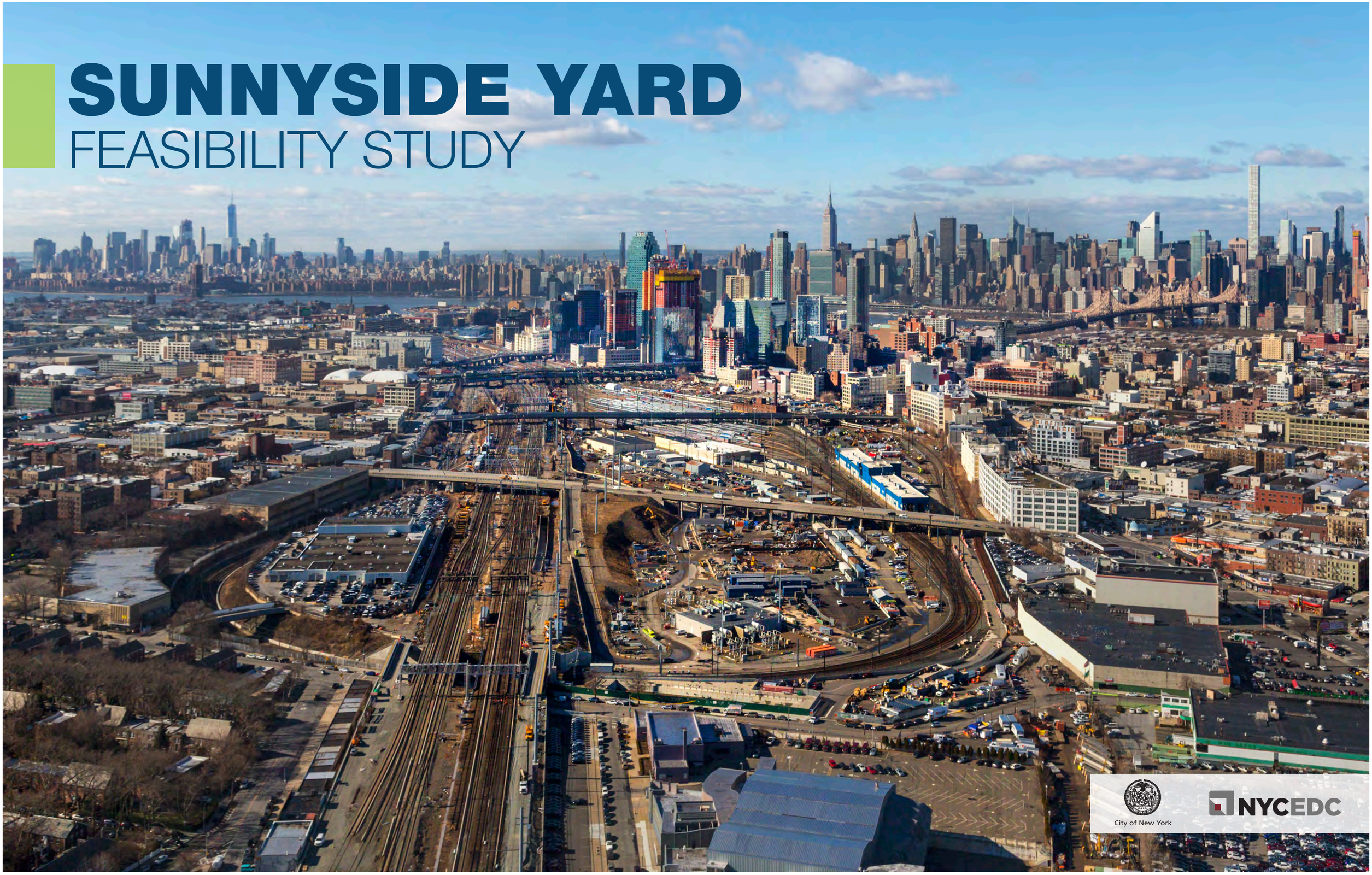
SUNNYSIDE YARD
FEASIBILITY STUDY



City of New York

NYCEDC

February 6, 2017

New York City is in the midst of a period of unprecedented growth. Our population has reached a record 8.5 million, and current projections estimate that it will reach an astonishing 9 million before 2040. That growth has helped make the City an even more dynamic place to work, learn, and play, but it has also placed new stress on the core infrastructure serving the City and the region.

At the same time, land has become increasingly scarce. Opportunities to expand the transportation infrastructure we need to move our workforce and the housing stock necessary to shelter our residents are few and far between. The public sector must reach for new and innovative solutions to meet our needs.

In Western Queens, there remains one of New York City's last great opportunities to solve many of these challenges in one place. Sunnyside Yard is a 180-acre site that houses essential rail operations for Amtrak, the MTA, and NJ Transit. It has also divided communities in Queens for decades. In early 2015, Mayor de Blasio announced that the City would analyze the feasibility of taking on the mammoth task of decking over Sunnyside Yard to build a new, fully planned neighborhood in the heart of Queens – all while allowing rail operations to continue underneath. Since the Mayor's announcement, the City has worked with Amtrak to study the future of Sunnyside Yard. This study is the result of that collaboration and represents a comprehensive and detailed assessment of the technical, planning, and financial considerations of building atop Sunnyside Yard.

We thank the many community members, elected leaders, public agencies, and other stakeholders who informed this study. We look forward to continuing our work together to explore an opportunity with the potential to prepare New York City for the next century.

Sincerely,

Alicia Glen

Deputy Mayor for Housing and Economic Development

Acknowledgements

Acknowledgements

LEAD AGENCIES

New York City Economic Development Corporation (NYCEDC)

Amtrak

CONSULTED AGENCIES

New York City Agencies

- *Department of Cultural Affairs (DCLA)*
- *Department of City Planning (DCP)*
- *Department of Environmental Protection (DEP)*
- *Department of Education (DOE)*
- *Department of Health & Mental Hygiene (DOHMH)*
- *Department of Transportation (DOT)*
- *Department of Parks and Recreation (DPR)*
- *Department of Housing Preservation and Development (HPD)*
- *New York City Police Department (NYPD)*
- *Office of Management and Budget (OMB)*

Metropolitan Transportation Authority (MTA)

New York City Transit Authority (NYCT)

Long Island Railroad (LIRR)

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WSP USA/Structural Engineering

Chapter 1: Executive Summary

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FIGURE 1.1: SUNNYSIDE YARD IN CONTEXT

The Pennsylvania Railroad first opened Sunnyside Yard in 1910. It now covers approximately 180 acres, is over 8,000' long, and varies in width from 400' to 1,500'. It is a key train storage yard and maintenance hub for Amtrak's Northeast Corridor, and serves New Jersey Transit and Long Island Rail Road, which is developing storage tracks and maintenance facilities there as part of its East Side Access Project.

A. Introduction

The Sunnyside Yard Feasibility Study identifies key considerations and planning principles to inform future decision-making with regard to a Sunnyside Yard overbuild. For the purposes of this study, feasibility was evaluated under the perspectives of engineering, economics, and urban design to inform the development of planning principles. If implemented in a coordinated fashion, these planning principles would guide the creation of a neighborhood that integrates with the surrounding urban context, generates substantial public and economic benefits for New York City (the "City") at large and western Queens, and facilitates unimpeded operations of one of the country's busiest rail yards. (Figure 1.1, Figure 1.2) Collectively, these planning principles provide a development framework for a potential overbuild at Sunnyside Yard that could feasibly address engineering, economic, urban design, and public policy considerations.

Overbuild development in Sunnyside Yard has been discussed for nearly a century. Studies in recent decades have suggested a range of potential development opportunities, but none have comprehensively addressed railroad operation constraints, structural engineering requirements, existing infrastructure capacity, market conditions, and urban design standards in a cohesive manner. This study is the first to assemble the data and analyses necessary to integrate engineering, economics, and urban design into a single, systematic assessment.

An iterative process, which modified physical and programmatic configurations in response to financial and engineering analysis, informed the development of these planning principles. Multiple options and scenarios were tested. Although complex constraints narrow the range of alternatives, the three test cases presented in this study are by no means the only potential overbuild scenarios at Sunnyside Yard. The analysis of data and resulting principles provide a resource to inform future planning and decision-making.

The feasibility of an overbuild at Sunnyside Yard is influenced by several factors that are in flux. Rail traffic in Sunnyside Yard is expected to significantly increase in coming years and both Amtrak and the Metropolitan Transportation Authority (MTA) plan to implement reconfigurations of tracks and rail operations. As these and other projects progress, they will need to take into consideration a potential overbuild to preserve project feasibility. This study's findings can aid the initial coordination necessary between multiple ownership entities for a future overbuild at Sunnyside Yard.

B. The Study

The goal of this study is to identify a set of principles to guide feasible development from the perspectives of engineering, economics, and urban design. For the purposes of this study, feasibility was defined as follows:

- **Engineering - Rail operations and structural considerations:** A conceptual structural system for overbuild, above an active and expanding railyard, capable of supporting development and minimizing impact on rail operations.
- **Economics - Market demand and real estate development parameters:** Development strategies that leverage value, minimize costs, and generate economic and public benefits for the City and surrounding neighborhoods.
- **Urban Design – Surrounding communities and planning standards:** A framework that complements the existing adjacent neighborhoods, allows mixed-use districts to be phased over time, and meets policy goals across a fully developed project.

Three test cases were developed to explore the feasibility of different programs. All test cases include a significant proportion of residential use but vary in focus:

- Test Case 1 (Residential)
- Test Case 2 (Live/Work/Play)
- Test Case 3 (Destination)

While the three test cases varied in mix of uses, program and phasing, each were aligned with the following public policy objectives:

- Create housing options for low- and moderate-income New Yorkers, new office space to support local and citywide employment growth, and venues for community and cultural uses;
- Serve local neighborhoods and help accommodate ongoing growth;
- Produce mixed-income, mixed-use communities, including schools, libraries, police and fire stations, and other community amenities;
- Promote significant public parks, open spaces, recreational facilities, and a connected network of green streets and pedestrian routes; and
- Respect and respond to existing neighborhood contexts and improve physical connections between the neighborhoods of western Queens.

FIGURE 1.2: SUNNYSIDE YARD: EXISTING CONDITION

A summary of the test case programs is illustrated in Figure 1.3. Given the preliminary nature of the program definition, all program assumptions are expressed as ranges.

The evaluation of the three distinct test cases provides the analytical framework to test strategies for minimizing impacts on railroad operations, improving financial feasibility, supporting integrated mixed-used urban design, and achieving public policy objectives. The collective analysis of the three test cases resulted in certain conclusions, considerations, and principles such as:

- Potential locations for columns and walls that support an overbuild with a full range of structures and uses without impacting rail yard activity;
- Overbuild coverage area, building typologies, and structural systems that address complex engineering requirements in the most efficient manner;
- Access point and street-grid strategies that support overbuild and connect, integrate, and respond to surrounding neighborhoods; and
- Phasing considerations that take into account market demand and absorption and coordinate with Amtrak's planned improvements at Sunnyside Yard, pursuant to their 2014 Master Plan.

	Test Case 1 Residential	Test Case 2 Live/Work/Play	Test Case 3 Destination
Residential	18.0 M – 24.4 M	14.2 M – 19.3 M	16.3 M – 22.0 M
Total # of Residential Units	18,000 – 24,000 units	14,000 – 19,000 units	16,000 – 22,000 units
30% Affordable Units**	5,400 – 7,200 units	4,200 – 5,700 units	4,800 – 6,600 units
Class A Office	0	3.5 M – 4.8 M	0
Creative Office	0	600 k – 800 k	0
Neighborhood Retail	700 k – 900 k	500 k – 700 k	600 k – 800 k
Mixed-Use	200 k – 300 k	110 k – 150 k	1.1 M – 1.5 M
Community Facilities/Schools	1.5 M – 2.0 M	1.0 M – 1.4 M	1.1 M – 1.5 M
# of Schools	13 – 19 schools	10 – 14 schools	10 – 14 schools
Higher Education	0	1.0 M – 1.4 M	0
Parking	700 k – 1.0 M	1.0 M 1.3 M	1.2 M – 1.6 M
# of Parking Spaces	2,400 – 3,300 spaces	3,300 – 4,500 spaces	3,900 – 5,300 spaces
Total Floor Area	**21.1 M – 28.6 M**	**22.0 M – 29.8 M**	**20.3 M – 27.4 M**
Open Space	38 – 52 acres	37 – 50 acres	31 – 42 acres

FIGURE 1.3: TEST CASE AREA COMPARISON*

*All numbers are in total square feet unless otherwise noted.
** Affordable housing follows MIH guidelines

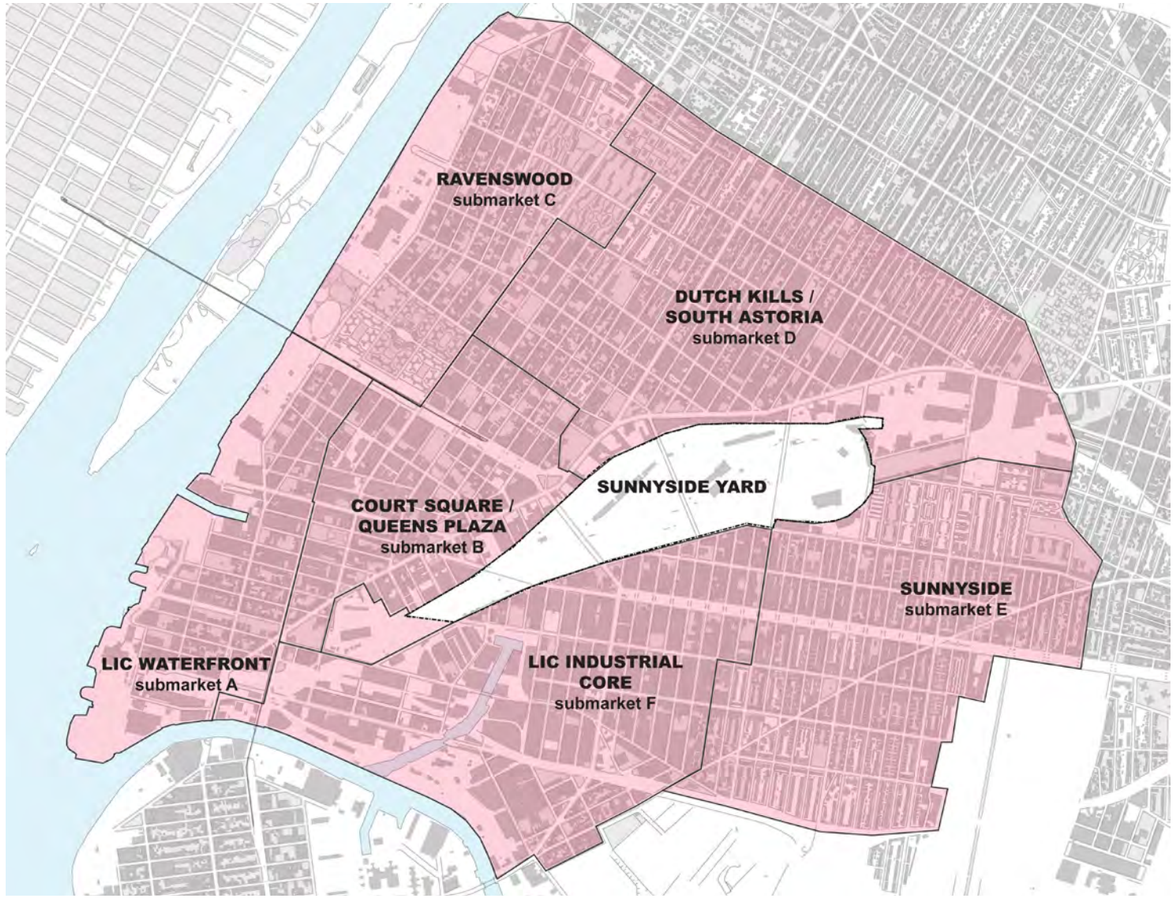


FIGURE 1.4: STUDY AREA

C. Context

Assessing the feasibility of an overbuild at Sunnyside Yard requires consideration of both offsite influences and onsite constraints. The offsite contextual considerations include adjacent neighborhoods, transportation and utility infrastructure, and market conditions. The onsite constraints consider ownership and railroad operations, including the Amtrak Master Plan.

Adjacent Neighborhoods

Sunnyside Yard is located at the confluence of four distinct neighborhoods. (Figure 1.4) A wide range of land use patterns and neighborhood characteristics comprise the "Study Area," defined as a one-mile radius from Sunnyside Yard. These characteristics include:

- Rapid transformation from an industrial area to a mixed-use, multi-story residential neighborhood in the areas to the west, including Long Island City;
- A range of multi-story commercial loft buildings and single-story industrial uses in Dutch Kills/South Astoria and Greater Sunnyside to the north and southeast of Sunnyside Yard, respectively;
- Traditional office uses clustered around Queens Plaza; and
- Tracts of low-rise, one- to three-family row houses in many parts of the Study Area.

Where development is taking place, new high-rise towers are altering the built environment and urban experience. These trends are resulting in new demand for the services and conveniences that typically exist in dense residential neighborhoods. The need for schools is increasing, as is the community's desire for parks, public space, and retail amenities.

Transportation and Utility Infrastructure

A combination of subways, commuter rail, and transit buses are available close to all sections of Sunnyside Yard, with the greatest access provided at the western half of Sunnyside Yard. Key infrastructure elements include:

- Eight MTA subway lines serving approximately 13 subway stations or complexes are located within the study area and walking distance to the project site.
- Many MTA bus routes either stop within or pass through the Study Area.
- With the exception of subway and parking capacity, transportation in and around the Sunnyside Yard Study Area is generally available, accessible, and at or below capacity under current conditions.
- Pedestrian routes operate effectively, the bicycle network is generally well connected, and levels of service for vehicular traffic are generally acceptable.
- Existing utility infrastructure is well developed and is generally adequate for current land uses and new development in areas surrounding Sunnyside Yard; however, some infrastructure, particularly sewer and water supply systems, is aging and may not have adequate capacity to meet future demand.

Market Conditions

The Study Area is home to approximately 5% of Queens' residential population, the largest employment hub in western Queens, and an anchor of the City's industrial economy. Submarkets to the west of Sunnyside Yard are experiencing significant new residential development, while elsewhere in the Study Area, little new residential real estate development has taken place. For commercial properties, increased job growth is spread across a range of industries and building types, including newly-constructed Class A office space and adaptively reused space. Key factors driving the development of the Study Area include:

- Much of the population surrounding Sunnyside Yard is concentrated in principally residential submarkets to the east of Sunnyside Yard, with nearly half residing in the Dutch Kills/South Astoria and Sunnyside submarkets.
- The current base of 9,000 units built since 1999 and is forecasted to increase by an additional 14,500 units over the next eight years.
- Since 2002, employment has increased by 25% and the area is recognized as one of the City's most significant non-Manhattan employment centers.
- Neighborhood retail in the LIC Waterfront submarket is generally competitive with other submarkets along the Brooklyn-Queens waterfront and minimal shopping district retail exists in either Western Queens or North Brooklyn.

Size and Ownership

The Sunnyside Yard Feasibility Study focuses on the identified Study Area, which includes approximately 180 acres of Sunnyside Yard located to the east of 47th Avenue. Key features of the Yard:

- Sunnyside Yard is more than six times the size of Hudson Yards, twice the size of the Battery Park City, and 30 acres larger than Roosevelt Island.
- The Amtrak Northeast Corridor and the Long Island Railroad ("LIRR") Main Line run through the spine of the Yard and are operational at all times.
- Yard ownership is spilt among four parties: Amtrak, which owns most of Sunnyside Yard, MTA which owns the northern and western parcels, the City which owns the air rights above the MTA-owned properties, and General Motors which owns its facility located in the southeastern section of the Yard. (Figure 1.5)
- If constructed, an overbuild above Sunnyside Yard would be the largest and most complex urban development site in New York City.

Railroad Operations and Amtrak Master Plan

Sunnyside Yard is currently one of the country's busiest rail yards. Multiple railroad entities actively use the space for operations, storage, and maintenance. Future plans by MTA/LIRR, Amtrak, and New Jersey Transit ("NJT") to upgrade the rail facilities will intensify this activity. Key considerations influencing railroad operations:

- Currently, Sunnyside Yard has 32 active storage tracks.
- Harold Interlocking, a major railroad junction serving the tracks within the Yard, routes trains from Pennsylvania Station to either the Northeast Corridor or the LIRR Main Line.
- Amtrak is one of the major users of the Yard, and Sunnyside Yard is a key train storage yard and maintenance hub for their Northeast Corridor operations.
- At Sunnyside Yard, Amtrak stores and services its Northeast Corridor trains, utilizes its high-speed rail (HSRF) maintenance facility for Acela service, and operates a commissary building for preparing onboard food and beverages.
- MTA/LIRR is currently constructing the East Side Access project at the Yard, and will be developing storage tracks and maintenance facilities.
- NJT uses Sunnyside Yard primarily as a midday lay-up area for storing trains between

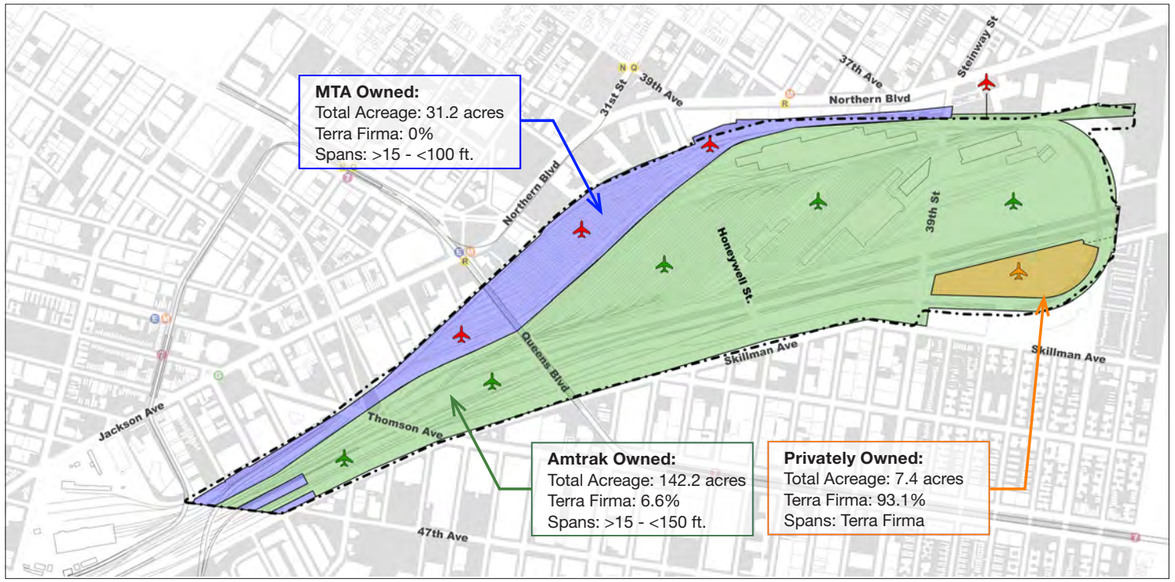


FIGURE 1.5: SUNNYSIDE YARD OVERBUILD: LAND AND AIR RIGHTS OWNERSHIP

- Amtrak Land Ownership
- MTA Land Ownership
- Private Land Ownership
- Amtrak Air Rights Ownership
- City of New York Air Rights Ownership
- Private Air Rights Ownership

morning and evening rush hours.

- The Amtrak Yard Expansion project, as detailed in its Master Plan, would enable Sunnyside Yard to accommodate approximately double the number of trains that it does today.
- Amtrak is planning to rehabilitate East River Tunnels damaged during Hurricane Sandy.
- Amtrak is planning to complete ongoing state-of-good repair work (maintenance and equipment upgrades) as well as other miscellaneous projects around Sunnyside Yard.
- The MTA has at least six known projects that are either under construction, planned, or envisioned over the next 15 years and beyond that will impact the Yard.

Combined, those physical, operational, structural, and economic conditions will impact overbuild development at Sunnyside Yard. While these development conditions are challenging and continuously evolving, they frame a set of principles that can be used to guide development of a future overbuild.

D. Key Considerations and Planning Principles

Existing and future conditions were used to evaluate the three test cases and to inform a set of planning principles. Given the complexity and scale of this project, the findings of this study are subject to inherent risks that are beyond the control of any single entity. The success of this project could be influenced by several onsite and offsite factors. A project of this nature faces risks due to shifting political priorities, as well as changes in expected revenue and/or cost assumptions. Modifications of density or the planned program could alter feasibility, as well as impact existing transportation networks and other offsite considerations. Multiple railroads, complex infrastructure, and the sheer scale of such an overbuild project would require exceptional coordination and a long-term perspective from all involved parties.

With these caveats, the following considerations and planning principles are identified to inform future decision making in regards to a Sunnyside Yard overbuild.

Engineering

The existing and future railroad operations will impose significant constraints for overbuild feasibility. Assumptions involving Amtrak's Sunnyside Yard Master Plan are predicated on its 2014 vision of its 2030 operations. As the Master Plan implementation progresses over time, assumptions may need to be reconsidered and the plan for the overbuild adjusted accordingly. Key considerations and planning principles with respect to rail operations include:

- Detailed cooperation will be necessary at all levels between the railroad companies, the City, any development entity, and developers.
- Track outages, work hours, and construction work zones should be streamlined to maximize contiguity and continuity, while minimizing disruptions to railroad operations.
- Whenever possible, overbuild construction should be performed concurrently with other planned construction of railroad infrastructure.
- Overhead wires that supply electrical power for trains will need to be lowered and supported under the deck. Other overhead wires may need to be rerouted or buried.
- Required railroad clearances above the tracks affect the height of the deck, limiting the vehicular access to only the existing roads and bridges and inflating building heights. Some variances should be required from standard track clearances to locally reduce deck height.
- It is assumed that the existing bridges cannot be replaced.
- Certain areas of the Yard, particularly above the Main Line tracks, are exceptionally encumbered by heavy rail traffic and physical infrastructure. These areas were determined to be infeasible for decking as they exist today.

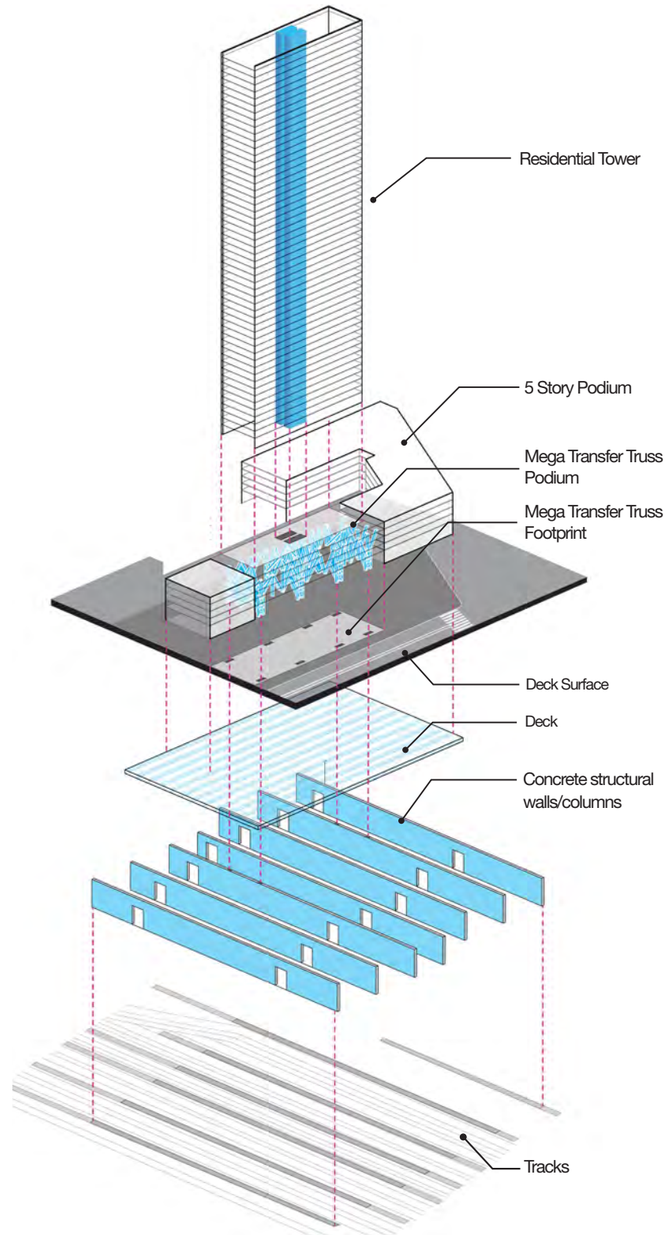


FIGURE 1.6: TOWER AND TRACK STRUCTURE RELATIONSHIP

- Overbuild poses some safety considerations such as adequate exhaust of heat and diesel fumes generated by stored trains, fire and life safety ventilation, standpipes, and egress.

Structural systems will need to accommodate the constraints imposed by railroad operations, the restrictions dictated by yard geometry, and the structural requirements for a substantial overbuild. (Figure 1.6) Key considerations and planning principles with respect to structural constraints include:

- Structural steel construction is preferred for the deck, as it is lighter than precast concrete and therefore easier to maneuver and install in congested areas.
- Structural support walls or columns must be located outside of required railroad track clearances.
- Deck/platform depth (vertical thickness between upper surface and underside) will vary between 9’ and 16’. Deck depth increases with span length and may be adjusted to accommodate urban design considerations.
- Deck spans would vary across Sunnyside Yard. Shorter spans between support walls or columns would allow for taller structures above.
- Buildings under 60’ tall, roads, and open space can generally be supported by support columns at track level.
- In general, buildings and towers over 60’ tall:

  -Require full support walls at track level.

  -Need to be oriented with their long axis perpendicular to the direction of the tracks, with support walls running between tracks, in order to provide adequate resistance to wind loads.

  -Must span three to four lines of columns (depending on tower length/height). (Figure 1.7)

  -Require a substantial steel truss (a “mega transfer truss”) in the building podium to transfer the loads to support walls. The size of the transfer truss varies depending on span and tower height.

FIGURE 1.7: RAILROAD OPERATIONS AND TOWER LOCATIONS

Structures and infrastructure which interact with proposed deck

Tower Footprints

Future Track Alignment

Optimized Tower Locations

Studied Boulevard Alignment

Urban Design

Urban design considerations aim to create balanced, vibrant, and well-connected urban neighborhoods within operational, structural, and financial constraints. (Figure 1.8) Key considerations and planning principles with respect to urban design include:

- A strong but flexible vision for development is necessary for a successful long-term and phased buildout.
- The deck generally sits 20-40' above surrounding streets. Vehicular connections to the deck should be adjacent to existing bridges wherever possible, where the elevation of the deck will be close to the elevation of the bridge. The existing bridges at 39th Street, Honeywell Street, and Queens Boulevard should be utilized as the primary north-south vehicular connectors.
- A central, roughly east-west-oriented boulevard along the length of Sunnyside Yard should be established to link different phases of development.
- Pedestrian connections should be established over un-decked open areas, at surrounding dead-end streets, and along Skillman Avenue. The pedestrian network should be integrated with offsite and onsite open spaces.
- Transit use should be encouraged by providing easy access to existing transit and incorporating new transit, such as the proposed LIRR Sunnyside Station.
- New neighborhood districts should have a clear identity and organization.
- Each development phase should strive to create complete neighborhoods with a balance of uses to meet a broad range of needs.
- New development should respond to the surrounding context. Transitions and buffers should be used to negotiate differences in scale, elevation, and use.
- A system of connected parks and open spaces with a variety of scales and uses should be integrated with new development.

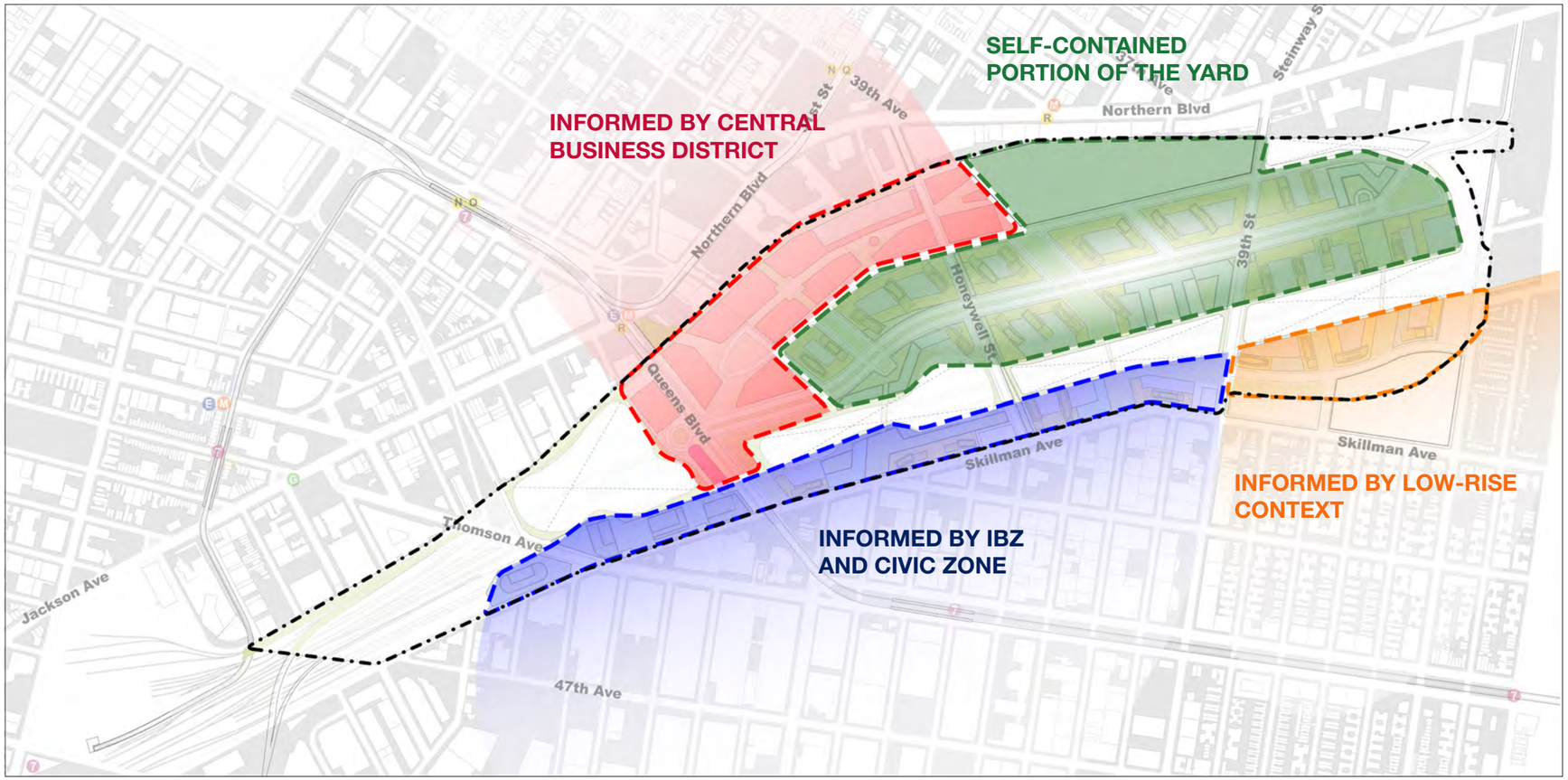


FIGURE 1.8: SUNNYSIDE YARD: NEIGHBORHOOD CHARACTER

Economics

An overbuild development at Sunnyside Yard depends on the strategic placement and phasing of different building typologies to mitigate construction costs and provide for the economic capacity to support critical public infrastructure, including open space, schools, and roads. Key considerations and planning principles with respect to economics include:

- Buildings should be located where they are most structurally feasible and cost-effective, with heights, footprint size, and overall site density maximized where appropriate.
- Parks, roads, and open space should be located where overbuild is more structurally complex and/or costly.
- Areas that are most difficult to build over should be left un-decked. A target of 80-85% overall deck coverage is appropriate given Yard constraints. (Figure 1.9)
- Construction should be phased to:

  -Coordinate as closely as possible with Amtrak's Master Plan to synchronize track outages, minimize railroad disruption, and reduce potential duplication of rail reconstruction work.

  -Leverage time value of money by delaying less-accretive uses to later phases.

  -Capitalize on the mix of uses to allow non-competitive uses to be absorbed simultaneously.

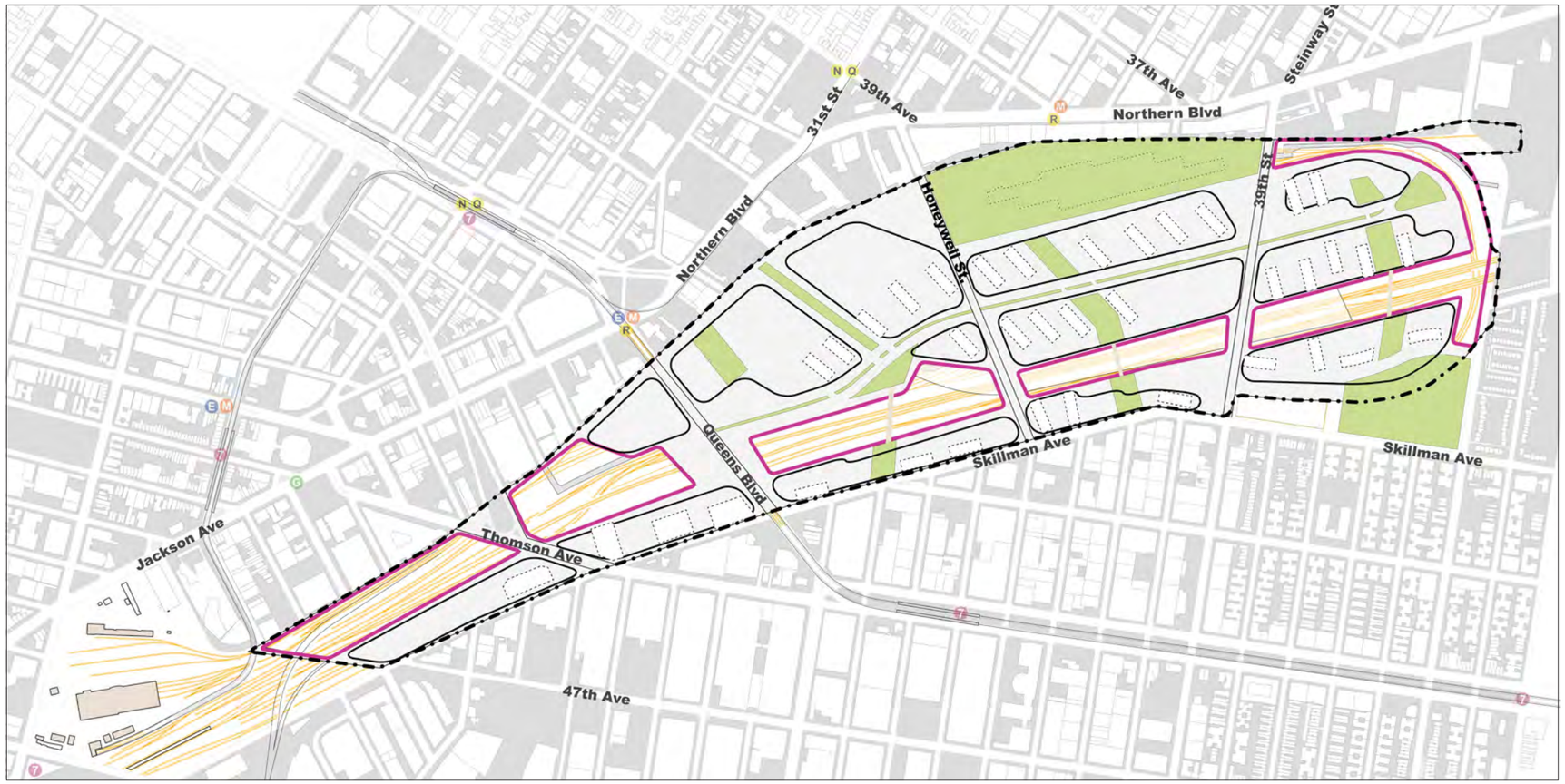


FIGURE 1.9: OPTIMIZED DECK COVERAGE, OPEN SPACE AND TOWER FOOTPRINTS

Outline of Non-Decked Areas
Public Open Space
Tower Footprints
Tower Zones

E. Development Feasibility

Each of the three test cases evaluated contained a specific programmatic and public policy focus - Residential, Live/Work/Play, and Destination. Each test case was evaluated based on the same assumptions regarding railroad operations, structural system strategies, and planning principles, and each test case varied in its mix of uses, program and phasing. Multiple options and scenarios were tested as part of this study, and the three test cases are by no means the only solution for the development challenges presented. Other configurations – both of program and physical form – are possible. More detailed study and planning of Sunnyside Yard and the Study Area may result in better solutions.

An overbuild development of Sunnyside Yard as measured by the three test cases could bring substantial benefit to the City, including between 14,000 and 24,000 total new housing units, 31 to 52 acres of open space, and new schools, community facilities, and retail amenities to serve new residents and surrounding communities. Development at Sunnyside Yard could create at least 4,200 to 7,200 new permanently affordable housing units, helping to meet City policy goals. This study follows MIH guidelines as a minimum standard of affordability.

Following the development of the test cases, the full overbuild was divided into seven zones, “A” through “G”. (Figure 1.10) The development zones were defined based on ownership, railroad operations, physical landmarks and barriers, and construction constraints. Each zone was independently evaluated for the feasibility of development based on a number of factors, including ownership, planning parameters, street grid and connections, tower placement, land uses, and open spaces.

To estimate project-wide feasibility, a number of financial analyses were completed to measure total project costs against total potential project revenues. The horizontal elements outside of the building footprints including utilities, certain decking, mechanical and public safety infrastructure, roads, and open space were analyzed together. The mega transfer truss and deck costs below a building footprint were analyzed separately. The mid-point of each vertical program range was assumed for purposes of these analyses. The financial measurements used to evaluate financial feasibility include:

- **Total Development Costs:** All of the horizontal costs (both in and outside of building prints) and all vertical costs associated with the development of the overbuild.
- **Gross Land Proceeds:** Value a developer would pay for the land and development rights, considering normal development costs if this were a typical development on terra firma.
- **Overbuild Premium:** Cost premium for the deck and mega transfer truss within the building footprint(s).
- **Onsite and Offsite Horizontal Costs:** Costs for horizontal development outside of a building footprint including railroad force accounts and other site-wide systems such as streets, open space, municipal buildings, and utilities, and costs related to offsite utilities to support density and capacity on Sunnyside Yard.

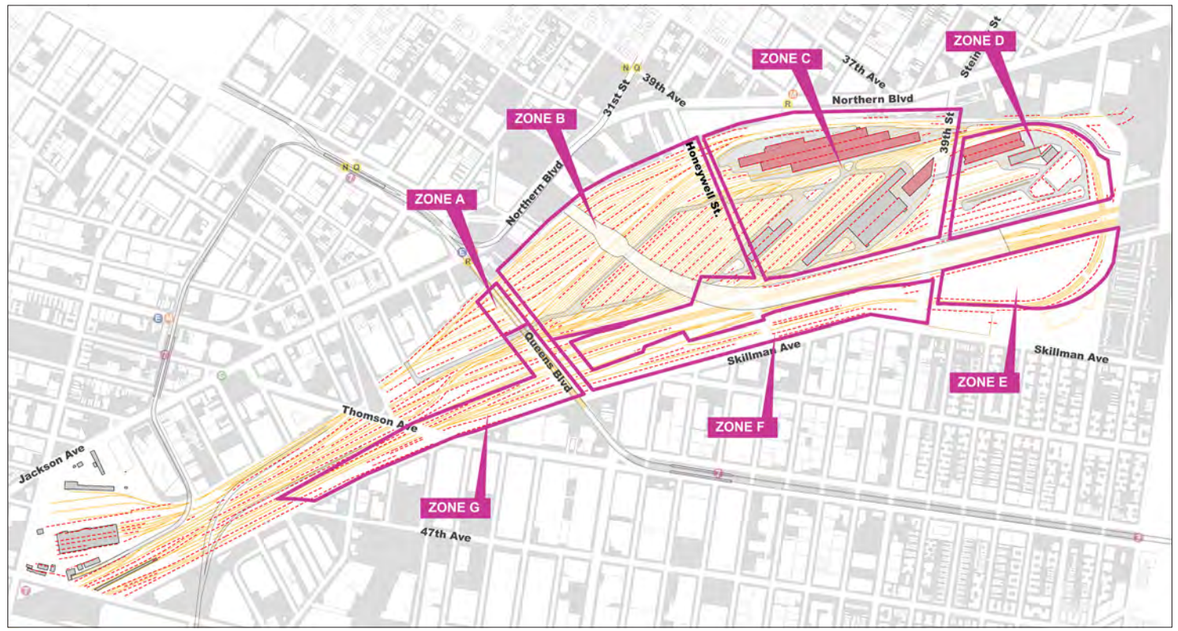


FIGURE 1.10: SUNNYSIDE YARD ZONE BOUNDARIES

- **Residual Land Value:** Gross land proceeds, less overbuild premium and onsite and offsite horizontal costs.

Financial feasibility is strongly influenced by use mix, density, number of roads, amount of open space, and share of affordable housing. Horizontal project costs are generally consistent between test cases and vary only modestly due to differences in phasing and the number of roads, size of open space, and other horizontal program elements. Total development cost is estimated to range from approximately $16 billion to $19 billion in 2017 dollars. The test cases generate between approximately $3.33 billion and $3.98 billion in gross land proceeds. Overbuild premiums are estimated to cost between $2.38 billion and $3.38 billion. Onsite and offsite horizontal costs are between approximately $2.93 billion and $3.43 billion and result in between -$3.48 billion and -$1.73 billion in residual land value. While a negative residual land value suggests that public investment is necessary to facilitate development, significant public benefits in the form of new public facilities such as schools and open space would be delivered because of this project. In addition, the project would unlock potential future tax revenue, including but not limited to real estate taxes. The magnitude of public benefits and taxes is significant. For example, the total onsite real property tax generated by the test cases over 40 years could be between $1.31 billion and $1.53 billion.

Core Yard

Based on an understanding of the technical constraints and the lessons learned by optimizing feasibility for the three test case scenarios, the Core Yard, defined as Zones D, C, and B-South covering approximately 70 acres, has been identified as an area most viable for development, and would be a likely early phase of the total overbuild project.

Based on railroad operations and the future track layout, the Core Yard could support a high density of residential uses. The majority of the area is under Amtrak ownership and overlaps with elements of the Amtrak Master Plan requiring immediate coordination. Development in the Core Yard would encourage consistent block and street grid formation and the creation of a central east-west boulevard to facilitate future phases of development. The area is connected to the existing road and bridge network and is large enough to accommodate a complete and economically feasible neighborhood. (Figure 1.11)

The development of the Core Yard could bring substantial benefit to the City, including approximately 11,000 to 15,000 total new housing units, 15 to 20 acres of open space, and new schools, community facilities, and retail amenities to serve surrounding communities and new residents. The Core Yard could create at least 3,300 to 4,500 new permanently affordable housing units, helping to meet City policy goals. Across the test cases, the Core Yard produces similar levels of financial feasibility. By evaluating the impacts of the range of uses, number of roads and open space, the Core Yard program was refined to improve financial feasibility. Total development cost is approximately $10 billion in 2017 dollars. Using the mid-point of a refined Core Yard program, the project could generate approximately $2.84 billion in gross land proceeds. After accounting for approximately $1.81 billion in overbuild premium and approximately $1.84 billion in onsite and offsite horizontal costs, the Core Yard can have an estimated residual land value of -$798 million. A negative residual land value indicates that public investment will be required in the project. The financial feasibility of the project was evaluated by analyzing the public goods and tax proceeds that would be generated by this potential investment. The Core Yard could deliver housing, substantial public benefits in the form of affordable open space, and public facilities at a cost that is comparable to other major infrastructure investments and large scale developments led by the City. Moreover, the Core Yard could generate significant tax proceeds. The real property taxes alone (approximately $934 million over 40 years) could exceed the total cost of investment.

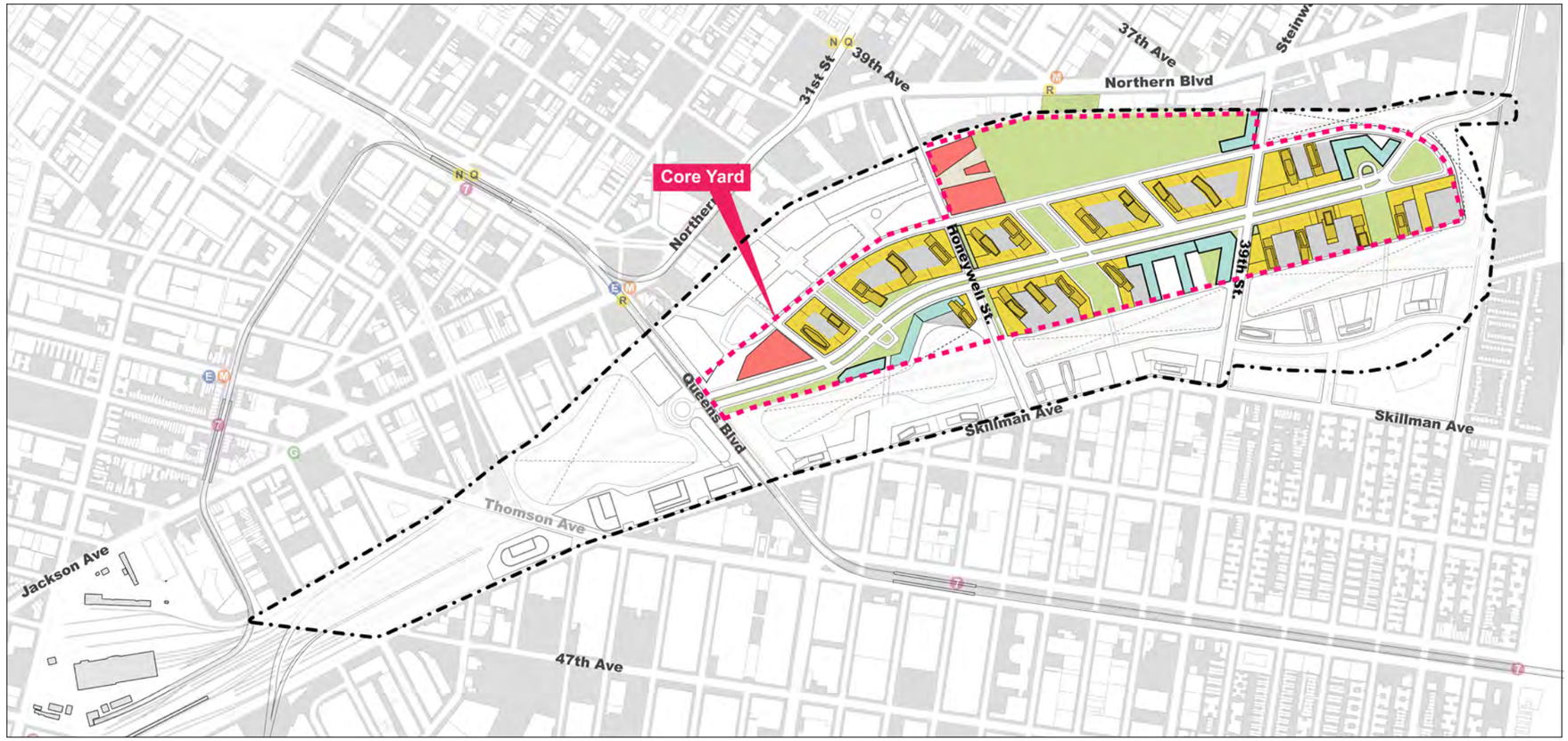


FIGURE 1.11: CORE YARD LAND USE

Finally this investment would leverage substantial private investment to catalyze economic impacts at a regional scale. Considering this combination of factors, the Core Yard is financially feasible.

F. Conclusion

This Feasibility Study describes engineering, urban design, and economic parameters for a feasible overbuild approach at Sunnyside Yard.

Some key issues that influence feasibility are beyond the scope of this study, including potential modifications to Amtrak's Master Plan and the related incremental construction costs, offsite improvements to transportation infrastructure, and the specific financing, contractual, and/or governing structures that would be created to support development. (Figure 1.12, Figure 1.13)

Sunnyside Yard is an active railyard situated within a dynamic urban environment. As Amtrak progresses on its Master Plan, and as the economic and urban environment evolves, variations from the studied test cases may be warranted, resulting in changes to specific feasibility findings. Should the project move on to a next stage of planning, more detailed study and design development should be undertaken, with a focus on a more discrete section of Sunnyside Yard—the Core Yard. A comprehensive program of public outreach and engagement would be integrated with additional planning. In tandem, significant coordination between multiple land and air rights owners, careful sequencing of investments, and development of thoughtful value creation strategies each need to occur to support a feasible project.

FIGURE 1.12: POTENTIAL SITE PLAN BASED ON TECHNICAL FINDINGS

A future overbuild development plan would also have to respond to significant uncertainties. A project of this scale would span several political administrations, multiple economic cycles, and changes to the City's employment base. Cost-effective and operationally-efficient construction of an overbuild will include large up-front expenditures that may not see returns for many decades. Changes to the development program, density, open space, value creation, ownership coordination, technology advancements, railroad requirements, and adjacent development may alter the key considerations and planning principles of this study and impact project feasibility. This feasibility study is only the first stage in a multi-step, multi-year design process needed to realize a project of this scale and complexity.

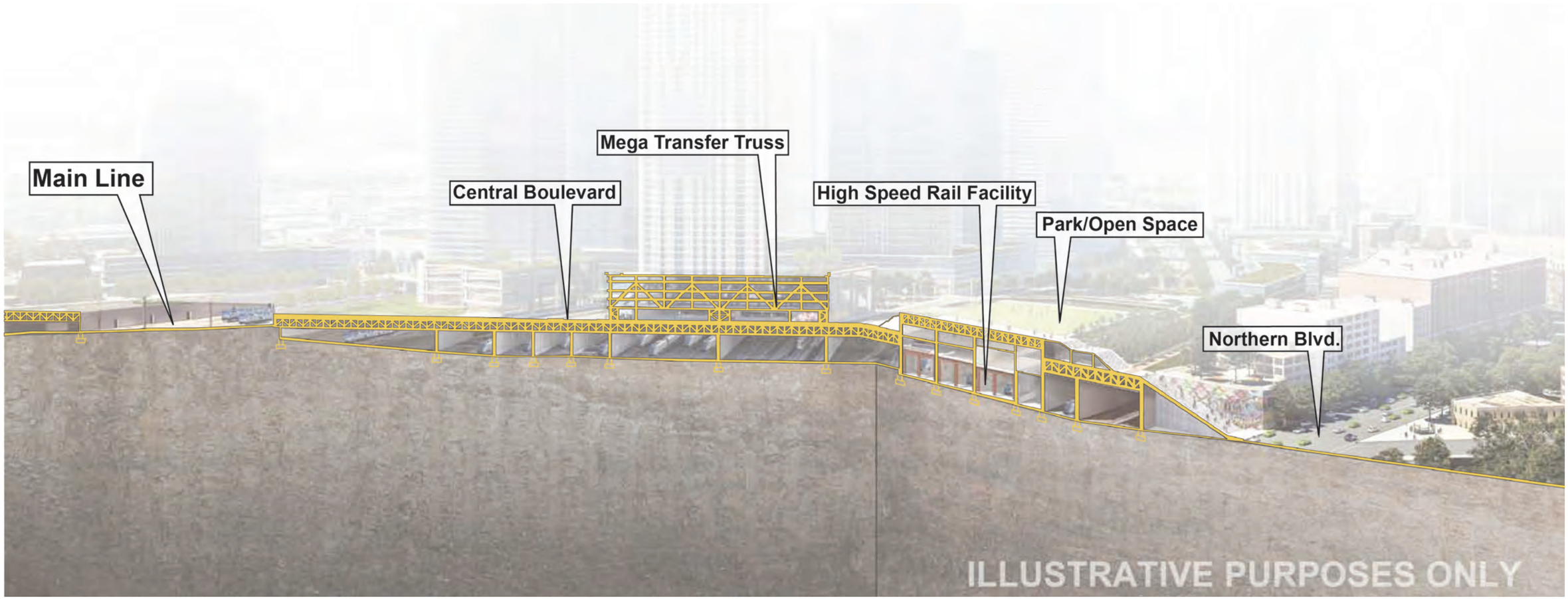
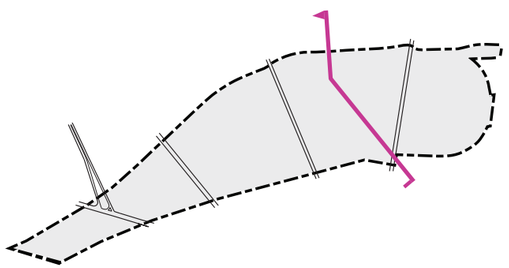


FIGURE 1.13: SECTION RENDERING: AMTRAK HIGH SPEED RAIL SHOP AND STORAGE

'All renderings, illustrations, and plans in this study are intended for illustrative purposes only. There are a variety of potential design solutions and these renderings, illustrations, and plans shall not be construed to be a representation of an intended design solution'



KEY PLAN

Section Cut

City of New York

NYCEDC