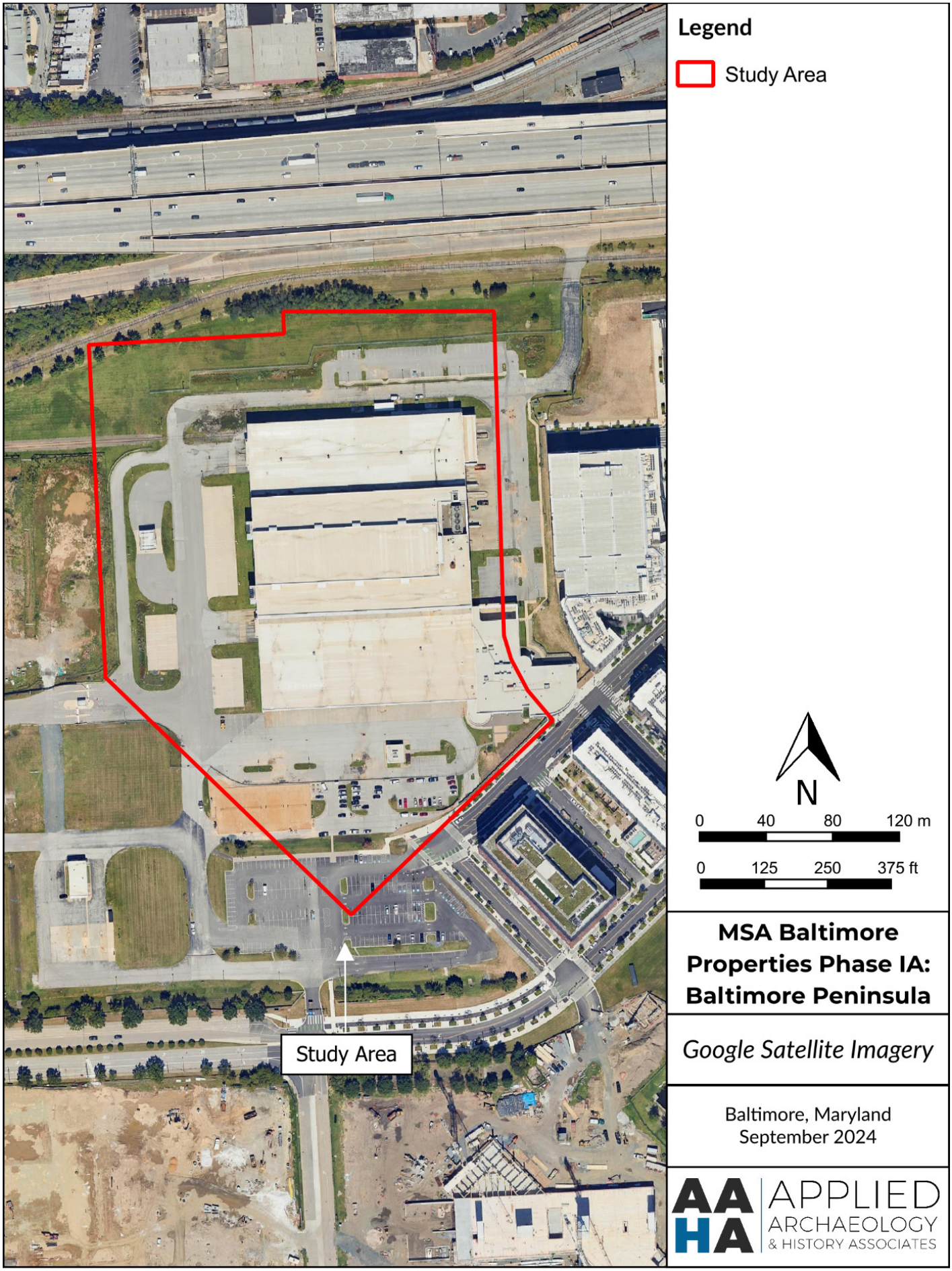

Figure 6: Aerial photograph showing Study Area.

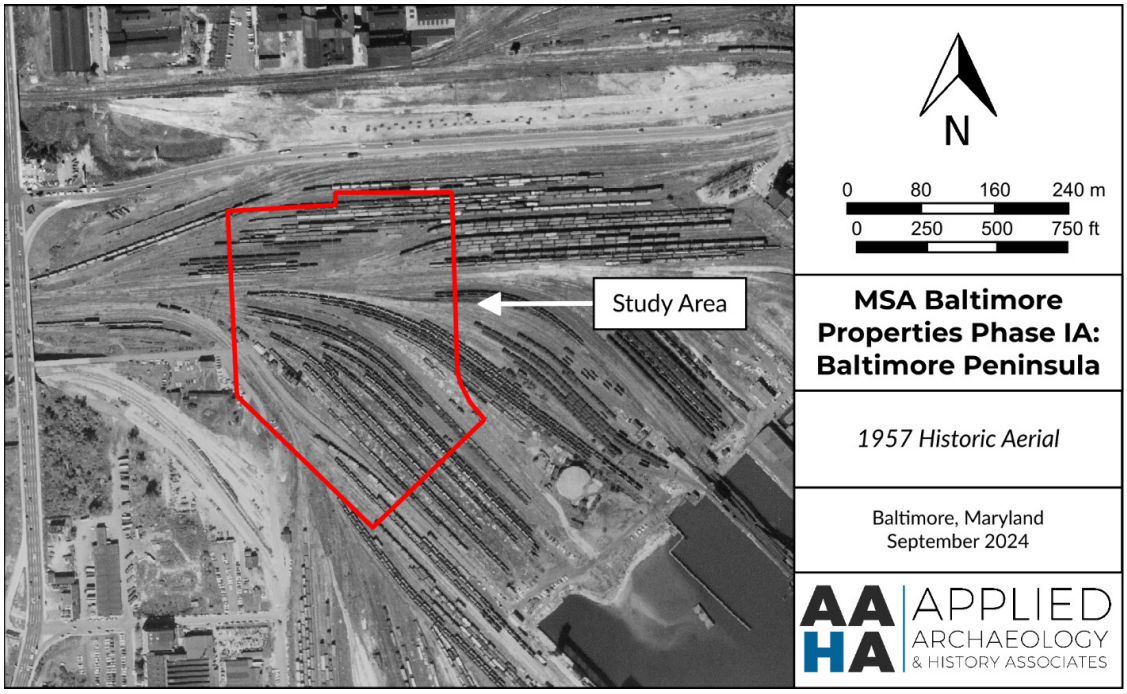

Figure 7: Aerial photograph taken in 1957 showing the location of the Study Area (Nationwide Environmental Title Research, LLC. 2023)

Baltimore Peninsula Site
e. Transportation Assessment

Regional Access
Regional access to the Baltimore Peninsula site is provided via I-95 and MD 2:

I-95
The site is located approximately 500 feet south of I-95. Southbound vehicle access from I-95 is provided via Exit 56, Key Highway, which leads to McComas Street. Access from northbound I-95 is provided via Exit 54, Hanover Street, which leads to Cromwell Street.

MD 2
Access to the site from MD 2 is approximately one-quarter mile away, using Cromwell Street.

Site Access and Circulation
Vehicular access to the 2,200-space surface parking area at the Baltimore Peninsula Site will be provided via Cromwell Street, Mission Blvd., and an extended Distillery Street. Access to the 800-space garage parking will be provided via Mission Blvd. and Distillery Street.

Multimodal Access
Sidewalks are present on all of the streets surrounding the Baltimore Peninsula site. The sidewalks along Cromwell Street east of Peninsula Drive, Mission Blvd, and the adjacent streets have been recently installed with a minimum 8-foot pedestrian subzone and tree box buffers along the street. West of Peninsula Drive, 6-foot-wide sidewalks are located on both sides of Cromwell Street with no pedestrian buffer. Five-foot wide sidewalks with no pedestrian buffer are located on the east side of S. Hanover Street. There are high visibility crosswalks at all of the intersections along Cromwell Street except at the intersection with Insulator Drive. There are also high visibility crosswalks at all of the intersections along Mission Blvd.

The proposed stadium site is well-served by multiple public transit options, enhancing accessibility for at-tendees.

CityLink Silver Line
Operated by the Maryland Transit Administration (MTA), the CityLink Silver line traverses Hanover Street, with bus stops at the intersections of McComas Street and Cromwell Street. This line provides connectivity between Curtis Bay and the Hopkins-Morgan State area, facili-tating access to various parts of the city.

MTA Route 67
Also running along Hanover Street, MTA Route 67 has stops near its intersections with McComas Street and Cromwell Street. This route offers additional transit options for commuters traveling through these corridors.

MTA Route 71
MTA Route 71 operates along Cromwell Street, with stops near Insulator Drive and Peninsula Drive, further enhancing the site's accessibility via public transportation.

Charm City Circulator: Cherry Route
The Charm City Circulator is a free bus service provided by the Baltimore City Department of Transportation. The Cherry Route runs along Cromwell Street and Mission Boulevard, with stops near Insulator Drive and Rye Street. Notably, these stops are within 500 feet of the potential entrances to the stadium site, offering convenient access for patrons.

The proximity of these transit services to the proposed stadium site supports the implementation of trans-portation management strategies aimed at reducing vehicular traffic and promoting the use of public trans-portation among attendees.

The Baltimore Peninsula stadium site benefits from existing and planned bicycle infrastructure, enhancing accessibility for cyclists.

Existing Bicycle Infrastructure

Cromwell Street Separated Bike Lane

A dedicated bike lane runs along Cromwell Street from South Hanover Street to House Street. At House Street, the cycle track turns onto House Street and contin-ues onto Mission Boulevard, terminating at Tidewater Street.

Port Covington Path Connection

On the western end of Cromwell Street, the bike lane connects with the Port Covington path that runs along South Hanover Street, providing extended cycling routes.

Planned Bicycle Infrastructure

According to the 2015 Baltimore Bike Master Plan, additional bicycle facilities are proposed to further enhance connectivity:

South Hanover Street

The plan proposes the addition of bike lanes and buffered bike lanes along South Hanover Street.

Off-Road Trails

Off-road trails are proposed along McComas Street and the waterfront areas of the peninsula.

However, these projects have not been prioritized for planning and design as of the latest updates.

The existing and proposed bicycle infrastructure supports sustainable transportation options for stadium at-tendees, promoting cycling as a viable mode of travel to the venue.

Trip Generation and Mode Split

This transportation assessment assumes the traffic and trip generation associated with a stadium with 7,500 seats with a build year of 2030. Key assumptions are based on research and methodologies from local and national sources.

Transit Usage

Approximately 2% of patrons are expected to use transit (bus), with the remaining 98% traveling by private vehicles.

Vehicle Occupancy Rate

A vehicle occupancy rate of 3.0 persons per vehicle has been applied.

Peak Hour Arrival

It is assumed that 60% of vehicle trips will arrive during the peak hour.

Directional Distribution

The Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition for Land Use Code (LU) 462 (Professional Baseball Stadium) was used, applying a directional distribution of 92% inbound and 8% outbound vehicle trips during the peak hour.

Based on these assumptions, the resulting trip generation for evening and Saturday peak hours is:

- 1,470 inbound peak hour vehicle trips
- 128 outbound peak hour vehicle trips

These estimates form the basis for evaluating the impact on the surrounding roadway network.

Intersection	Direction	Existing Conditions		Background Conditions		Future Conditions		Future Conditions w mit.		Mitigation Measures
		PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	PM Peak	Saturday Peak	
S.Hanover Street @ Cromwell Street	Overall	C/23.2	C/25.3	D/40.6	D/53.7	**F/207.7**	**F/389.2**	**E/58.4**	D/49.0	Adjust traffic signal timing
S. Hanover Street @ McComas Street	Overall	C/20.4	B/17.5	**F/84.9**	**F/92.7**	**F/91.2**	**F/112.6**	C/28.3	D/53.4	Use existing reversible lane to add an additional lane in the NB direction
McComas Street @ Key Highway	Overall	C/26.1	D/35.2	D/50.6	D/35.4	**E/57.5**	D/35.5	D/43.9	D/35.5	Adjust signal timing for PM
Mission Blvd @ Tidewater Street	Eastbound	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	A/0.0	N/A
	Northbound	A/9.1	A/8.7	B/14.2	B/10.9	B/14.9	B/11.3	B/14.9	B/11.3	
	Southbound	A/0.6	A/1.8	A/0.7	A/1.4	A/0.2	A/0.2	A/0.2	A/0.2	
Cromwell Street @ Stadium Entrance	Eastbound					C/23.3	B/13.5	C/23.3	B/13.5	N/A
	Westbound					A/0.0	A/0.0	A/0.0	A/0.0	
	Southbound					A/0.0	A/0.0	A/0.0	A/0.0	

Table BP2: Summary of Intersection Capacity Analysis

Traffic Analysis

The capacity analysis for the study intersections was conducted using SYNCHRO 11 software based on the Highway Capacity Manual 2000 Edition. The analysis evaluated the Level of Service (LOS), which measures av-erage control delay per vehicle and is categorized from "A" (best conditions) to "F" (worst conditions).

Baltimore City considers intersections operating at LOS "D" or better as acceptable.

The LOS analysis was conducted for the following three scenarios:

1. Existing Conditions

Traffic counts were collected during:

Thursday, October 10, 2024: 4:00 PM to 7:00 PM (weekday PM peak period).

Saturday, October 12, 2024: 11:00 AM to 2:00 PM (weekend peak period).

2. Future Background Conditions

Traffic projections account for an average of 6% annual regional growth rate over six years, based on extrapolation of growth generated in previous area studies (year 2040) to 2030 build year historical traffic data.

Potential development in the Baltimore Peninsula area.

3. Future Conditions

Site-related traffic is added to the future background conditions to evaluate the total impact of the proposed development.

Table BP2 above outlines results of the Level of Service analysis for the five study area intersections along with required mitigation measures.

Mitigation Measures

Developers are responsible for mitigating site-related traffic to maintain LOS conditions equivalent to those under Future Background Conditions (without the development). The following mitigation measures should be considered to obtain adequate LOS:

Off-Site Intersection Mitigation Measures

- S. Hanover Street @ Cromwell Street: Adjust traffic signal timings
- S. Hanover Street @ McComas Street: Utilize the existing reversible lane to add a lane in the northbound direction.
- McComas Street @ Key Highway: Adjust traffic signal timings

Transportation Management

The mitigation measures outlined in the previous section are based on the assumptions of 98% automobile usage and a vehicle occupancy rate of 3.0 for trips to the site. However, the scale of required mitigation could be reduced if vehicle demand is lowered through the implementation of transportation management strategies.

Designated drop-off zones for ride-shares, taxis, and private vehicles are a vital component. These zones re-duce illegal stopping near stadium entrances, improve pedestrian safety, and help maintain steady traffic flow. By separating drop-off areas by mode of transportation and providing clear wayfinding signs or app-based di-rections, stadium operators can enhance efficiency. Staffed zones with attendants can further ensure orderly operations during peak times. A potential drop-off zone could be located along the northern edge of the sur-face lot along Distillery Street.

Baltimore Peninsula Site
f. Preliminary Site and Building Design Concept

The size of the site is challenging for the proposed use. It has the advantage, however, of being in the newly developed Baltimore Peninsula area where synergy between the stadium and the surrounding features and destinations can be developed. The elevation of Distillery Road where it meets the site is approximately 26' and the team anticipates the continuation of the road on a nominal slope between the stadium and the practice pitch. For concept purposes, and to minimize disturbance to the cap, the project should anticipate an average of approximately 4 feet of clean fill across the portion of the site south of Distillery Road. Excavation for any utilities may be within that 4 feet but excavation for any lower level will likely require haul-off, appropriate disposal, and backfill with clean material. North of Distillery Road, it may be necessary to construct a retaining wall along the north edge so as to maintain the entrance off of Distillery Road and the elevation of the railroad property. (refer to appendix g).

The program for this new soccer venue calls for a significant amount of parking. Given the site as presented, there is minimal space for parking. It may be possible to design ADA compliant and VIP spaces in the areas designated on the exhibits herein however, the public parking will need to occur offsite. It is expected that the use of the existing, multi-level garage to the east will meet the zoning requirements, however its use would be subject to a written agreement between the garage owner and the stadium operator and/or owner. In addition, and on a temporary basis, it may be possible to utilize some of the surrounding area until such time as those parcels are developed.

Preliminary Site Design Concept

Considering the site limitations above, the design team is proposing that the stadium be oriented north-south and located tight to the top of the site boundary in the north-south direction and centered slightly favoring the east side in the east-west direction. This location provides the following benefits:

North-south orientation
This orientation is ideal for soccer pitches and allows for maximum future expansion.

Adjacency between parking and back of house
Locating the VIP parking and loading dock along the north-west portion of the site creates an ideal adjacency to the practice facility, locker rooms, and kitchen commissary.

Street Presence
The stadium establishes a street presence along the road on the eastern side of the site and provides an opportunity for retail on the corner where the road kicks out to the southeast.

Public Space
By pulling the stadium away from the southern boundary, it provides space for a public park or plaza in the remaining triangular space that can serve many functions on both gamedays and non-gamedays.

Preliminary Building Design Concept

Spectator Entrance Sequence
The main stadium entrance is located on the south side of the stadium. The ticket booth is located at the ground level at this location. The main entrance is adjacent to existing restaurants, businesses and housing.

A large plaza is situated to the south of the main stadium entrance and is a space for festivals and events on non-gamedays as well as an ample gathering area for stadium goers.

Once past security, all ticket holders travel up stairs to a main concourse plinth that provides a view down to the pitch and lower bowl seating area.

The main concourse provides access to concessions, restrooms, club, suite spaces, stadium pub and multi-purpose rooms. The concourse provides elevated views of the Baltimore Peninsula development to the south and the city skyline and I-95 to the north.

Spectator Seating

The lower seating bowl offers most seating options with direct access from the main concourse.

West Side seating
The west side of the stadium provides access to the premium seats offered by the Suites and Club experience. Stairs leading to the Mezzanine level provide access to the upper grandstand seating and press level. The west seating section is covered by a metal canopy.

South End Seating
The dedicated supporter section is situated behind the goal and is in close proximity to the supporter pub.

East Seating
The east lower bowl seating area is accessed from the main concourse with access to concessions and restrooms. The east concourse offers an unobstructed view to the pitch. This space can be utilized and/or ticketed for special events. Alternate #1 provides expansion seating and if accepted, Alternate #2 which is for a canopy overtop the East grandstand can be considered.

North End
The concourse at the north end of the stadium will be the location of the video scoreboard and general admission seating.

Field Level +0'-0" = finished grade
Mechanical, back of house storage, stadium loading dock and Building Ops, Commissary, Team Lockers and Team Training Spaces.

Team Lockers can be found on the west side of the stadium at field level. Shared Team Training areas are located off the concourse at the North Plaza with ample opportunities for natural light and close access to practice pitch at ground level.

Main concourse: +/- 14'-0"
Circulation, Lower Bowl Seat Access, Team Store, Concessions, Restrooms, Supporters Pub, Club and Suites, Party Deck seating options in corner.

Mezzanine Level +/- 28'-8"
Access to grandstand seating

Press Level +/- 61'-4"
The press box and broadcast booth will be located at the top of the west grandstand.

The practice field is situated north of the stadium across the street with access to the shared training spaces. The pitch is oriented east-west, which is not the ideal orientation, but is the only orientation that will fit on the site.

Stadium operations are primarily located to the east of the stadium facility. This allows for direct access from the road to the east for ease of loading, storage, and ventilation. Facility Operation offices will have ample opportunity for natural light.

An Alternate Expansion option provides a dedicated building adjacent to the Practice pitch for Academy Expansion program and services such as restrooms adjacent to practice pitch.

Baltimore Peninsula Site
g. Site Evaluation

Based on the RFP and the project meetings with the MSA and DC United throughout the preliminary design phase, the following parameters were established to evaluate each site; site access, traffic impact, site size, parking, flood plain, easements, setbacks, existing utilities, visibility, future expansion and development potential, community relations and neighborhood integration, cost impact, geotechnical impact, environmental impact, and archaeological impact.

Based on the information provided in this report, the project team has categorized each parameter as an opportunity or a challenge for the Baltimore Peninsula site:

Site Access and Traffic Impact: Opportunity
The site is surrounded by public roads on all sides, which allow for multiple access points to the site as well as easy access from I-95 in both directions. Vehicular access to the 2,200-space surface parking area at the Baltimore Peninsula Site will be provided via Cromwell Street, Mission Blvd., and an extended Distillery Street. Access to the 800-space garage parking will be provided via Mission Blvd. and Distillery Street.

Site Size: Challenge
The "Market, Site Fit and Economic Impact Analysis" report completed by Crossroads Consulting and Populous states that approximately 27 acres are required to accommodate the stadium, surface parking, and practice soccer pitch. The Baltimore Peninsula site is approximately 13 acres, which creates potential challenges with providing the full parking program which will be addressed off site.

Parking: Challenge
Per the RFP, the project team assumed a ratio of three people per vehicle and the "Market, Site Fit and Economic Impact Analysis" report conducted by Crossroads Consulting and Populous indicated that 90% of fans would be traveling to the stadium by car. This ratio equates to 2,250 parking spaces minimum for a 7,500-seat stadium or approximately 18 acres of space for parking.

Parking is the most glaring weakness of this site. On site parking will likely be limited to VIP/ player parking and the loading area for deliveries. All additional parking for the stadium is recommended to be located off-site and ideally within a half-mile radius.

Flood Plain, Easements, Setbacks: Challenge
The Baltimore Peninsula site is not within the flood plain.

During the project team's initial meeting with BGE, they indicated the need for a sixty-foot (60') easement for their duct bank installation. The project team's understanding is that the duct bank is intended to be routed through the northern portion of the northern site parcel. The design team recommends to locate part of the practice pitch and parking lot within the easement. Generally the on grade improvements are acceptable within the easement, however, if maintenance is required within the easement, BGE would have the right to shut down the field and do their repairs which could result in significant damage to the artificial practice pitch.

In our last conversation with the railroad, they indicated that the existing spur to the north of our site was still in use, so we would need to clarify their setback requirements.

There are no building setback requirements.

Existing Utilities: Opportunity
There are existing utilities on site. Modifications and connections for utilities will be required, but there is capacity to not require bringing additional utilities to the site.

Visibility: Opportunity
The Baltimore Peninsula site has premier visibility and community presence as the stadium would be in the heart of the new Baltimore Peninsula development. The site is extremely visible from I-95 in the north bound direction, which provides a great opportunity for marketing and branding.

Future Development Potential: Opportunity
There is planned investment and development surrounding the stadium site as part of the Baltimore Peninsula master plan. The stadium project may serve as an anchor to attract visitors and businesses to the new development.

Community Relations and Neighborhood Integration: Opportunity
The stadium project has support from MAG Partners, who are the developers of the Baltimore Peninsula.

Cost Impact: Opportunity
Per the cost estimate completed by RLB (see appendix h), the project would be approximately $16,000,000 less expensive at this site than at the Carroll Park Golf Course site. The primary difference in projected cost is the Carroll Park Golf Course site requires significant grading, site improvements, and parking due to the location, and the public parking for the Peninsula site will be developed off-site.

It should be noted that the need for parking on the Peninsula site will need to be addressed through a combination of off-site land lease(s) yet to be developed and an agreement to share adjacent parking garages on the Baltimore Peninsula. This cost has not been included as part of this report.

Geotechnical Impact: Opportunity
The preliminary borings that were completed did not identify any concerns beyond the expectations for this site. The soils analyzed do not appear to limit the options for structural foundations of the building.

Environmental Impacts: Challenge
The findings of Phase I ESA identified no current regulatory violation files or citations for the subject Property.

It is likely during any proposed redevelopment activities of the subject Property that some petroleum and metals impacted soils will be encountered and will need to be properly managed and dispose of this impacted material in accordance with state and federal regulations. It may also be possible to utilize the existing Environmental Management Plan (EMP) or Comprehensive Soil Management Plan (CSMP) to manage any excavated impacted soils that have been prepared for the subject Property and associated parcels as part of past MDE agreements.

An allowance has been included in the cost estimate to account for removing contaminated soils that are discovered during construction.

Archaeological Impacts: Opportunity
Due to continuous development in the Study Area, including extensive landform modification in the late 1980s, it is unlikely that significant archaeological resources exist within the Study Area. The Study Area has low potential for archaeological resources. No further archaeological investigation is recommended.

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Conclusion

Conclusion

Throughout the preliminary design phase, the project team was able to complete analysis for both sites, define a base and an expanded program for the project, and establish an initial budget for the MLS NEXT Pro multi-use soccer stadium project.

The project team was able to evaluate the opportunities and challenges of each site using the analysis required by the RFP as well as the critical success factors discussed with the Maryland Stadium Authority and DC United to establish twelve parameters by which each site was assessed.

The biggest opportunities of the Carroll Park Golf Course site are the size and access to existing utilities, while the biggest challenges are the lack of access to the site and only a singular entry on and off the site. This will present challenges with traffic congestion before and after matches, and limit emergency egress options, and delivery services.

The greatest opportunity for the Baltimore Peninsula site is it's location in the middle of the new Baltimore Peninsula development, and the greatest challenge is determining how public parking will be accommodated off-site.

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Appendices


Moody Nolan
PENDULUM