



DESIGN CONCEPTS

Vehicular & Pedestrian Circulation

Each concept employs the idea of separating the vehicular circulation from pedestrian by providing clear and separate points of ingress/egress away from the main vehicular paths while moving them the edges of the structure making them more visible. The perimeter of the ground level is lined with the minimum required height parking barriers to provide a safe and controlled environment that allows the free flow of pedestrians in and out of the structure enhancing the ground level's accessibility for all patrons including those parking in the required accessible spaces.

Parking Control

The City of Ames desires an automated ticket system that would allow flexibility in payment type, time limit duration and no on-site attendant. A "Pay-by-Stall" system meets the basic needs of the City of Ames as a system familiar to most users with a more reasonable cost compared to other more complex systems. The basic premise of the "Pay-by-Stall" system is the user pays at a centralized multi-stall payment machine for the appropriate stall and the amount of time needed. Like a metered system, an attendant would be required to patrol and enforce the parking structure by reviewing a printed listing of the paid spaces, then verifying there are no vehicles illegally parked.

The parking structure would have no gates or ticketing system only requiring two multi-space payment machines at the main egress points on the ground level. Queuing during events and peak hours would be minimal with no waiting to pay at a machine or toll booth where gates can be restrictive. The payment machines would be hard wired together to simplify enforcement and can be setup to receive cash, credit cards and specialty card if there are monthly payment plans. Signage cost for this system increase as it would be required at each stall to inform the user of the park and pay system, stall number and multi-space Machine locations.

Traffic Operations

The parking capacity under any of the proposed concepts will increase significantly.

Currently the parking control in the structure is not anticipated to include gates, exiting traffic would be split between two exits, one on the west to Clark Avenue and one on the East to Kellogg Avenue. Since all exits accommodate full movements, a selected exit would largely depend on proximity to the patron's vehicle so it is presumed that 55% will use the west access and the remainder will exit to the east.

Traffic Operations [continued]

The parking structure queuing requirements depend primarily on the peak hour flow and the parking payment system type that is selected. During peak hour a larger queuing area would be required if the selected payment system had a controlled payment at the entrances and exits rather than a Pay- by- Stall system where you approach the exit gate with a prepaid ticket ready to be scanned. Detailed analysis of traffic operations for exits should be performed during the Design Development phase to verify queue lengths based on projected surface traffic growth, as well as increased capacity of the parking area.

Sustainable Site

As a standalone parking structure with multiple site constraints there are limited opportunities for sustainable concepts that are economically viable. Storm water management strategies which reduce water runoff, remove pollutants from runoff, and increase groundwater recharge on the site are an option. Three strategies to consider for storm water management are bioswales, the use of pervious pavement surfaces and a below grade infiltration field.

The use of bioswales may be quite limited by site constraints. Bioswales are hearty vegetated channels designed to cleanse and direct storm water runoff that could be located in strategic locations along the south façade. This area has a limited width available and the close proximity of foundations may further impact its practicality. A rule of thumb is that 1/8 of the total building area would be required for a bioswale to be affective alone.

Pervious pavement surfaces, also known as permeable surfaces, allow water to penetrate the material helping reduce storm water runoff and lower the amount of pollutants exiting the site by increasing infiltration areas to include paved areas. Pervious pavement for the portions of the lower level of the structure is a possibility and additional area is available in the paved open space adjacent to the park in the center of the structure. These systems tend to be more expensive than standard non-pervious paving because of a specific sub grade granular system is required and occasional maintenance.

Sustainable Site [continued]

The addition of an infiltration field and catch basin underneath the central open space can provide another method of storm water management. This system would collect runoff from the parking structure drains and pervious surfaces improving the water quality by removing the dirt, salt and grit through settlement before water exits to a pipe field infiltration system. This infiltration field then allows additional water to permeate into the soil before instead of discharging directly into the City storm sewer system. These efforts reduce the negative effects of swift discharge into streams and if there are combined Sanitary/Storm systems still in place in communities it can further reduce water treatment volumes and costs.

All Concepts first meet the minimum code requirements for storm water management and do not include upgrades to landscape for bioswales, pervious paving or the infiltration field in baseline cost estimates. If desired, these sustainable site options have been included as separate add alternate costs in the complete estimate offered for each Concept.

Assumptions

The following assumptions have been included in all planning Concepts:

- Zoning Requirement for retail or commercial space on the first level of the structure at street frontage is assumed to be waived to allow for maximum capacity of the parking structure to be developed.
- Open space for development of a multi-use exterior community space has been considered in the preparation of each Concept. For purposes of the study these areas are assumed to be paved and no landscape budget has been included as the specific design of these areas is beyond the scope of this study.
- The upper deck in Concepts A and B is +11'-0" above the lower parking surface at grade. If the structure is two levels above grade, as in Concept C, the top deck is +22'-0" above grade.
- There is +8'-4" clear between the deck and upper structure. Standards of practice have informed the elevation of decks and clear height internally to the structure. No atypical heights are anticipated to accommodate special equipment or vehicles

All three concepts were selected to maximize the parking on the proposed site while allowing for future expansion of the structure as the community grows. All concepts acknowledge the link between parking structure and Tom Evens Park and the need for multi-purpose spaces within and around the proposed structures.

Concept A

A full site concept, single elevated deck parking structure extending from Clark Ave to Kellogg Ave across both Lots X & Y. The parking structure could effectively function as two separate ramps with a bridge connection on both ground and upper level allowing for a continuous vehicular flow.

This concept allows for maximum flexibility with multiple vehicular entrances/exits, two ramps and centralized means of egress within a simple and straightforward structure.

Some form of cladding system will be required along portions of all the facades to help provide continuity with the adjacent buildings and screen the view of the cars from the streets. The cladding system must be sensitive the historic qualities of Main Street, but allow for clear view and open air circulation.

Concept B – Phase I

A full site concept, single elevated deck parking structure extending from Clark Ave to Kellogg Ave across both Lots X & Y, constructed in two phases. This concept was divided into phases to allow consideration of a smaller initial project and to illustrate the additional cost incurred if a second phase is constructed later. Phase I is a parking structure built on Lot X with assumed construction beginning in 2010. The parking structure is composed of a single vehicular ramp and two vertical means of egress at the edges. This concept allows for maximum flexibility for future expansion with only a minimal number of days out of service to make the connection to the new structure to the east on Lot Y. Cladding or screening systems should be considered in similar manner to Concept A.

	Concept A	Concept B Phase I	Concept B Phase II	Concept B complete	Concept C
Total Stalls*	400	212	188	400	346
Net Stalls Gained	182	89	93	182	128
Total Construction Cost Estimate with Add/Alternate Items	\$8,158,967	\$4,020,430	\$4,591,769	\$8,612,199	\$6,683,415
Cost Per Stall*	\$20,397	\$18,964	\$24,424	\$21,530	\$19,316
Cost Per Net Stall**	\$44,829	\$45,173	\$49,374	\$47,320	\$52,214

*Total number of available spaces in any of the concept options assumes a variance to the commercial space requirement [ORD. NO. 3822, 3-8-05]

* Cost Per Stall = Total Construction Cost Estimate with Add/Alternate Items / Total Stalls

** Cost Per Net Stall = Total Construction Cost Estimate with Add/Alternate Items / Net Stalls Gained

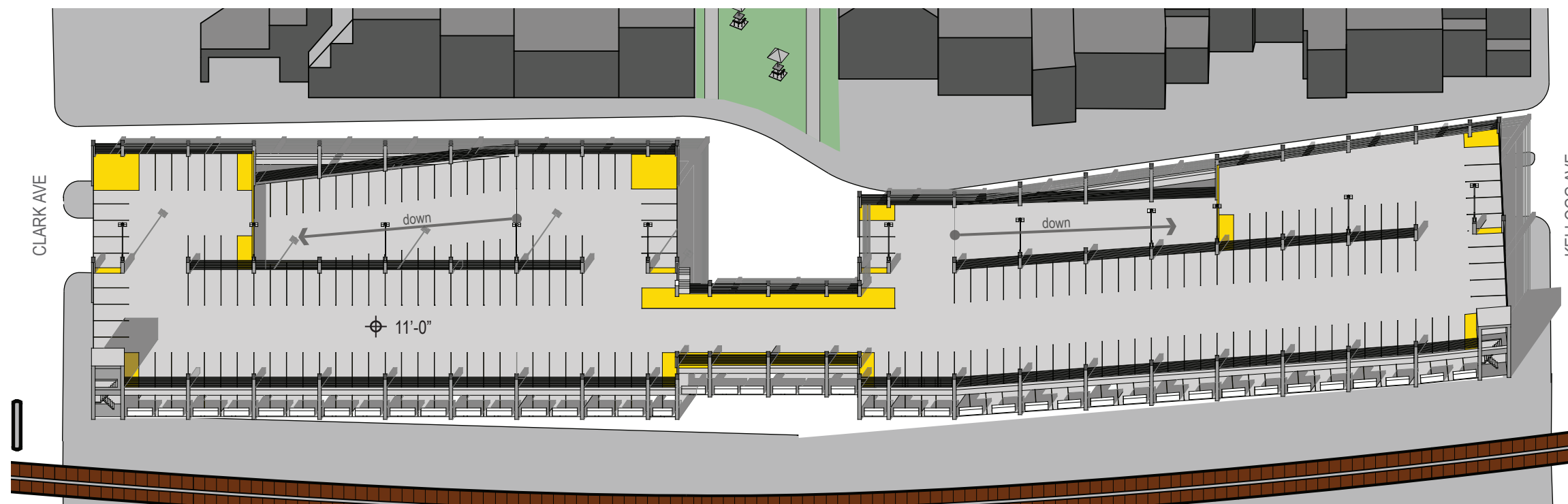
Concept B – Phase II

Is a full site, single elevated deck parking structure extending from Clark Ave to Kellogg Ave across both Lots X & Y, constructed in two phases, Phase II is a parking structure built on Lot Y with assumed construction beginning in 2012. The parking structure is composed of a single vehicular ramp, a vertical means of egress at the east corner and bridge structure to connect vehicular and pedestrian traffic. This concept allows the existing parking structure to the east to almost double in size maximizing the parking across the entire site. Cladding or screening systems should be considered in similar manner to Concept A.

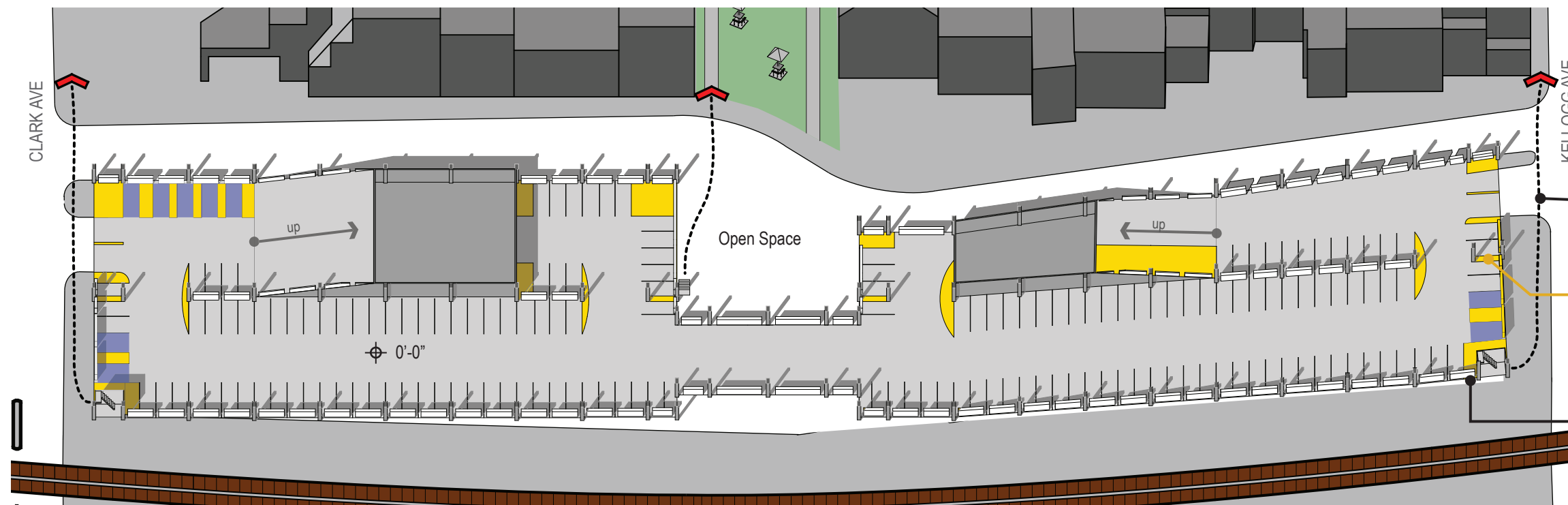
Concept C

Is a half site parking structure with two elevated decks constructed on Lot X only and Lot Y remaining a surface parking lot with assumed construction beginning in 2010. The parking structure is composed of a single vehicular ramp, two vertical means of egress at the edges and a three stop elevator. While the elevator is technically not a building or accessible code requirement until a structure reaches 4 stories, we recommend a public project included this convenience for persons of disability.

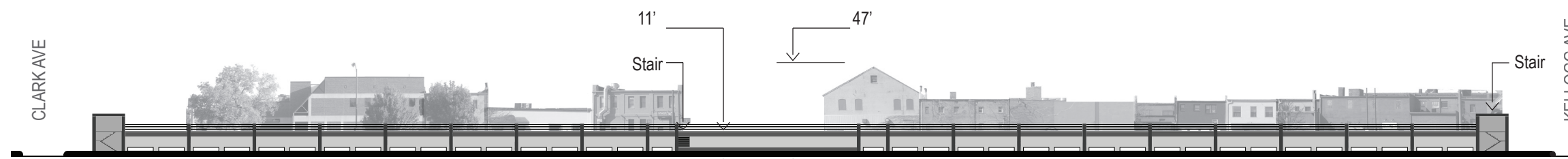
This concept allows for future expansion to the east in Lot Y with the addition of a bridge structure and only a minimal number of days out of service to make the connection to the new structure Cladding or screening systems should be considered in similar manner to Concept A.



Level 2



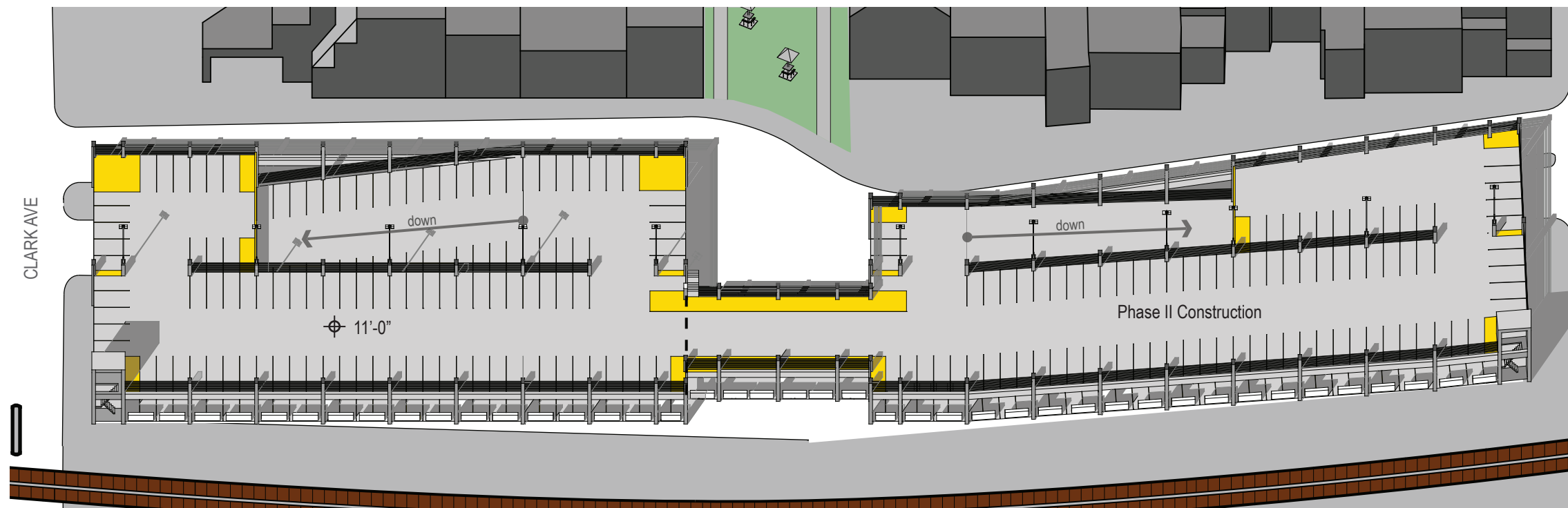
Level 1



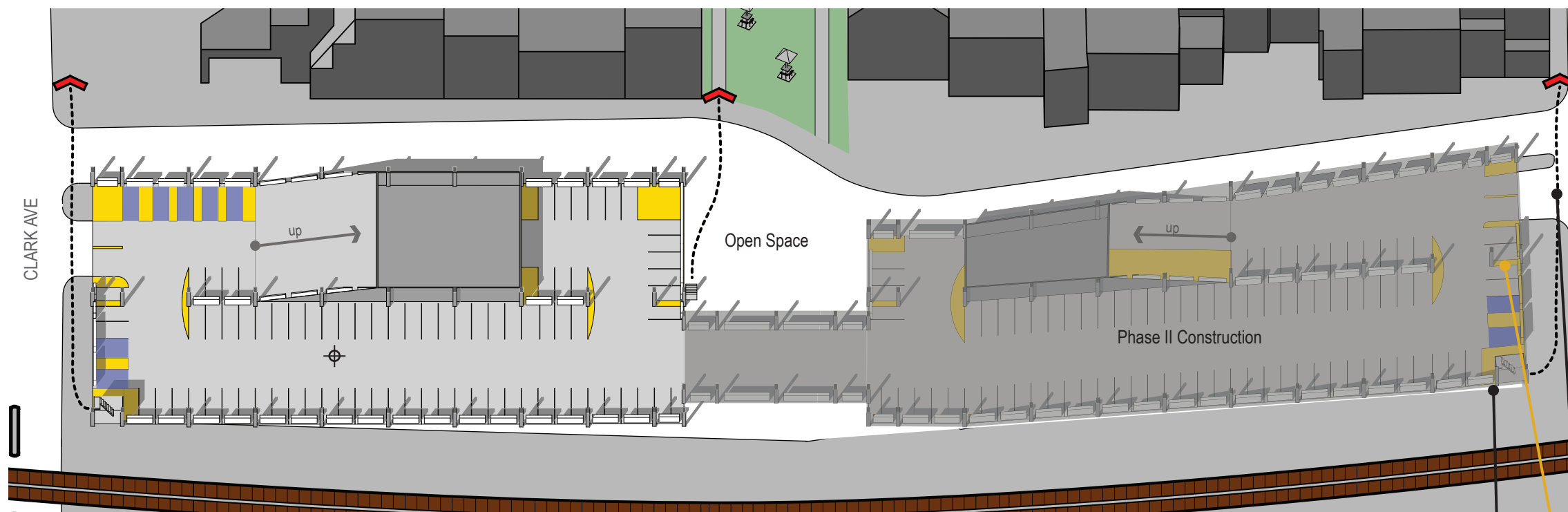
Existing	
Lot X	123
Lot Y	95
Total Stalls	218

Concept A	
Accessible	7
Van Accessible	2
Level 1: Total Accessible Stalls	9
Lot X	102
Lot Y	92
Level 1: Total Stalls	194
Lot X	-21
Lot Y	-3
Level 1: Net Stalls Gained	-24
Level 1	194
Level 2	206
Total Stalls*	400
Net Stalls Gained	182

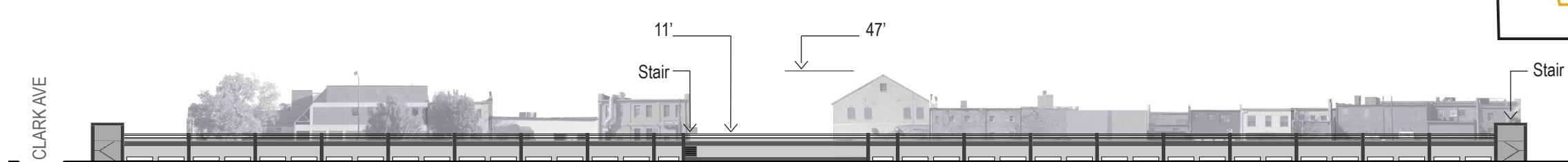
*Total number of available spaces in any of the concept options assumes a variance to the commercial space requirement [ORD. NO. 3822, 3-8-05]



Level 2



Level 1

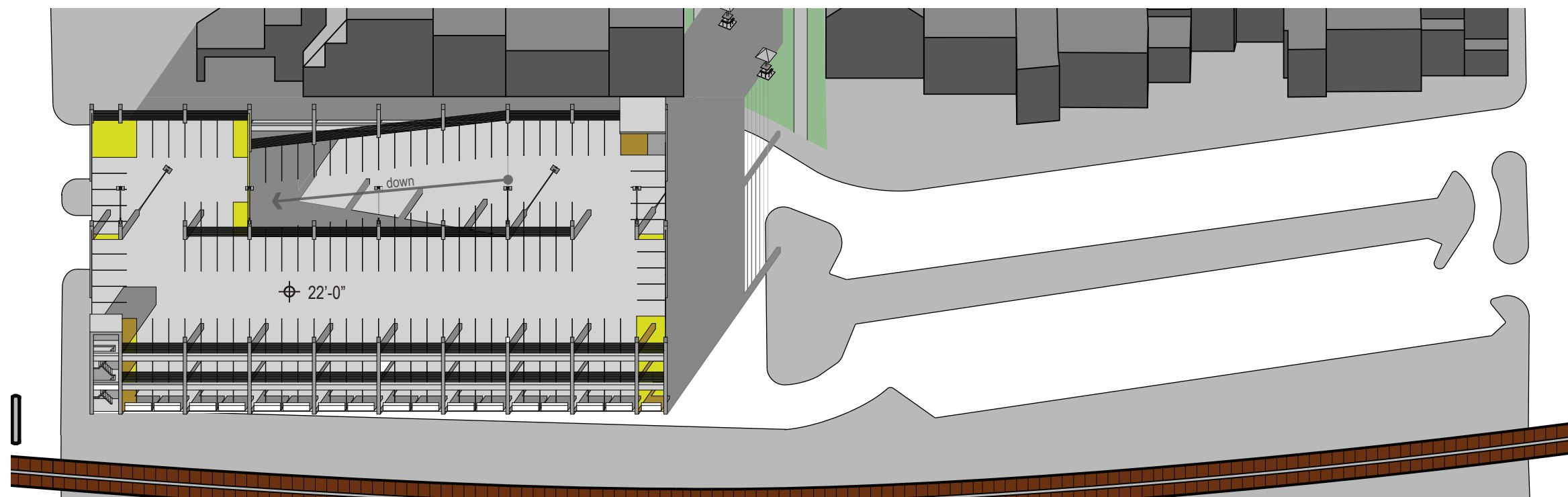


Existing	
Lot X	123
Lot Y	95
Total Stalls	218

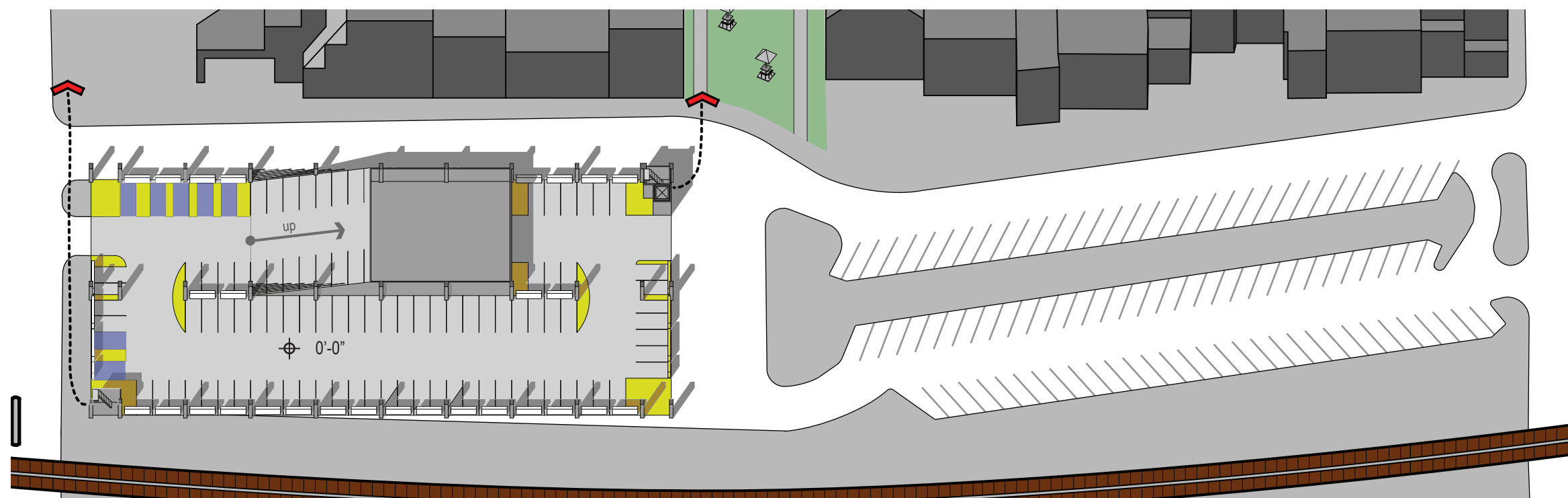
Concept B	Phase I	Phase II
Accessible	7	2
Van Accessible	2	0
Level 1: Total Accessible Stalls	9	2
Lot X	102	NA
Lot Y	NA	92
Level 1: Total Accessible Stalls	102	92
Lot X	-21	NA
Lot Y	NA	-3
Level 1: Net Stalls Gained	-21	-3
Level 1	102	92
Level 2	110	96
Total Stalls*	212	188
Net Stalls Gained	89	93

Concept B Complete	
Accessible	9
Van Accessible	2
Level 1: Total Accessible Stalls	11
Lot X	102
Lot Y	92
Level 1: Total Stalls	194
Lot X	-21
Lot Y	-3
Level 1: Net Stalls Gained	-24
Level 1	194
Level 2	206
Total Stalls*	400
Net Stalls Gained	182

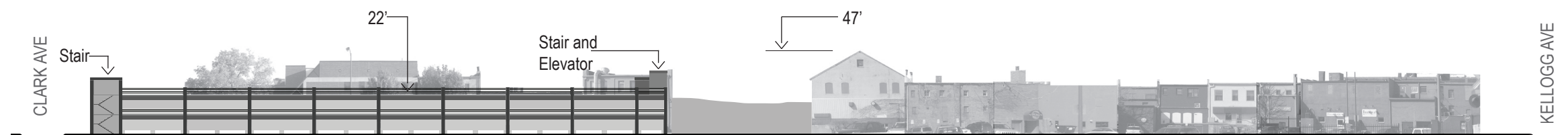
*Total number of available spaces in any of the concept options assumes a variance to the commercial space requirement [ORD. NO. 3822, 3-8-05]



Level 2



Level 1



Existing	
Lot X	123
Lot Y	95
Total Stalls	218

Concept C	
Accessible	8
Van Accessible	2
Level 1: Total Accessible Stalls	10

Lot X	104
Lot Y	NA
Level 1: Total Stalls	104

Lot X	-19
Lot Y	NA
Level 1: Net Stalls Gained	-19

Level 1	104
Level 2	130
Level 3	112
Total Stalls*	346

Net Stalls Gained	128
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*Total number of available spaces in any of the concept options assumes a variance to the commercial space requirement [ORD. NO. 3822, 3-8-05]