

## 5.6 PARKING

This plan proposes to remove all of the surface parking lots on the Southwest Quad and replace and grow the total quantity of parking spaces by constructing structured parking. The best site for this is the current Cunningham parking lot, due to its location at the edge of campus and also its rational and efficient configuration.

Several different scenarios were modeled for creating structured parking at this location. Each has a corresponding first cost in total and also on a cost per parking stall. UW Milwaukee will use this data to determine how construction and operational costs can balance out against anticipated fees for use to create the best overall solution.

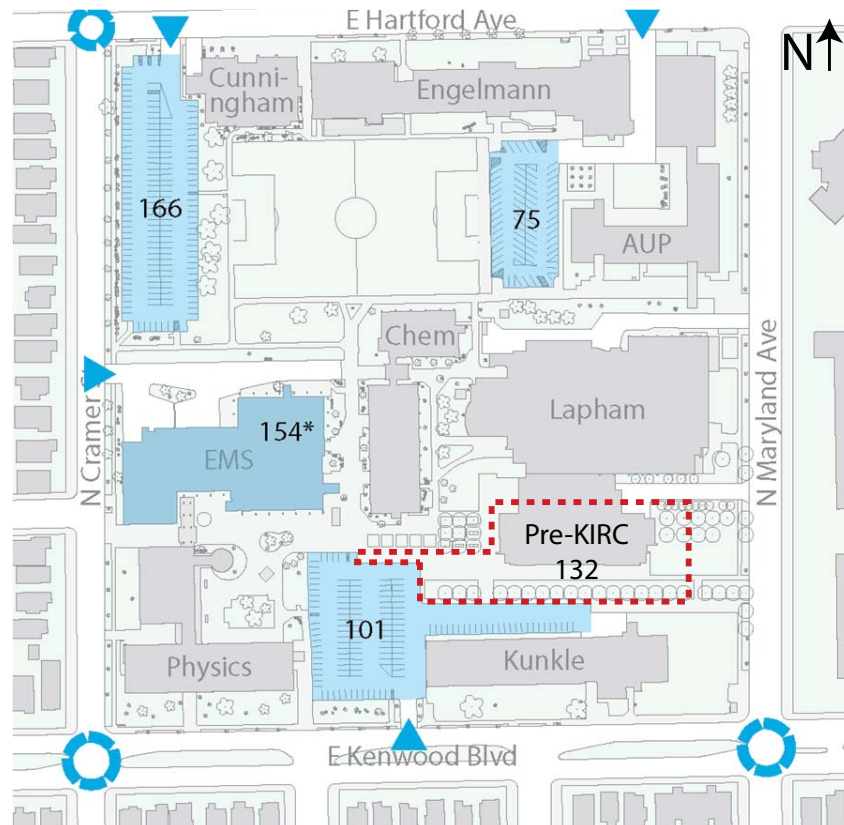


FIGURE 5.6.0-1: CURRENT AND PRE-KIRC PARKING PLAN

In addition to creating a free standing parking structure, this study also considers the possibility that structured parking could be created below future new academic buildings. This is not recommended due to desirability of basement space for vibration sensitive equipment.

All future parking configurations were created to compare against a base case of the existing parking count prior to construction of the Kenwood IRC: 628 total spaces. Within this total, the constant portion is the existing 154 spaces in the basement of the EMS building. The quantity of surface and structured parking spaces will change in the other simulations to follow.



FIGURE 5.6.0-2: ENGELMANN PARKING LOT

## CUNNINGHAM LOT OPTIONS

### TWO LEVELS - 300 STALLS

This is the simplest of the options considered and includes two levels of parking for a total of 300 cars at the existing Cunningham Lot. Because of the low cost of the lower at grade level and minimal ramps for the upper level, this option costs notably less both in total and as a cost per parking stall. Unfortunately, this configuration does not achieve enough parking quantity to meet the pre-KIRC target without also building parking under a future academic building. The future layout and cost for this solution are as follows:



FIGURE 5.6.1-3: PLAN OF CUNNINGHAM TWO LEVEL PARKING

	COST/ STALL	NO. OF STALLS	SUB- TOTAL	TOTAL
At Grade Stalls	\$3,250	150	\$0.5M	<b>\$3.2M</b>
Elevated Deck Stalls	\$18,000	150	\$2.7M	
Project Cost Multiplier				1.25
<b>TOTAL PROJECT COST</b>				<b>\$4M</b>

FIGURE 5.6.1-1: COST FOR CUNNINGHAM TWO LEVEL PARKING

EMS Spaces	154	
CUN Spaces	300	
<b>TOTAL</b>		<b>454</b>
Pre-KIRC Existing	628	
<b>DELTA FROM PRE-KIRC</b>		<b>(174)</b>

FIGURE 5.6.1-2: TOTAL STALLS FOR CUNNINGHAM TWO LEVEL PARKING

## THREE LEVELS - 450 STALLS

This solution adds one level of parking below grade at the Cunningham Lot for a total of 450 cars over three levels. This solution satisfies the baseline target of replacing the pre KIRC parking at Southwest Quad, but it is considerably more expensive than the two level option 1 solution above because it eliminates the low cost at grade level.



FIGURE 5.6.1-4: PLAN OF CUNNINGHAM THREE LEVEL PARKING

	COST/ STALL	NO. OF STALLS	SUB- TOTAL	TOTAL
Below Grade Stalls	\$22,500	150	\$3.4M	<b>\$8.8M</b>
Elevated Deck Stalls	\$18,000	300	\$5.4M	
Project Cost Multiplier				1.25
<b>TOTAL PROJECT COST</b>				<b>\$11M</b>

FIGURE 5.6.1-5: COST FOR CUNNINGHAM THREE LEVEL PARKING

EMS Spaces	154	
CUN Spaces	450	
<b>TOTAL</b>		<b>604</b>
Pre-KIRC Existing	628	
<b>DELTA FROM PRE-KIRC</b>		<b>(24)</b>

FIGURE 5.6.1-6: TOTAL STALLS FOR CUNNINGHAM THREE LEVEL PARKING

## FOUR LEVELS - 600 STALLS

This solution adds a level of parking above grade at the Cunningham Lot for a total of 600 cars over four levels. This solution exceeds the baseline target of replacing the pre KIRC parking at Southwest Quad, but it is considerably more expensive and may also encounter local opposition given the visual impact of two elevated parking decks on Cramer Street.



FIGURE 5.6.1-9: PLAN OF CUNNINGHAM FOUR LEVEL PARKING

	COST/ STALL	NO. OF STALLS	SUB- TOTAL	TOTAL
Below Grade Stalls	\$22,500	150	\$3.4M	<b>\$11.5M</b>
Elevated Deck Stalls	\$18,000	450	\$8.1M	
Project Cost Multiplier				1.25
<b>TOTAL PROJECT COST</b>				<b>\$14.4M</b>

FIGURE 5.6.1-7: COST FOR CUNNINGHAM FOUR LEVEL PARKING

EMS Spaces	154	
CUN Spaces	600	
<b>TOTAL</b>		<b>754</b>
Pre-KIRC Existing	628	
<b>DELTA FROM PRE-KIRC</b>		<b>126</b>

FIGURE 5.6.1-8: TOTAL STALLS FOR CUNNINGHAM FOUR LEVEL PARKING

## PARKING BELOW BUILDINGS

### SWQ 2/3

This solution implements the same approach that was used in developing the EMS building – include several levels of underground parking beneath the new academic buildings at this corner of the site. This approach has the advantage of minimizing overhead costs associated with construction since they are already rolled into the cost of the superstructure above and the costs of additional basement levels are also partially offset by reducing the length of deep foundations. These savings are typically lost, however, due to layout inefficiencies brought about by designing the structural module and system to favor flexibility in the building above rather than the parking configuration below. For this reason, typical cost per parking space increases about 20% for structured parking below a building, when compared to structured parking below grade without any building above. Another factor making this solution less attractive is the loss of vibration stable basement space that is increasingly important to accommodate sensitive scientific instruments. While this option is indeed possible, and would offer maximum convenience for user occupants, it is neither commonplace in this building type nor recommended to maximize value at this location.



FIGURE 5.6.2-1: PLAN OF PARKING BELOW SWQ 2/3

CUNNINGHAM LOT	COST/STALL	NO. OF STALLS	SUB-TOTAL	TOTAL
Below Grade Stalls	\$22,500	150	\$3.4M	<b>\$8.8M</b>
Elevated Deck Stalls	\$18,000	300	\$5.4m	
Project Cost Multiplier				1.25
<b>TOTAL PROJECT COST</b>				<b>\$11M</b>

FIGURE 5.6.2-2: COST FOR CUNNINGHAM THREE LEVEL PARKING

SW 2/3	COST/STALL	NO. OF STALLS	TOTAL
Below Grade Stalls	\$28,500	150	<b>\$3.4M</b>
Project Cost Multiplier			1.25
<b>TOTAL PROJECT COST</b>			<b>\$5.3M</b>

FIGURE 5.6.2-3: COST FOR STALLS BELOW SWQ 2/3

EMS Spaces	154
CUN Space	450
SWQ 2/3	150
<b>TOTAL</b>	<b>754</b>
Pre-KIRC Existing	628
<b>DELTA FROM PRE-KIRC</b>	<b>128</b>

FIGURE 5.6.2-4: TOTAL STALLS FOR SWQ2/3 PARKING

## SWQ 4

This solution is identical to option 2 at the Cunningham Lot for a total of 450 cars over four levels. It shows how the Cunningham lot could be extended under SWQ 4 if and when that building is created to compensate for the surface parking lost by moving the Soccer Field eastward and removing the Engelmann parking lot. This has the advantage of deferring this investment until the loss of the Engelmann lot requires the additional spaces. When SWQ 4 goes ahead, this lot could be developed with one or two levels to include additional parking spaces if this proves necessary at that time. This is a very late phase in the overall implementation plan, so it is logical to assume that some of the base assumptions may change such that it could turn out that more or less parking is required in this extended time frame.

This solution offers several advantages in that it accommodates parking need immediately with the construction of the initial Cunningham garage and then it augments that quantity later as necessary to allow the removal of the Engelmann surface lot. This path forward is recommended, assuming that the independent financial analysis under way proves that it is affordable.



FIGURE 5.6.2-5: PLAN OF PARKING BELOW SWQ 4

SWQ 4	COST/ STALL	NO. OF STALLS	TOTAL
Below Grade Stalls	\$28,500	120	\$3.4M
Project Cost Multiplier			1.25
<b>TOTAL PROJECT COST</b>			<b>\$4.3M</b>

FIGURE 5.6.2-7: COST FOR STALLS BELOW SWQ 4

EMS Spaces	154
CUN Spaces	450
SWQ Spaces	120
<b>TOTAL</b>	<b>724</b>
Pre-KIRC Existing	628
<b>DELTA FROM PRE-KIRC</b>	<b>96</b>

FIGURE 5.6.2-8: TOTAL STALLS FOR SWQ 4 PARKING

CUNNINGHAM LOT	COST/ STALL	NO. OF STALLS	SUB- TOTAL	TOTAL
Below Grade Stalls	\$22,500	150	\$3.4M	<b>\$8.8M</b>
Elevated Deck Stalls	\$18,000	300	\$5.4m	
Project Cost Multiplier				1.25
<b>TOTAL PROJECT COST</b>				<b>\$11M</b>

FIGURE 5.6.2-6: COST FOR CUNNINGHAM THREE LEVEL PARKING