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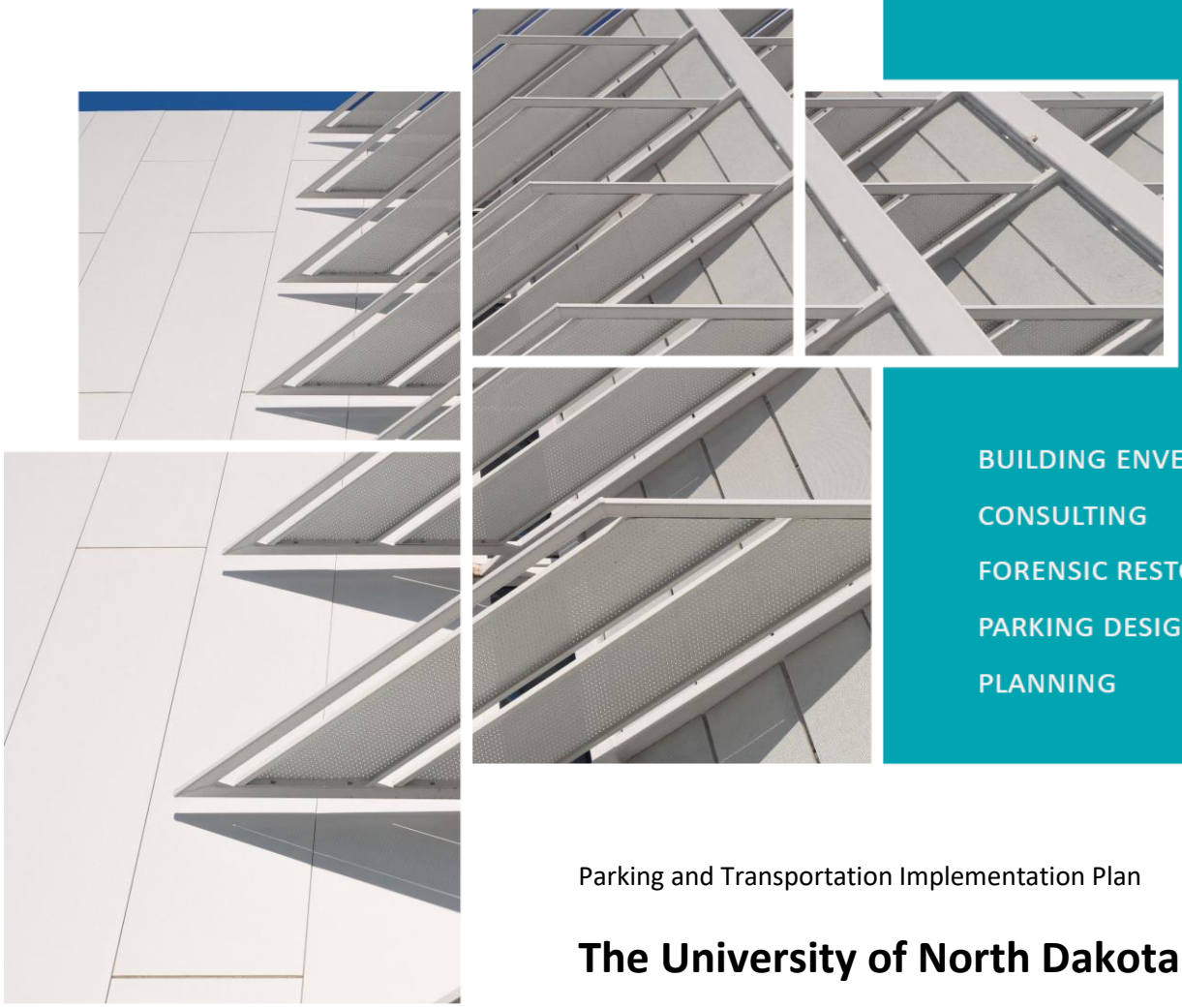


BUILDING ENVELOPE
CONSULTING
FORENSIC RESTORATION
PARKING DESIGN
PLANNING

Parking and Transportation Implementation Plan

The University of North Dakota

July 18, 2018

Final Report

WALKER CONSULTANTS

EXECUTIVE SUMMARY

University of North Dakota (UND) engaged Walker Consultants (Walker) to suggest implementation strategies to help UND improve campus parking and transportation services. Walker reviewed the University's current parking system and had the following key findings:

KEY FINDINGS

- Overall, the parking system was found to be underutilized. During the weekday at 10:00 a.m. period of peak demand, only 44% (or, ±5,225) of the total spaces were occupied. ±6,543 spaces out of the ±11,768 total spaces within the system were empty.
- The parking facilities bounded by 6th Avenue North, Stanford Road, Columbia Road, and the railroad tracks tended to be the busiest parking facilities.
- Perceptions of parking occupancy (or availability) likely vary based on the affiliations of different user groups (student residents, student commuters, faculty/staff).
- A majority of the parking permits for each user group are the same price. This coupled with the current "hunting permit" system in place results in parkers circling the most convenient parking facilities to find an open space—likely increasing perceptions that the system is "full."
- The overall low occupancy coupled with the "hot spots" of high parking demand observed in select facilities suggests the parking demand needs to be managed through updated pricing, permitting, and allocation structures.

RECOMMENDATIONS

Based on Walker's analysis of UND's parking system, Walker's key recommendations are as follows:

RIGHT-SIZE THE PARKING INVENTORY

- Fewer than half of UND's parking spaces are occupied during peak campus hours. With demand for approximately 5,225 parking spaces, sound planning principles would dictate that even with a generous "effective supply cushion" of 15%, the campus would only need a parking inventory of around 6,150 stalls.
- While, theoretically, this implies that the campus could decommission around 5,600 spaces, the operation of the University is more nuanced, and demand is scattered among many facilities, over an area of over 1.25 square miles.
- Walker has assembled a recommendation dividing the campus into nine zones and proposes judicious lot closures in some of these zones, and a rebalancing of demand. Walker's first-cut at decommissioning lots could reduce the inventory by as many as nearly 2,500 parking spaces.
- Rebalancing demand among the lots will require adjusted permit allocation processes, by zone and by lot, and pricing strategies to encourage the use of less popular parking areas.
- Parking right-sizing is discussed thoroughly in the full Recommendations section.
- After the beginning of the fall 2018 semester, Walker recommends that UND validates the daytime peak occupancy counts provided to Walker for this report, as parking lot decommissionings are predicated on the data as provided. Further, Walker recommends nighttime counts of parking occupancy in residential (overnight) parking areas, to capture the peak occupancy in these areas—this likely occurs between 2:00 a.m. and 4:00 a.m. on a weekday night. If UND provides these new and validated counts, Walker will be able to offer a professional judgement as to whether they materially impact the conclusions and recommendations herein.

PARKING PERMITS

- Walker recommends that UND switch from a "hunting permit" format to a zoned system, as described above—with permits that have more well-defined privileges. Pricing should vary by zone, based upon proximity to the destination and/or convenience to the central core of campus. For example, the parking facilities that are further from the core area of campus, should be priced lower than the facilities that are closer to the most popular campus destinations.
- The full Recommendations section details parking zones, potential fee structures, and budgetary impacts.
- Increases in parking rates should be combined with transparency. The Parking Services Department should clearly communicate how the revenue will be spent. A brief annual report, which includes a simple illustration of sources-and-uses can perform this function.
- Walker recommends that the current event parking rate structure is adjusted. Instead of discounting the parking rates based on the total quantity of permits sold, charge a certain rate for the first 50 permits, a lower rate for the next 50 permits, etc.
- UND should link parking fees and citations to student accounts. This would add a level of convenience for students and should improve UND's collection rate for parking citations.

PARKING ENFORCEMENT

- Generally, students should be limited to registering only one license plate for parking privileges. However, students with multiple vehicles should have the opportunity to demonstrate that all vehicles are registered in their name.
- If UND formalizes a carpool program for students, it will be necessary to allow two or more students to share a single set of privileges. There are controls that can be put in place to discourage abuse.
- For faculty/staff, Walker recommends that multiple vehicles are allowed to share a permit, but if more than one vehicle is present on campus at one time, both vehicles should be cited.
- Walker recommends that UND adopt the "ambassador" program model or approach to parking enforcement. This program is based on positive customer and visitor contact.
- Walker recommends that parking citation fee amounts are set at the maximum allowable rate for serious violations such as ADA violations, life safety-related violations, and theft of services. Increase fines, as allowed, for other violations to keep pace with parking rate increases.

STAFFING

- Walker recommends that UND implement additional cross training within different roles/positions within the department. This will help when certain staff are on vacation and/or during transition periods.

TECHNOLOGY

- UND should also consider a Pay by Cell option for use in the parking ramp and on on-street meter spaces.
- An automated parking guidance system (APGS) can help both regular and transient users of the campus find parking more quickly and efficiently and can reduce campus congestion, by reducing the amount of hunting for parking spaces. A description of this technology is included as Appendix B.

OTHER RECOMMENDATIONS

- Most visitor parking should be concentrated in the existing parking ramp. The parking ramp is currently underutilized, and providing it as a parking option for visitors will help with wayfinding for visitors, and may increase revenue.

- Consider decommissioning parking facilities that are regularly underutilized. Walker is recommending a zoned parking allocation system effectively can be used to take lots offline. Such lots can be used for overflow, until such time as the oversell ratio within zones is refined, and they are no longer required.
- Walker recommends that any new paystations (i.e., multispace meters) that are installed on-campus parking facilities are EMV-compliant (Europay, MasterCard, Visa).
- Combine changes to parking permit systems with communication about the campus shuttle routes to encourage students and faculty/staff to park in remote lots and utilize the shuttle to reach their destination. Shuttle routes may need to be adjusted to accommodate shifts in parking demand patterns.
- Update parking signage to have consistent time ranges, such that all time periods are covered by the signage.

BACKGROUND

In 2014-2015, the University of North Dakota ("UND" or "University") undertook a Parking System Operational Assessment. While most of the recommendations have not been implemented to date, the University believes they are still valid and wishes to chart a course to actualizing those changes, and has asked Walker Consultants ("Walker") to help guide this implementation effort. The overall objectives are to develop implementation strategies for changes to the following:

- Permit allocation and pricing
- Customer orientation
- Parking enforcement program
- Use of technology
- Budget
- UND Ramp operations

First among these changes is shifting the parking fee and allocation system from the current "hunting permit" to a tier- and zone-based pricing model to balance supply and demand within the system, and to improve the customer service experience. The University desires to make these initial changes in time for the 2018-2019 academic year.

SUMMARY OF PREVIOUS WORK

As mentioned above, UND undertook a Parking System Operational Assessment, which was released in February 2015. The study evaluated and made recommendations in the following operational areas:

- Parking allocation system and permitting practices
- Organizational structure
- Technology Utilization
- Costs and fees assessment
- Enforcement culture
- Customer orientation and service culture

The following is a brief summary of the priority recommendations identified in the Operational Assessment:

- *Mission, vision, and strategic direction* - UND Parking Services should develop a new mission statement and departmental visions and establish a strategic direction that supports the University's overarching goals.
- *Organizational structure* - All access management related services within the University should be consolidated into one unit, and that the unit should be managed outside of public safety. New much-needed positions should be added to the department and others should be repurposed.
- *Professional development* - Invest in professional development programs related to parking and transportation.
- *Customer focus* – UND should adopt a customer-oriented philosophy, engage patrons through a parking and transportation advisory committee, and regularly collect and communicate customer satisfaction information.

- *Parking Enforcement Program* – The parking enforcement program should be consolidated under Parking Services and reconfigured into a parking ambassador program. Additional staff should be added to the program, and a progressive fine structure and a more educational mindset should be developed.
- *Technology – U*ND should pursue credit card capable meters, license plate recognition, and improved space availability and parking reservation systems.
- *Budget*- UND should diversity parking revenue streams and grow special event and short-term parking revenue in order to relieve the burden on permit holders.
- *UND Ramp* – The exit lane of the parking ramp should be reconfigured, and existing revenue control equipment should be replaced to improve the garage function.

CURRENT PARKING CONDITIONS

This section describes the current parking conditions and programs at UND.

PARKING PERMIT SYSTEM STRUCTURE

Currently, all vehicles and motorcycles that park on campus must have a permit and be registered with UND Parking Services. As of August 2016, all permits are virtual and associated with a license plate. UND has the following permit required zones.

- *"A" Administrative Faculty/Staff* (red) - designated for faculty and staff with an "A" permit
- *"S" Student* (blue) - designated for students who live off-campus who have an "S" permit.
- *"H" Resident Student* (green) - designated for students who live on-campus who have an "H" permit.
- *"A/S/H" (brown)* - designated for permit holders with "A", "S", or "H" permits. "A/S/H" zones allow overnight parking.
- *Accessible (Handicap)* - require the appropriate state-issued ADA permit and a valid UND permit.
- *"P" Park-and-ride (pink)* - reduced permit price for students, faculty, and staff who are willing to park at the perimeter of campus and utilize the campus shuttle to reach their destination.
- *Reserved (grey)* - a special permit is required for parking.
- *Maintenance Vehicle (black)* - restricted (24/7) to use by UND maintenance vehicles.
- *Service Vehicles (black)* - designated for departmental services vehicles and require a current UND DSV permit or reserved permit.

Figure 1 (with the associated map in Figure 2) below, summarizes parking permit options available to students. Students purchase permits that allow them to park in designated zones on campus, as well as overflow zones, if the designated facilities are full.

Residential students: All of the student resident parking permits cost $155 per year. The RCS permit ($300 per year) which allows students a guaranteed parking spot in the ramp as well as access to the "S", "H", and "A/S/H" zones. For $155 student residents purchase permits based on their housing location, and are given access to "A/S/H" and "PR" zone as well.

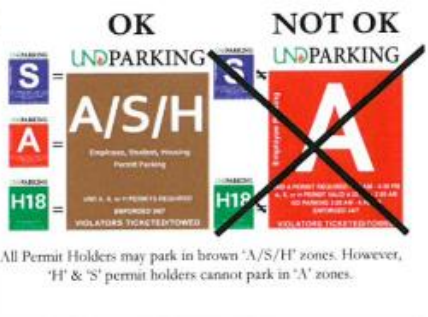
Commuting students: Student commuters can purchase the $300 RCS permit described above or the "S" permit that allows parking in any S zone for $155. Other options for student commuters include an evening permit (4pm-11pm) for $65, or a park-and-ride perimeter permit for $125 for perimeter lots at Airport or northeast of Ralph Engelstad Arena (REA).

With the exception of the park-and-ride lots, and higher-priced ramp permits, the current parking zones are not distinguished by price or convenience. With the current system, all permit holders can park in "A/S/H" zones to find parking, some of which are in desirable locations to park near the core area of campus. Student commuters may circle the most convenient "S" zones to find parking, before heading for the less convenient A/S/H overflow lots.

Figure 1: Student Parking Permit Options

I live on-campus			Where can I park?	What if the lots are full?
Permit	**Price**	**Residence**	**Zones**	**Overflow Zones**
RCS	$300	Any on-campus residence hall or apartment	Reserved Ramp 24/7, 'S', 'H', 'A/S/H' (brown), and 'PR'	Guaranteed parking spot in ramp, see overflow zones depending on your residence
HJFS*	$155	Johnstone, Fulton, Smith	'HJFS' **only,** 'A/S/H' (brown), and 'PR'	'A/S/H' (brown) southwest corner of Chester Fritz Auditorium lot
H18*	$155	Selke, Brannon, McVey, Noren, U Place, West	'H18' **only**, 'A/S/H' (brown), and 'PR'	'A/S/H' (brown) southwest corner of Chester Fritz Auditorium lot or 'A/S/H' (brown) lot west of the Housing Office (6th Ave. N. & State St.)
HMU*	$155	Swanson Hall, Conference Center, Greek Housing	'HMU' **only**, 'A/S/H' (brown), and 'PR'	'A/S/H' (brown) southeast of HMU zone (north of Memorial Stadium)
HPR*	$155	Walsh, Bek, Hancock, Squires, Greek Housing	'HPR' **only,** 'A/S/H' (brown), and 'PR'	'A/S/H' (brown) gravel lot located north of 6th Ave. N. on Princeton (behind tennis courts)
HAPT*	$155	On-Campus Student Apartments	Assigned apartment or secondary space (not visitor), 'A/S/H' (brown), and 'PR'	'A/S/H' (brown) lot west of the Housing Office (6th Ave. N. & State St.)

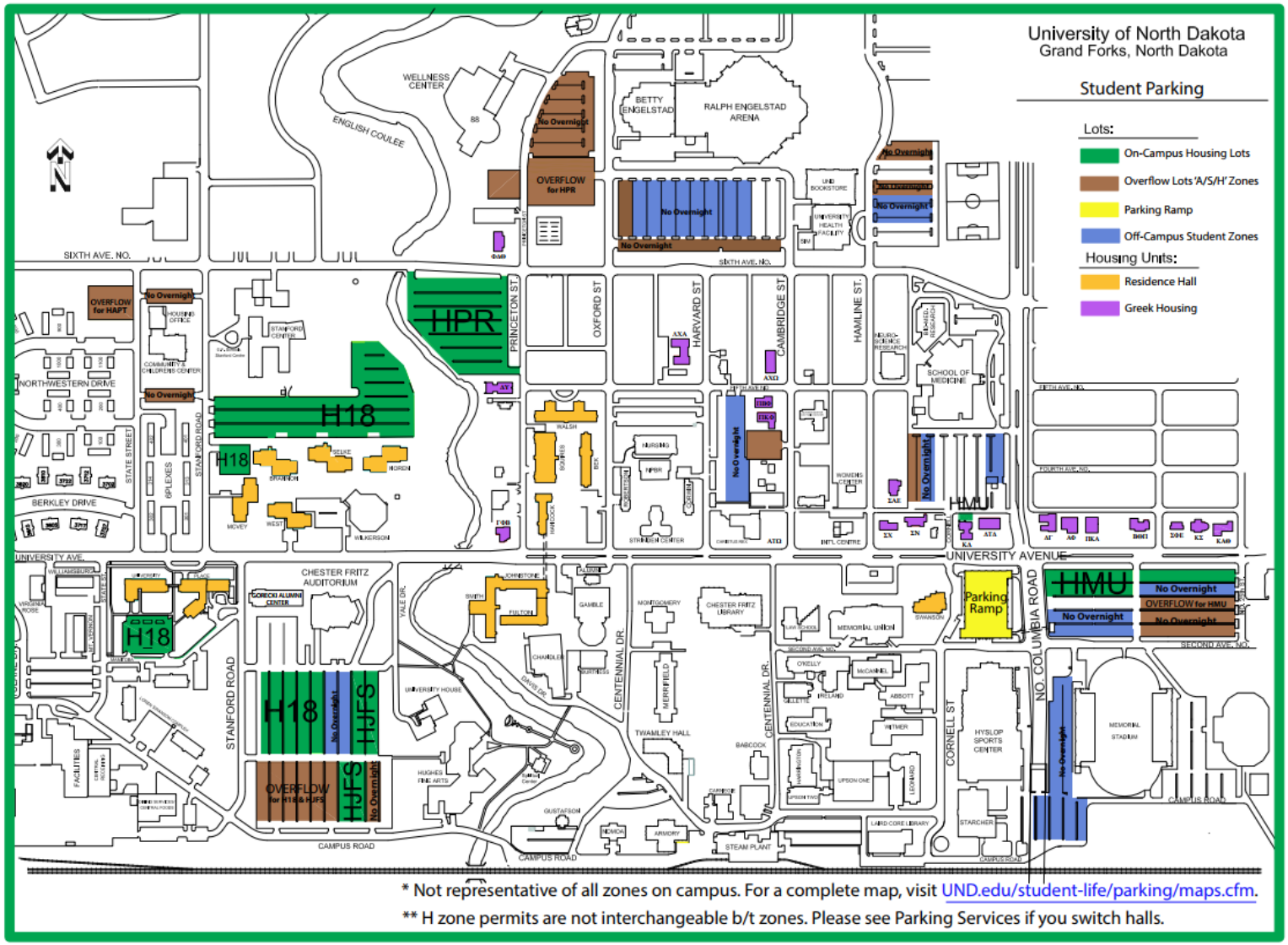
I live off-campus			Where can I park?
Permit	**Price**	**Residence**	**Zones**
RCS	$300	Off-Campus	Reserved Ramp 24/7, 'S', 'H', and 'A/S/H' (brown), and 'PR'
S	$155	Off-Campus Student Parking	'S', 'A/S/H' (brown), 'PR', parking ramp available 5am-midnight (as space allows)
PM	$65	Evening Parking (4pm-11pm)	'S', 'A', 'A/S/H' (brown), and 'PR' from 4pm-11pm **only**
PR	$125	Park and Ride perimeter zones	'PR' only--Perimeter lots at Airport and northeast of REA



*Parking Ramp is only available from 3:30pm-12am with these permits

Source: UND Student Parking Guide 2015-2016, UND Parking Services

Figure 2: Student Parking Map



Source: UND Student Parking Guide 2015-2016, UND Parking Services

Figure 3, below, summarizes the parking permits rates and types for faculty and staff. Faculty and staff pay $225 per year to park anywhere on campus that allows an A permit.

Figure 3: Faculty Parking Permit Options

Type	Permit	Cost
Faculty and Staff	A	$225
Residence Hall Directors	AHR	$225
Deans and Associate Vice Presidents	AD	$810
President and Vice Presidents	AVP	$810
Evening Workshift (4 p.m. – noon)*	PMA	$65
Park & Ride*	PR	$125
Parking Ramp	RCA	$400

*No ramp access with these permits.

Source: UND Parking Services

ANALYSIS OF FINANCIAL REVENUE DATA

Walker received a financial revenue report from UND from Fiscal Year 2017. A simplified summary appears below in Table 1, a full copy of the financials provided is shown in Appendix A.

Table 1: Parking Inventory by Lot

Summary FY 2017 Budget

Revenues		
Permits	$	2,102,619
Fines	$	275,560
Other	$	38,219
TOTAL	**$**	**2,416,397**
Expenses		
Wages & Benefits	$	558,841
Operating	$	648,185
Debt Service	$	1,165,529
TOTAL	**$**	**2,372,555**
Excess Reserves	**$**	**43,843**

Source: UND Parking Services, Walker Consultants, 2018

Parking has contributed to excess reserves each of the past seven years, and those reserves increased each year, notwithstanding money spent on plant improvement, in all but FY2016 (in which reserves were depleted). While this has been effective and sustainable in recent history, Walker recommends the addition of a sinking fund, to ensure steady funding of infrastructure repairs, maintenance, and preventative maintenance—particularly as the parking ramp begins to age. This is covered more fully in the Recommendations section of this report.

EVENT PARKING

Figure 4 below, summarizes the event parking rate structure that is currently in place. The parking rate (both daily and weekly) decreases as the number of permits sold increases. During peak time (August 20-May 20 and Monday through Friday 8:00am-4:30pm) higher rates are charged than during non-peak times (weekends, May-21-August 19, and Monday through Friday 4:31pm-7:59am) and the rates decrease as event duration decreases.

Daily permits and weekly event parking permits are available and are sold for different durations of time parked including full day, ½ day (2.5-4.49 hours), and ¼ day (1-2.49 hours).

Figure 4: UND Event Parking Rate Structure

Peak time:	Peak time, Full Day:			Peak time, 1/2 Day:			Peak time, 1/4 Day:	
Quantity		Daily Permits	Weekly Permits	Daily Permits	Weekly Permits		Daily Permits	Weekly Permits
1-50	Full	$ 5.00	$ 20.00	$ 2.50	$ 10.00		$ 1.25	$ 5.00
51-100	60%	$ 3.00	$ 12.00	$ 1.50	$ 6.00		$ 0.75	$ 3.00
101-250	50%	$ 2.50	$ 10.00	$ 1.30	$ 5.00		$ 0.60	$ 2.50
251-500	40%	$ 2.00	$ 8.00	$ 1.00	$ 4.00		$ 0.50	$ 2.00
501-1000	25%	$ 1.25	$ 5.00	$ 0.60	$ 2.50		$ 0.30	$ 1.25
1000+	20%	$ 1.00	$ 4.00	$ 0.50	$ 2.00		$ 0.25	$ 1.00

Peak time: August 20 – May 20, Monday through Friday 8 a.m. – 4:30 p.m.

Non-Peak:	Non-Peak, Full Day:			Non-Peak, 1/2 Day:			Non-Peak, 1/4 Day:	
Quantity		Daily Permits	Weekly Permits	Daily Permits	Weekly Permits		Daily Permits	Weekly Permits
1-50	Full	$ 2.50	$ 10.00	$ 1.30	$ 5.00		$ 0.60	$ 2.50
51-100	60%	$ 1.50	$ 6.00	$ 0.80	$ 3.00		$ 0.40	$ 1.50
101-250	50%	$ 1.30	$ 5.00	$ 0.70	$ 2.50		$ 0.30	$ 1.30
251-500	40%	$ 1.00	$ 4.00	$ 0.50	$ 2.00		$ 0.30	$ 1.00
501-1000	25%	$ 0.60	$ 2.50	$ 0.30	$ 1.30		$ 0.20	$ 0.60
1000+	20%	$ 0.50	$ 2.00	$ 0.30	$ 1.00		$ 0.10	$ 0.50

Non-Peak time: Weekends throughout the year; May 21 – August 19, Monday through Friday 4:31 p.m. – 7:59 a.m.

Determining Duration:

- 1 hour – 2.49 hours = 1/4 day
- 2.5 hours – 4.49 hours = 1/2 day
- 4.5 or more hours = full day

Source: UND Parking Services

PARKING SUPPLY AND DEMAND

Walker received parking supply and demand data for a majority of the off-street parking facilities from UND.

Figure 5, on the following page, shows the parking facilities on campus, including the airport facilities.

Figure 5: UND Parking Facilities

Source: Walker Consultants, 2018

PARKING SUPPLY

UND has ±100 active parking facilities, with a total of approximately 12,000 spaces in the parking system. Walker received the following parking inventory data from the majority of UND's parking facilities. Table 2, below, summarizes the number of spaces in each lot, corresponding to the Parking Facilities map in Figure 5, above. For the lots with inventory as "N/A", the inventory was not available, or the lots could not be located.

Table 2: Parking Inventory by Lot

Lot #	User-Available Inventory	Lot #	User-Available Inventory	Lot #	User-Available Inventory
1	73	38	149	71	71
2	84	39	390	75	N/A
3	104	40	651	77	N/A
4	258	40E	351	80	326
5	80	41	36	80n	53
6	15	42	N/A	80w	5
7	6	43	12	81	8
8	N/A	H43	166	82	86
9	755	44N	40	83	225
10	738	44S	43	84	158
11	9	44W	70	85	363
12	43	45	6	86	9
13	408	46	44	87	42
14	73	47	56	88	5
15	34	48	6	89	9
16	6	49	7	91	7
17	0	50	N/A	93	3
18	550	51	8	94	31
19	9	52	42	95	144
20	14	53	9	96	202
21	70	54	269	96w	200
22	21	55	208	97	105
23	N/A	56	N/A	98	69
24	109	57	6	100	51
25	40	58E	249	101	17
26	11	58W	170	102	313
27n	621	58S	17	103	180
27s	462	59	7	107	3
28	55	60	16	108	35
29	17	62	197	110	19
30	114	62A	15	114	2
31	N/A	62N	36	Ramp Lev 1	158
32	N/A	62S	24	Ram Lev 2	158
33	134	65	114	Ramp Lev 3	150
34	53	67	9	Ramp Lev 4	162
35	171	68	157	Ramp Lev 5	122
36	109	69	6		
37	181	70	19	**Total**	**12,332**

Source: Walker Consultants, 2018

PARKING DEMAND

Walker received parking demand data from 2018 from the University. Data was collected by campus Parking and Transportation staff at UND's estimated period of typical peak demand (a weekday, during a regular semester, at 10:00am). Larger parking facilities were counted using vehicle-mounted License Plate Recognition (LPR) technology; smaller facilities were counted manually.

Figure 6, on the following page, summarizes the aggregate parking demand for the system. Overall, the parking system was shown to be underutilized. At the observed peak demand, only 44% (or ±5,225) of the total spaces were occupied. ±6,543 spaces out of the ±11,768 total spaces within the count areas were empty. 42 of the 108 parking facilities and two levels of the parking ramp were less than 50% occupied.

Select facilities experienced high utilization, mainly in the southern half of the campus (below 6th Avenue North). Three of the larger lots 13, 18, and 62 were over 85% occupied; several smaller lots including lots 2, 5, 28, 58S, 62, 62N, and 87 were also highly utilized.

Figure 6: Aggregate Parking Demand Map

Source: Walker Consultants, 2018

Since certain spaces within the parking facilities are designated for different users (faculty, staff, students, visitors, etc.), those users may have a different perceived parking availability. For example, if a lot is only 50% utilized, but the faculty/staff parking spaces are 90% utilized, from the faculty/staff perspective, the lot is almost full. Therefore, Walker analyzed the demand data from the perspective of the following user groups:

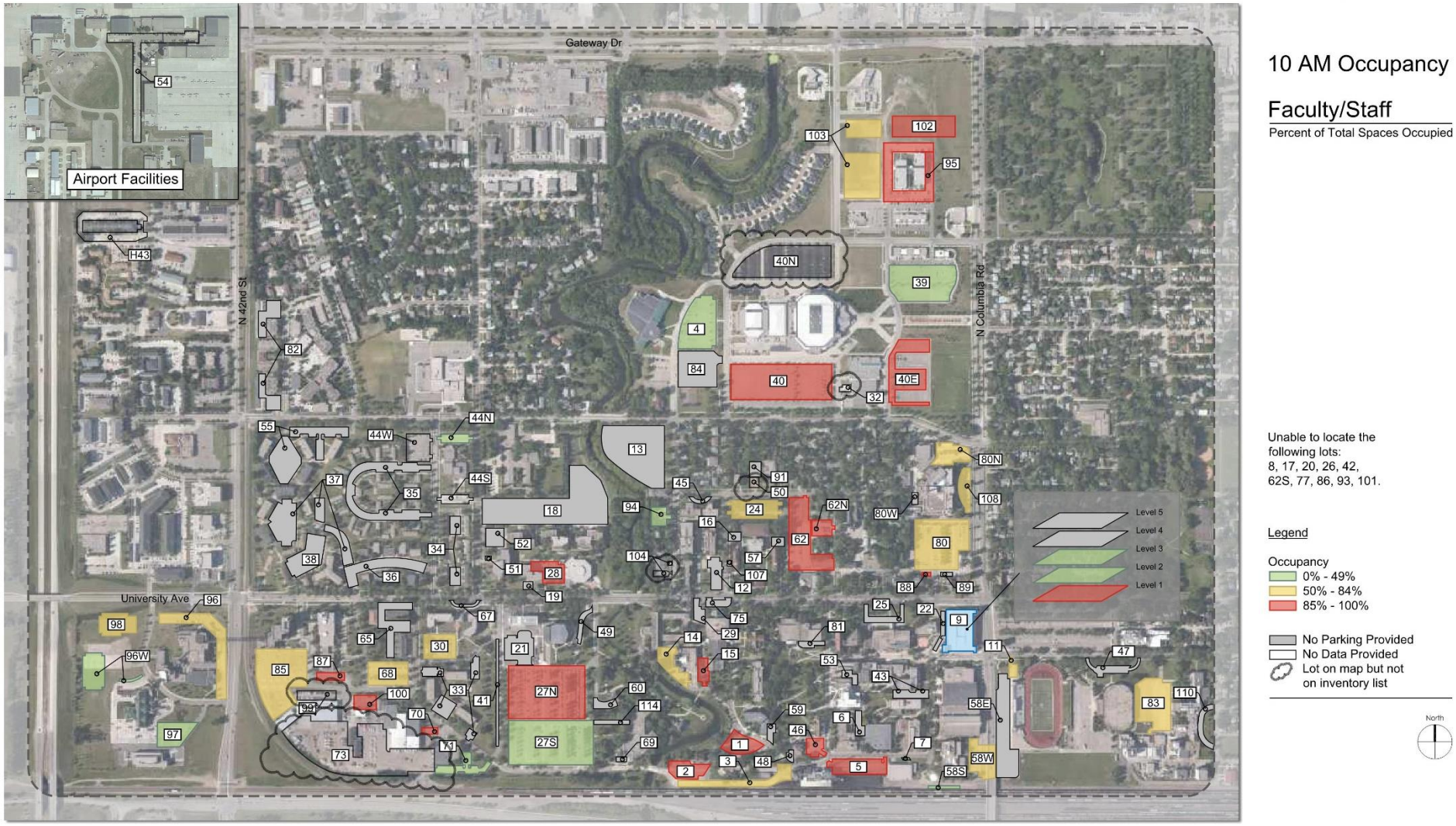
- Faculty/Staff
- Student Resident
- Student Commuter

FACULTY/STAFF

Approximately ±4,689 spaces within 53 parking facilities on campus are available for faculty and staff parkers. Faculty/staff is the user group with the largest amount of parking inventory on campus available to them. At peak, approximately 56% of the spaces available to faculty/staff were utilized.

Figure 7 on the following page includes a map showing utilization from the perspective of faculty and staff. The designated faculty/staff (A permit) areas of select parking facilities around the core area of campus and around the Ralph Engelstad Arena were highly utilized.

Figure 7: UND Faculty/Staff Parking Demand Map



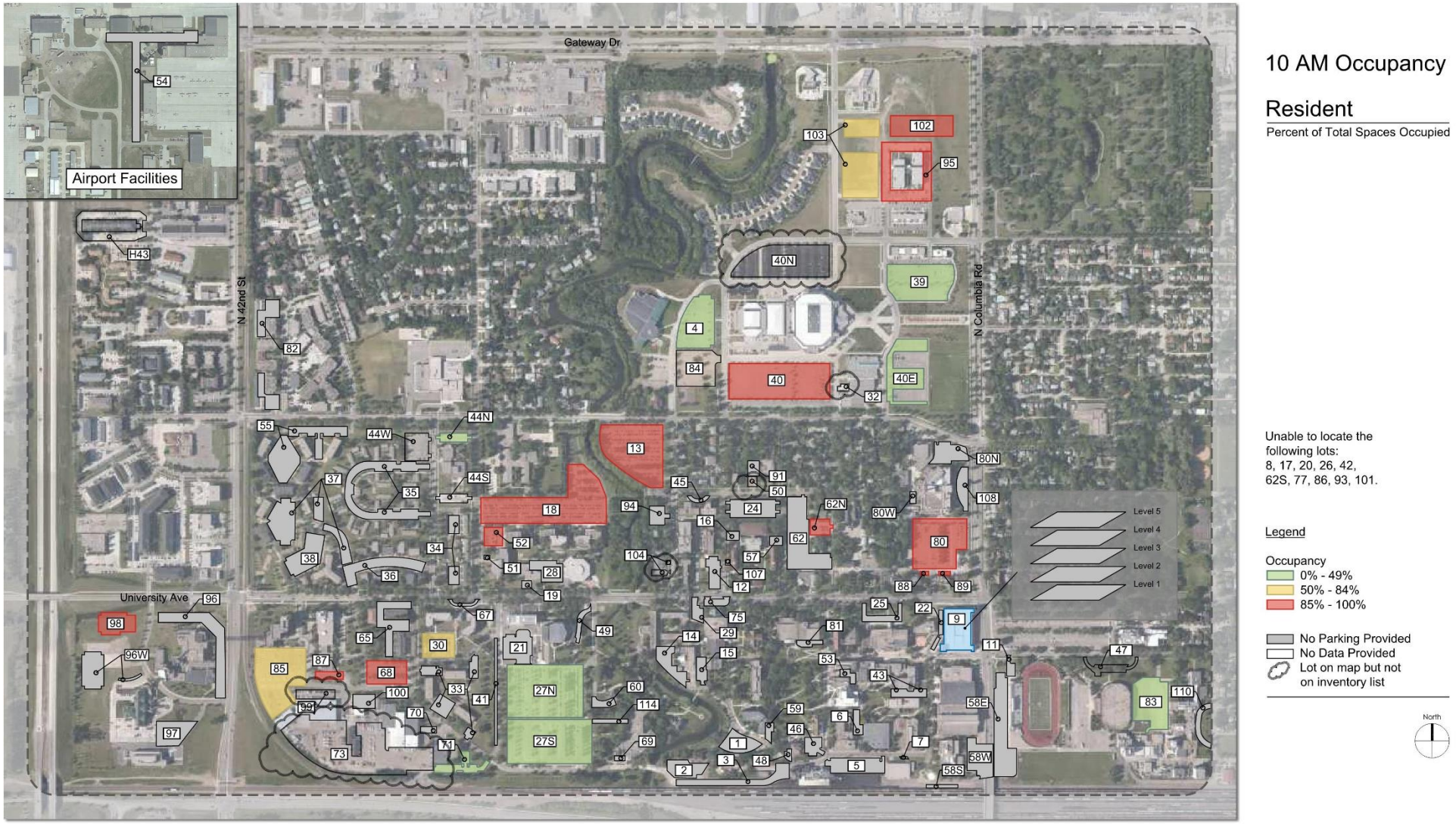
Source: Walker Consultants, 2018

STUDENT RESIDENT

Approximately ±3,978 spaces within 33 parking facilities on campus are available for student resident parkers. At peak, approximately 58% of the spaces available to student resident parkers were utilized.

Figure 8, below, includes a map showing the utilization of the parking facilities from the perspective of student resident parkers. Similar to faculty/staff, select parking facilities around the core area of campus and around the Ralph Engelstad Arena had the H-designated spaces highly utilized by student residents.

Figure 8: UND Student Resident Parking Demand Map



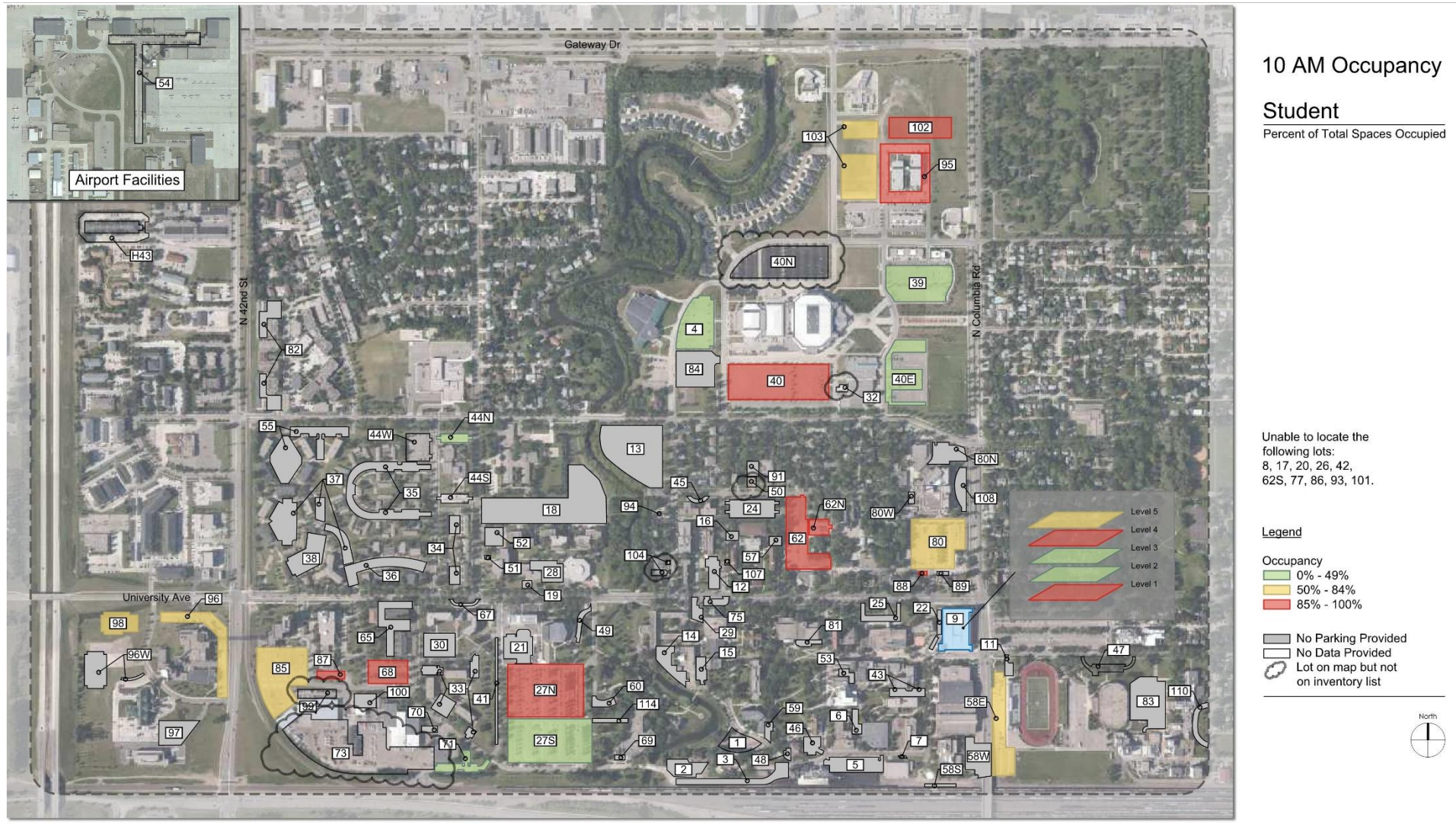
Source: Walker Consultants, 2018

STUDENT COMMUTER

Approximately ±3,935 spaces within 38 parking facilities on campus are available for student commuter parkers. At peak, approximately 55% of the spaces available to student resident parkers were utilized.

Figure 9, below, includes a map showing utilization from the perspective of student commuters. Similar to student residents and faculty/staff, select parking facilities around the core area of campus and around the Ralph Engelstad Arena were highly utilized.

Figure 9: UND Student Commuter Parking Demand Map



Source: Walker Consultants, 2018

PARKING ENFORCEMENT PRACTICES

As mentioned above, UND permit holders register their license plate numbers, and UND conducts parking enforcement using License Plate Recognition technology.

UND uses two vehicle-mounted LPR units to conduct enforcement. One LPR unit patrols areas north of University Avenue; the other unit enforces areas south of University Avenue. Most metered and time-zone areas are covered on foot.

ANALYSIS OF CITATION DATA

UND provided Walker citation data for fiscal year 2017 (July 1, 2016-June 30, 2017), as shown in Table 3, below with the most frequent citations highlighted. The most frequent violation issued was a lack of permit linked to the vehicle (12,273 citations), followed by a vehicle parked in other location than assigned (4,601 citations). Other frequent citations included exceeding the time limit, an expired meter, and exceeding a time limit in a loading zone. A total of 22,687 citations were issued, and 5,764 warnings were issued. In Walker's experience, a well-run enforcement program tends to issue approximately 3-4 citations per space per year. Although UND's ratio is closer to 2.4 citations per space (including warnings), if we take into account the low utilization of parking (i.e., approximately 44% at peak), this seems like a reasonable number of citations for the purposes of generating compliance—an equivalent of about 5.5 citations per space in use.

Table 3: Citations by Violation Type

Violation Type	Number of Citations
Parked in Handicap Space	1
Altered/Stolen	7
Counterfeit/Forged Permit	1
Exceed Time Limit	1,564
False Registration	5
No Permit Linked to Vehicle	12,273
Parked in Hash Marks	110
Parked in other than Assigned	4,601
Parked Overnight in Restricted Area	535
Suspended Privileges	44
Time zone Violation	6
Time zone Violation	4
Beyond Row	53
Displaying a Decoy Citation	57
Expired Meter	1,093
Improper Display of Permit	28
Parked in Fire Lane	8
Parked in Multiple Spaces	107
Parked on Grass/Lawn	8
Permit Sharing	154
Tow/Relocate	1
Abandoned Vehicle	2
Boot/Immobilize Vehicle	202
Exceeded Time Limit in Loading Zone	1,099
Failure to Comply with Parking	66
No Payment/Receipt Displayed	315
Parked in Handicapped Space	37
Parked in No Parking Zone	266
Parked on Sidewalk	21
Stolen Boot Replacement	1
Vehicle Inoperable	15
Total Citations Issued	**22,687**
Total Warnings Issued	**5,764**

Source: Walker Consultants, 2018

PARKING TECHNOLOGY—CURRENT CONDITIONS

The University accepts payment for parking by pre-payment of fees: for employee/student permits, a fixed fee, paid in advance, allows for the holder to park in designated areas; while visitors pay in cash or with credit to various collection devices for their expected parking duration.

T2 ENFORCEMENT

To enforce and manage the permit parking, the University employs a equipment, purchased from T2 Systems, that provides for the issuance and tracking of parking citations. Parking Enforcement Officers (PEO's) carry a mobile computer with a Bluetooth-connected printer that is capable of identifying a vehicle in violation of the parking policies of a given location, printing a ticket, and entering that citation into the tracking system. Note that the software system has begun transitioning to a smart-phone app, rather than dedicated mobile computers. The University is currently utilizing both platforms.

GENETEC MOBILE LPR ENFORCEMENT

The University has two vehicles that are equipped with a License Plate Recognition (LPR) system from Genetec that can quickly determine if parked vehicles are eligible to be in a given location on campus. The system integrates with the T2 Enforcement system allowing a violation to trigger the citation-issuing function of the T2 system. This type of system greatly increases the number of parked vehicles that can be vetted against the database of license plates, versus a traditional process performed manually by PEO's. It also eliminates the need for physical permits (hangtags, decals, placards, etc.)

T2 MULTI-SPACE METERS

In the parking ramp, the University utilizes T2 Luke-model payment stations for visitors. To use the system, visitors enter the license plate information using the alpha-numeric keypad, pay for a selected period of time by cash or credit card, and may receive a receipt for their purchase. The data on the payments is integrated into the T2 and Genetec enforcement systems, providing the PEO's the same ability to enforce visitor parking as they do for permit parking.

SINGLE-SPACE COIN MECHANICAL METERS

The University does still utilize some mechanical coin-operated single-space parking meters for visitor spaces in various surface parking lots. As is typical, these mechanical meters offer no system integrations, no ability to zero-out a payment when a vehicle leaves, nor any ability to accept payments other than coins.

CAMPUS SHUTTLE

UND has a shuttle system that provides free on-campus transportation during the fall and spring semesters. The University operates four different day routes and one night route. In fiscal year 2017, UND day and night shuttles had a total ridership of approximately 183,679 passengers.

The day and night shuttles have a total operational cost of $330,529 and are funded by Student Fees, Local Allocation, and Appropriated Funds.

RECOMMENDATIONS

Based on a review of current conditions and analysis, Walker makes the following recommendations.

PARKING PERMIT SYSTEM STRUCTURE

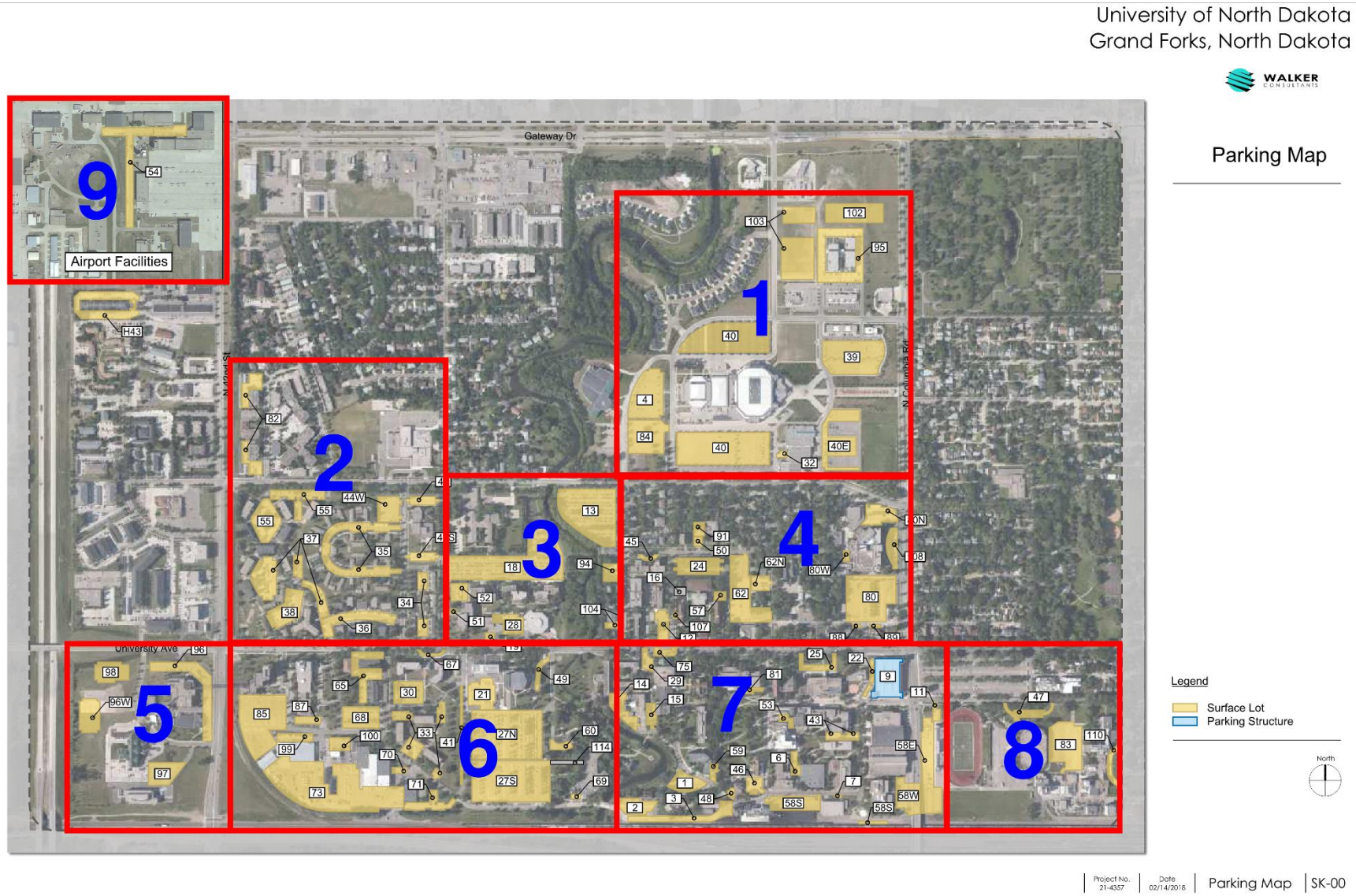
- Walker recommends that UND switch from a "hunting permit" format to a zoned system, with permits that have more well-defined privileges. Pricing may vary by zone, based upon proximity to the destination and/or convenience to the central core of campus. For example, the parking facilities that are further from the core area of campus, should be priced lower than the facilities that are closer to the most popular places to park.

- UND should link parking fees and citations to student accounts. This would add a level of convenience for students and should improve UND's collection rate for parking citations.

- Walker has developed a proposed zone structure for parking, that works towards right-sizing the inventory and introduces tiered pricing.

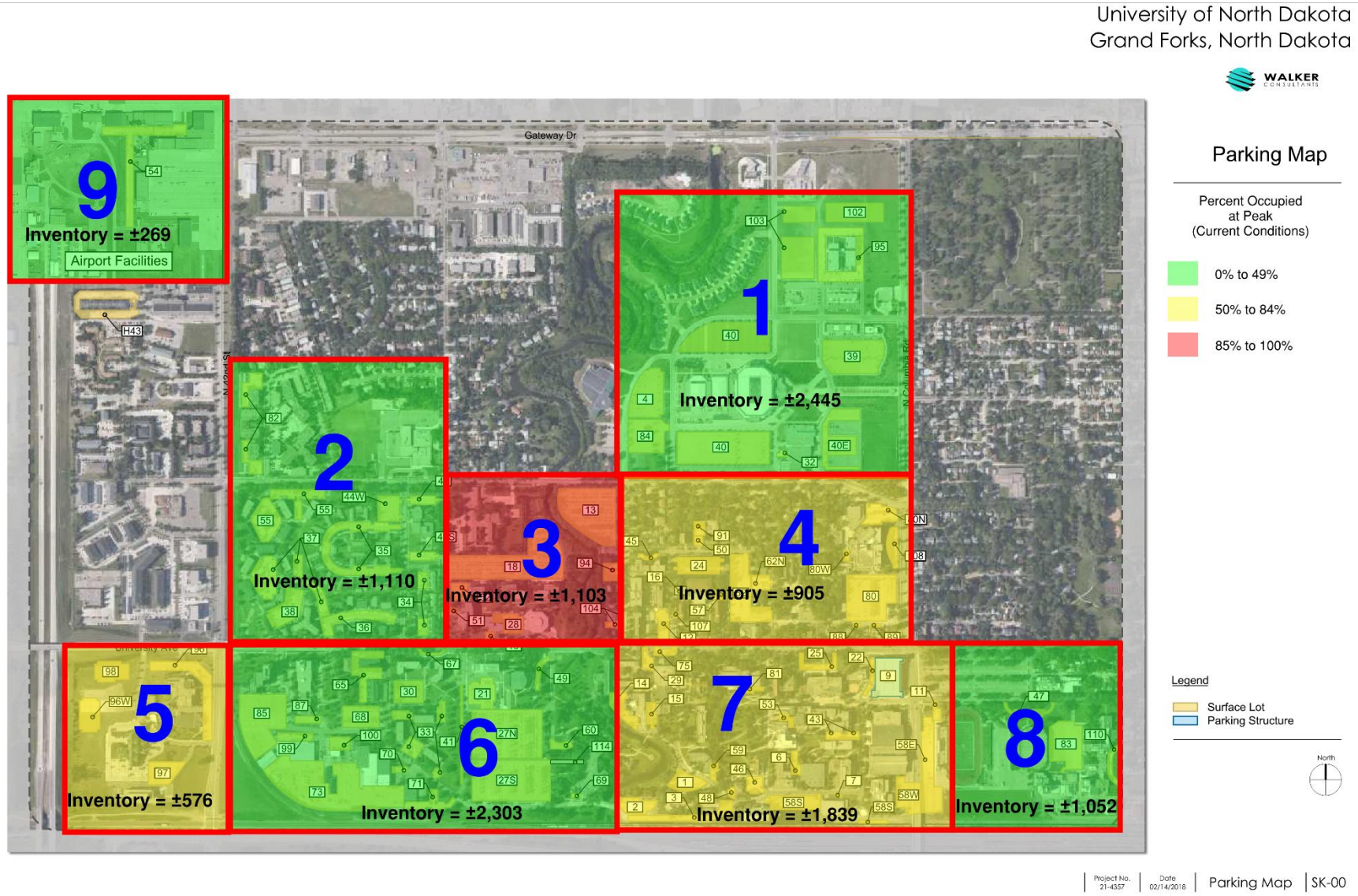
The map on the next page, labeled Figure 10, illustrates the current parking system broken into nine zones, along logical boundaries. Figure 11 is a heat map showing the current parking demand in each of these proposed zones.

Figure 10: Proposed Zone Parking Map



Source: Walker Consultants, 2018

Figure 11: Current Heat Map by Proposed Zone



Source: Walker Consultants, 2018

RECOMMENDED PARKING SUPPLY CHANGES—BY ZONE

Walker is offering a proposal to decommission certain parking lots in specific zones. In some cases, this will reduce the surplus within a zone; in other cases, it may shift demand from one zone to a neighboring zone. What follows is an analysis by zone-by-zone.

Summary Table 13, at the end of this section, illustrates—in aggregate—the impacts of parking space reductions and relocations of demand among the proposed zones.

ZONE 1

Zone 1 is in the northeast quadrant of the contiguous main campus. It includes the Ralph Englestad Arena, the Health Center, the bookstore, and the School of Medicine.

Table 4: Zone 1 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
4	258	35	14%
39	390	30	8%
40	651	114	18%
40E	351	28	8%
84	158	No data	-
95	144	59	41%
102	313	23	7%
103	180	140	78%
TOTAL	**2,445**	**429**	**18%**
Effective Supply Required		**505**	
Adequacy: Expressed as Surplus or (Deficit)		**1,940**	

Source: Walker Consultants, 2018

Zone 1 contains 2,445 parking stalls, about 429 of which are occupied during a typical peak day on campus—an occupancy rate of only 18%; if we were planning for an effective supply cushion of 15%, this zone would require an inventory of 505 parking spaces. This yields an effective surplus of 1,940 spaces. This zone has the greatest surplus of any of the nine Walker-defined zones. This fact notwithstanding, Walker does not recommend the removal or decommissioning of any lot in this zone. This surplus will serve the Arena for events, and can function as a less expensive option in a tiered-price system.

ZONE 2

Zone 2 is in the southwestern quadrant of campus, north of University Avenue. This zone is entirely comprised of student living communities—residence halls and apartments.

Table 5: Zone 2 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
34	53	-	0%
35	171	No data	-
36	109	55	50%
37	181	54	30%
38	149	45	30%
44N	40	No data	-
44S	43	17	40%
44W	70	11	16%
55	208	57	27%
82	86	20	23%
TOTAL	**1,110**	**259**	**23%**
Effective Supply Required		**305**	
Adequacy: Expressed as Surplus or (Deficit)		**805**	

Source: Walker Consultants, 2018

Zone 2 contains 1,110 parking stalls, with UND reporting a peak occupancy of 259. This is an occupancy rate of 23%, if we were planning for an effective supply cushion of 15%, this zone would require an inventory of 305 parking spaces. This yields an effective surplus of 805 spaces.

The shaded lines in the table above (lots 35, 38, and 55) have been identified for potential removal, representing 528 parking spaces, which in a residential area of campus could reduce traffic, increase green- and recreational-space, and improve quality of life (especially as relates to Lot 35, in the very center of this block). The lots identified for potential removal were selected from different areas within this zone, so as not to disadvantage the residents of any one hall disproportionately. These proposed eliminations would still leave an effective surplus of 277 spaces, 50 of which could be used to absorb overflow from Zone 3 (discussed next).

ZONE 3

Zone 3, just east of Zone 2, is the most heavily-used area on campus with current demand rates of 86%. When considering effective capacity (at 85% of actual inventory), the zone—which contains 1,103 parking spaces—is actually in deficit by 19 spaces, given the peak demand as reported by UND. This zone contains mostly residential parking with a few small pockets of parking set aside for faculty and staff members.

Table 6: Zone 3 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
13	408	355	87%
18	550	526	96%
19	9	1	11%
28	55	47	85%
51	8	2	25%
52	42	8	19%
94	31	15	48%
TOTAL	**1,103**	**954**	**86%**
Effective Supply Required		**1,122**	
Adequacy: Expressed as Surplus or (Deficit)		**(19)**	

Source: Walker Consultants, 2018

Of the 1,103 parking spaces in Zone 2, UND reports 954 occupied at peak. This represents 86% occupancy. A demand of 954 would dictate a supply of 1,122 parking spaces. Naturally, based on demand, Walker does not recommend removing or closing any parking in this zone.

Rather, we recommend relocating some of this demand to the remaining surplus in Zone 2. This can be accomplished by using a lot-based parking allocation; limiting the number of parking permits sold for particular lots in Zones 2 and 3. If 50 users are relocated from Zone 3 to Zone 2, the 19 space deficit becomes a 31-space effective surplus, with an occupancy rate of 82%. These lots would still feel rather full, but student residents should feel relatively assured of finding a parking space.

ZONE 4

Zone 4 is at the campus core, just north of University Avenue. It contains numerous academic buildings, among the least parking spaces of any Walker-defined zone, and demonstrates significant levels of demand, due to its convenience top high-demand facilities.

Table 7: Zone 4 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
12	43	14	33%
16	6	No data	-
24	109	58	53%
45	6	1	17%
57	6	3	50%
62	197	235	119%
62A	15	No data	-
62N	36	49	136%
62S	24	No data	-
80	326	239	73%
80n	53	29	55%
80w	5	No data	-
88	5	5	100%
89	9	7	78%
91	7	No data	-
93	3	No data	-
101	17	12	71%
107	3	1	33%
108	35	14	40%
TOTAL	**905**	**667**	**74%**
Effective Supply Required		**785**	
Adequacy: Expressed as Surplus or (Deficit)		**120**	

Source: Walker Consultants, 2018

This central campus zone contains 905 parking spaces, with a reported peak occupancy of 667—or 74%, adjusting for an effective supply cushion, this percentage rises to 87%, which will begin to feel constrained for people seeking a parking place. Even so, this zone reflects an effective surplus of 120 parking spots. Other than allocating parking permit privileges more granularly, Walker does not recommend changes to the inventory in this zone.

ZONE 5

Zone 5, located on the far southwest corner of campus, is the smallest zone—and contains facilities including the Tech Accelerator, the Center for Innovation, and the UND Aerospace Foundation. This zone is at a significant remove from the core of campus, and demonstrates a moderate (50%), but isolated, pocket of demand.

Table 8: Zone 5 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
96	202	129	64%
96w	200	80	40%
97	105	25	24%
98	69	56	81%
TOTAL	**576**	**290**	**50%**
Effective Supply Required		**341**	
Adequacy: Expressed as Surplus or (Deficit)		**235**	

Source: Walker Consultants, 2018

Even adjusting for an effective supply cushion, the current reported peak demand of 290 occupants could be met with a supply of 341 parking spaces—as contrasted with the current inventory of around 576 spaces. This would leave an effective surplus of 235 spaces. Walker proposes that the closure of lot 96w would allow the redistribution of parkers among the remaining three lots (predominantly in lots 96 and 97), and would reduce the number of spaces that need to be operated and maintained in Zone 5 by approximately 200. Walker does not recommend shifting any demand out of this zone, nor diverting demand from other zones into Zone 5.

ZONE 6

Zone 6, runs along the south side of University Avenue between North 42nd Street and approximately Princeton Street, and extends south to the railroad tracks. With a mix of residential, cultural, and academic facilities, this zone is relatively large and diverse; and, has the largest parking inventory outside the area surrounding the Ralph Engelstad Arena. It is roughly divided from its neighboring zone to the east (Zone 7), by the English Coulee. Among its approximately 2,300 parking spaces, this zone experiences a demand of around 44%, based on current data provided by UND.

Table 9: Zone 6 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
21	70	No data	-
27n	621	338	54%
27s	462	185	40%
30	114	No data	-
33	134	57	43%
41	36	No data	-
49	7	No data	-
60	16	No data	-
65	114	60	53%
67	9	No data	-
68	157	113	72%
69	6	No data	-
70	19	11	58%
71	71	21	30%
85	363	171	47%
86	9	No data	-
87	42	40	95%
100	51	16	31%
114	2	No data	-
TOTAL	**2,303**	**1,012**	**44%**
Effective Supply Required		**1,265**	
Adequacy: Expressed as Surplus or (Deficit)		**1,038**	

Source: Walker Consultants, 2018

The current reported peak demand of 1,012 occupants could be accommodated with 1,265 spaces, including an effective supply cushion, well below the 2,303 spaces currently in inventory. This would leave an effective surplus of 1,038 spaces. Walker proposes that the potential closures of lots 27S, 68, and 85—for a reduction of 982 spaces. Demand in Lot 27 can be concentrated in the north portion; Lot 85 is the furthest west in the zone, with adequate nearby alternatives; and lot 68 is in the center of a densely developed area, which may benefit from reduced traffic congestion. Walker does not recommend shifting any demand out of this zone, nor diverting demand from other zones into Zone 6.

ZONE 7

Running along the south side of University Avenue, between approximately Princeton Street and North Columbia Road, Zone 7 represents the academic and administrative core of the UND campus. It contains around 1,839 parking spaces, including 750 spaces in the campus' only parking ramp. Utilization is relatively high with 65% of spaces occupied during the reported period of peak demand (1,199 vehicles). The required effective capacity for this many cars would be 1,411 spaces—leaving a surplus of about 428 spaces.

Table 10: Zone 7 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
1	73	48	66%
2	84	83	99%
3	104	59	57%
5	80	67	84%
6	15	4	27%
7	6	3	50%
9	750	455	61%
11	9	6	67%
14	73	44	60%
15	34	26	76%
22	21	9	43%
25	40	27	68%
26	11	No data	-
29	17	9	53%
43	12	4	33%
46	44	34	77%
48	6	No data	-
53	9	4	44%
58E	249	165	66%
58W	170	127	75%
58S	17	18	106%
59	7	No data	-
81	8	7	88%
TOTAL	**1,839**	**1,199**	**65%**
Effective Supply Required		**1,411**	
Adequacy: Expressed as Surplus or (Deficit)		**428**	

Source: Walker Consultants, 2018

Although this zone has a surplus of spaces, Walker is not proposing closing or eliminating lots in this prime area of campus. Instead, we are suggesting relocating some of the demand from Zone 8 (discussed next), in order to decommission some of the lesser-used facilities in that zone, while making better use of some of the vacancies in the parking ramp.

ZONE 8

Zone 8 is found in the southeastern-most corner of the main campus, and features Memorial Stadium, the High Performance Center, and the Energy and Environmental Research Center. It also contains around 1,052 parking spaces. With a reported peak demand of only 402 vehicles, an adequate, effective supply would be around 473 parking spaces—yielding an effective surplus of 579 spaces.

Table 11: Zone 8 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
10	738	291	39%
20	14	No data	-
47	56	No data	-
83	225	111	49%
110	19	No data	-
TOTAL	**1,052**	**402**	**38%**
Effective Supply Required		**473**	
Adequacy: Expressed as Surplus or (Deficit)		**579**	

Source: Walker Consultants, 2018

Walker believes that it may be feasible to close lot 10, which represents 738 parking spaces. Although this would leave the zone in deficit by 159 spaces, we believe the existing peak demand could be redistributed. Of the approximately 290 vehicles that park in lot 10, 60 could be moved to lot 83, within Zone 8. Another 230 could be relocated to Zone 7, potentially distributed among lots 53E, 53W, and the parking ramp. In this manner, the remaining 314 spaces in Zone 8 would represent an effective surplus of 112 spaces.

ZONE 9

Zone 9 is located at the airport, and has 269 spaces on offer. The measured peak occupancy reported by UND was only 13 vehicles, for an occupancy of 5%.

Table 12: Zone 9 Parking Occupancies by Lot

Lot #	Inventory	Peak Occupancy	%
54	269	13	5%
TOTAL	**269**	**13**	**5%**
Effective Supply Required		**15**	
Adequacy: Expressed as Surplus or (Deficit)		**254**	

Source: Walker Consultants, 2018

Zone 9 is isolated from the rest of campus. Unless there is an easy way to segment the parking to remove some, Walker recommends no changes in this zone. If a new pricing strategy is effective at incentivizing more campus community members from the main campus to use the airport parking as a park-and-ride facility, UND could better avail itself of this existing capacity.

OTHER

Only one parking area among the inventory provided by UND does not fall within the zones offered in this section—Lot H43 at Dakota Hall. This location is also somewhat isolated, and does not lend itself to any closures or reallocations, and has been disregarded among the rest of the inventory for the purposes of this exercise.

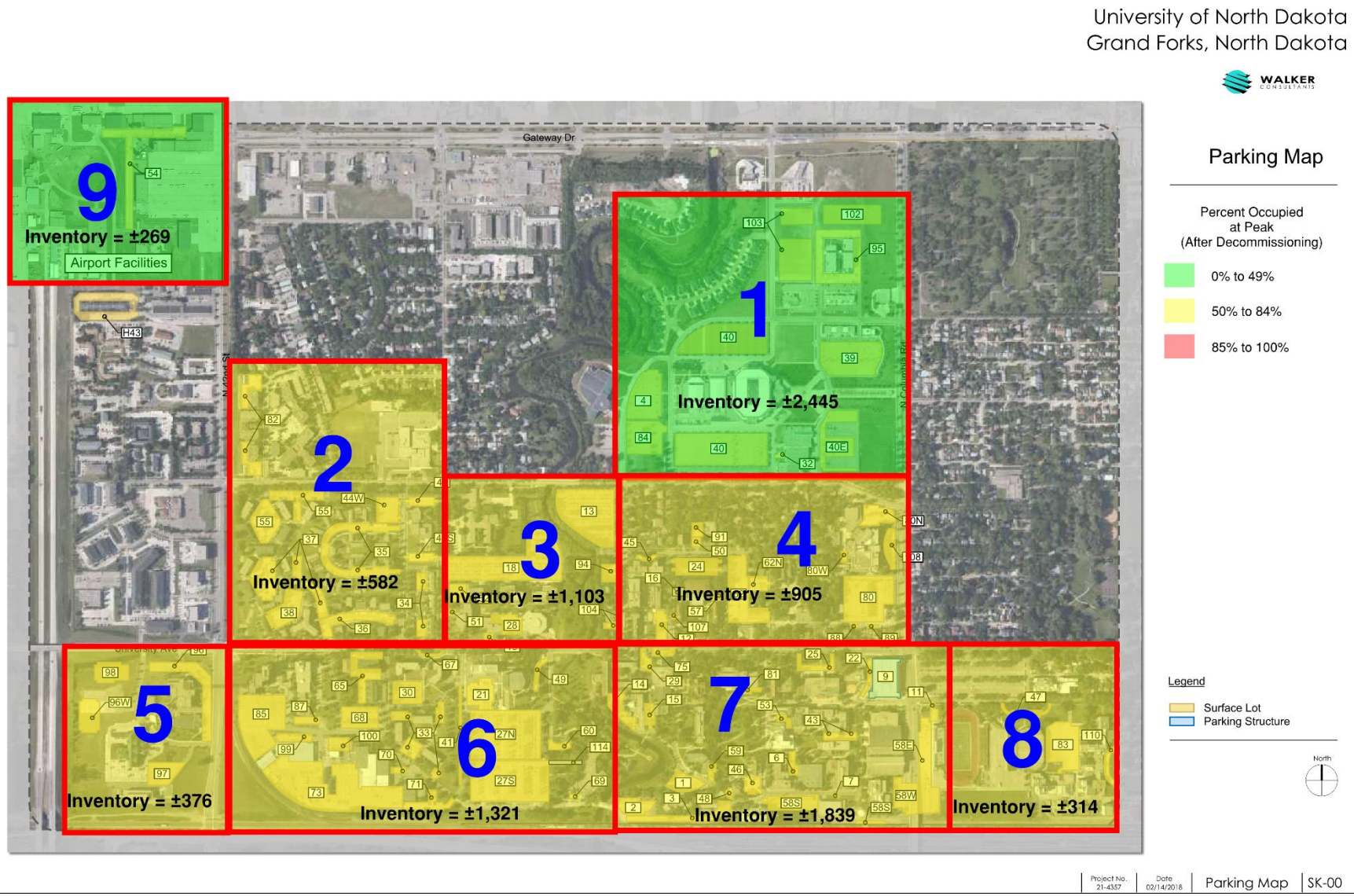
When taken as a whole, the parking lot closures or eliminations, and reallocations of demand, appear as follows—taken on a zone-by-zone basis.

Table 13: Aggregate Impacts of Zone Assignments, Parking Space Reductions, and Relocations of Demand

	BEFORE					AFTER						
	Inventory	Occupancy	Percent Occupied at Peak	Effective Supply Required*	Effective Surplus	Remove	Absorb from another zone	Relocate to another zone	Remaining Demand	Remaining Inventory	Remaining Effective Surplus	Percent Occupied at Peak
Zone 1	2,445	429	18%	505	1,940	0	0	0	429	2,445	1,940	18%
Zone 2	1,110	259	23%	305	805	528	50	0	309	582	218	53%
Zone 3	1,103	954	86%	1,122	(19)	0	0	50	904	1,103	39	82%
Zone 4	905	667	74%	785	120	0	0	0	667	905	120	74%
Zone 5	576	290	50%	341	235	200	0	0	290	376	35	77%
Zone 6	2,303	1,012	44%	1,191	1,112	982	0	0	1,012	1,321	130	77%
Zone 7	1,839	1,199	65%	1,411	428	0	230	0	1,429	1,839	158	78%
Zone 8	1,052	402	38%	473	579	738	0	230	172	314	112	55%
Zone 9	269	13	5%	15	254	0	0	0	13	269	254	5%
	11,602	**5,225**	**45%**	**6,147**	**5,455**	**2,448**	**280**	**280**	**5,225**	**9,154**	**3,007**	**57%**

Source: Walker Consultants, 2018

Figure 12: Projected Heat Map with Rebalanced Zones, Pricing, and Allocation



Source: Walker Consultants, 2018

PARKING ZONES AND TIERED PRICING

Based on the relative demand among the zones above, Walker recommends a tiered pricing structure that is commensurate with the desirability of the zones, and their proximity to the campus core. With this in mind, we are recommending four price points, with the highest prices for parking in Zones 3, 4, and 7—these are both the most heavily used zones and those closest to the primary campus destinations. At a second-tier rate, we recommend Zones 2, 5, 6, and 8. Zone 1 would be less expensive, and a third-tier rate on the main campus. Zone 9, the airport, due to its remoteness from the campus and its function as a park and ride facility would be the fourth pricing tier. The proposed tiers and parking fees are shown in the following table:

Table 14: Proposed Tiers and Parking Fee Basis

Tiers	Zones	Fee Basis
Tier 1	3, 4, 7	2x Base
Tier 2	2, 5, 6, 8	Base
Tier 3	1	.5 Base
Tier 4	9	.25 Base

Source: Walker Consultants, 2018

Walker proposes a structure in which Tier 2 is the "base" parking rate upon which each other rate is keyed. Therefore, future price adjustments (e.g., annual adjustments for inflation) would be made to the "base" rate and would cascade logically through the fee structure.

POTENTIAL FINANCIAL IMPACTS

The current budget for Parking is balanced, covers debt service, and (generally) contributes to excess reserves each year. Therefore, there is an opportunity, if desirable, to adjust parking rates in a manner that is approximately revenue neutral. Walker sees four potential, principal areas in which the Parking budget—at its current magnitude—may be vulnerable.

- The addition of a third LPR vehicle and operator
- Shuttle service expenses
- Capital repairs and maintenance
- Fluctuations in revenues and expenses

ADDITIONAL LPR

If field tests of increased enforcement intensity along existing LPR routes indicate that there is sufficient non-compliance with parking regulations to justify the addition of a third LPR vehicle and an additional parking enforcement officer (PEO), then wage and equipment costs could increase.

The costs of an additional camera system and vehicle would be one-time expenses, but the equipment should be amortized over five years, to allow for replacements. We anticipate the upfront cost of vehicle and equipment would be approximately $60,000, with an associated annual set-aside of $12,000 for capital replacement. Based upon data provided by UND, an approximate, fully-loaded wage (including benefits) for a PEO would be $50,000. This amount could be largely (or completely) offset by increased citation revenue. An average of three tickets per

hour at a value of $20 per ticket, with a collection rate of 66.6%, yields approximately $80K/year. On a percentage basis, these factors are likely to have minor budgetary impacts.

SHUTTLE SERVICE EXPENSES

A parking system that includes remote parking areas, as well as park-and-ride facilities, is dependent upon the campus shuttle service. The shuttle serves other purposes as well: connecting academic facilities, serving the airport, connecting residence halls and apartments to the core of campus, etc. However, none of the shuttles' operations are funded by Parking. If this were to change, there could be a minor to moderate impact to Parking's budget.

CAPITAL REPAIR AND MAINTENANCE

Plant improvements are currently funded with "excess reserves." While this has proven successful and sustainable to date, this is not a predictable funding stream, as it relies upon whatever dollar amount is collected in revenues over expenses, from year-to-year. Walker recommends that Parking's revenues should be adequate to fund a reserve for parking maintenance—a "sinking fund."

Maintenance budgets include items from three general categories: structural, operational, and aesthetic. Maintenance costs fall into all three categories, generally including the following:

1. Cost of periodic repairs and or routine corrective actions that are necessary to maintain serviceability and facility operations (this includes daily and routine maintenance);
2. Cost of preventive maintenance to extend the life of surface or structured parking;
3. The replacement costs for a facility, or for structural repairs and operational elements at the end of the estimated service life. Major structural repairs and replacements can distort an annual maintenance budget predicated on historical annual expenses. It is more appropriate that such items should be budgeted separately and expensed through a reserve sinking fund account.

Anticipated regular periodic maintenance and repair expenses fall into the first two categories above, and are usually included in the annual operating budget. Sinking funds are intended to provide at least a cushion toward the types of structural repairs suggested in number three, above, which includes major expenses that exceed annual maintenance type items, such as expansion joint replacements, major structural repairs to pre-cast Ts, columns and beams, elevator replacement, equipment replacement, lighting replacement, lot resurfacing, etc., which can amount to millions of dollars. It is impossible to determine in advance when such major repairs will be necessary, the amount, or if enough time has transpired to reserve sufficient funding to cover the expense. Many owners do not reserve any funds and are blind-sided.

Contributions to a sinking fund can be accumulated over time, grow with interest at the savings rate, and are available to cover structural maintenance and structural repairs when scheduled. Walker recommends setting aside $142 per structured space per year (for structures under 20 years old, $180 per year for structures above that age); and, $60 per surface space per year. If UND follows the recommendations in this report, which would eliminate approximately 2,500 surface parking spaces, the recommended annual sinking fund would be approximately $600,000 per year.

It is important to note that this sinking fund will support the general maintenance and operation of a parking infrastructure that is in good condition. It will not fund UND's deferred maintenance backlog, which will require a different or additional revenue stream (see, specifically, parking fee scenarios 3 and 4 in the following section).

EXCESS RESERVES

As mentioned above, any budgetary surplus or deficit accrues to, or is offset by, the excess reserves. If capital maintenance and repairs are no longer taken from this source, it can provide a better buffer against unanticipated revenue shortfalls (e.g., enrollment decreases) or increases to expenses (e.g., changes to wages or benefits packages).

PARKING FEE SCENARIOS

With these points in mind, Walker has built four budgetary scenarios with parking fees that are projected to generate approximately $2.1M, $2.8M, $3.6M, or $3.9M per year, versus the current $2.1M per year.

Scenario 1 uses a "base" fee of $150 in the tier structure recommended earlier, and illustrated in Table 14. This uses the new tiers and fees, and keeps the budget line items and bottom line at an approximate status quo. It does not support the creation of a sinking fund, and it does not fund the deferred maintenance backlog, as described in detail in the 2012 "University of North Dakota Parking Lot and Roadway Inspection and Survey" prepared by CPS, Ltd.

Scenario 2 uses a "base" fee of $200, and potentially generates approximately $600K in additional revenues, which could fund the Walker-recommended "sinking fund," in addition to keeping the current budget whole. This assumes that the addition of an enforcement person and vehicle will be largely self-supporting, and that the shuttle system continues to be funded outside of the Parking budget.

Scenario 3 increases the "base" fee to $250, which is projected to support the "sinking fund" and to contribute $750K per year towards the deferred maintenance backlog. All other assumptions remain the same as Scenario 2.

Scenario 4 has a "base" fee of $275, and is identical to Scenario three, but funds as much as $1.1M annually towards the deferred maintenance backlog.

Increases in parking rates should be combined with transparency. The Parking and Transportation Services department should clearly communicate how the revenue received from the higher rates will cover existing operational expenses, repair and maintenance, and debt service, and how excess revenues (if any) will be spent to improve access and circulation at the University. This could be accomplished through a brief annual report, which can focus on the year's accomplishments, next year's goals, staff profiles, and a general accounting of sources and uses of funds.

Current parking fee revenues are approximately $2.1M. The table that follows illustrates four possible fee-scenario projections, which are in line with the Zones and Tiers recommended by Walker in this report. All scenarios assume a similar number of parking permits sold as today (with a ratio of 1.82 permits sold versus the number of spaces occupied during periods of typical peak demand).

Table 15: Parking Revenue Scenarios

Permits sold @1.8:1	Scenario 1 Base Fee = $150	Scenario 1 Revenue	Scenario 2 Base Fee = $200	Scenario 2 Revenue	Scenario 3 Base Fee = $250	Scenario 3 Revenue	Scenario 4 Base Fee = $275	Scenario 4 Revenue
781	$75	$58,591	$100	$78,121	$125	$97,651	$138	$107,416
472	$150	$70,746	$200	$94,328	$250	$117,910	$275	$129,701
1,737	$300	$521,170	$400	$694,894	$500	$868,617	$550	$955,479
1,215	$300	$364,382	$400	$485,843	$500	$607,304	$550	$668,034
528	$150	$79,214	$200	$105,618	$250	$132,023	$275	$145,225
1,843	$150	$276,428	$200	$368,570	$250	$460,713	$275	$506,784
2,183	$300	$655,014	$400	$873,352	$500	$1,091,690	$550	$1,200,858
732	$150	$109,806	$200	$146,408	$250	$183,011	$275	$201,312
24	$37.50	$888	$50.00	$1,184	$62.50	$1,480	$68.75	$1,628
9,515		**$2,136,238**		**$2,848,317**		**$3,560,396**		**$3,916,436**

Source: Walker Consultants, 2018

FINANCIAL PROJECTIONS

Factoring in the financial impacts and fee scenarios illustrated above, Walker has developed the following potential summary-budget financial projections:

Table 16: Parking Budget Scenarios

Summary FY 2017 Budget		New Fee Scenario 1		New Fee Scenario 2		New Fee Scenario 3		New Fee Scenario 4	
Revenues		**Revenues**		**Revenues**		**Revenues**		**Revenues**	
Permits	$ 2,102,619	Permits	$ 2,136,238	Permits	$ 2,848,317	Permits	$ 3,560,396	Permits	$ 3,916,436
Fines	$ 275,560	Fines	$ 275,560	Fines	$ 325,191	Fines	$ 325,191	Fines	$ 325,191
Other	$ 38,219	Other	$ 38,219	Other	$ 38,219	Other	$ 38,219	Other	$ 38,219
TOTAL	$ 2,416,397	TOTAL	$ 2,450,017	TOTAL	$ 3,211,727	TOTAL	$ 3,923,806	TOTAL	$ 4,279,846
Expenses		**Expenses**		**Expenses**		**Expenses**		**Expenses**	
Wages & Benefits	$ 558,841	Wages & Benefits	$ 558,841	Wages & Benefits	$ 608,472	Wages & Benefits	$ 608,472	Wages & Benefits	$ 608,472
Operating	$ 648,185	Operating	$ 648,185	Operating	$ 660,185	Operating	$ 660,185	Operating	$ 660,185
Debt Service	$ 1,165,529	Debt Service	$ 1,165,529	Debt Service	$ 1,165,529	Debt Service	$ 1,165,529	Debt Service	$ 1,165,529
Sinking fund	NA	Sinking fund	NA	Sinking fund	$ 610,740	Sinking fund	$ 610,740	Sinking fund	$ 610,740
Deferred Maint.	NA	Deferred Maint.	NA	Deferred Maint.	NA	Deferred Maint.	$ 750,000	Deferred Maint.	$ 1,100,000
LPR add'n (one-time)	NA	LPR add'n (one-time)	NA	LPR add'n (one-time)	$ 60,000	LPR add'n (one-time)	$ 60,000	LPR add'n (one-time)	$ 60,000
TOTAL	$ 2,372,555	TOTAL	$ 2,372,555	TOTAL	$ 3,104,926	TOTAL	$ 3,854,926	TOTAL	$ 4,204,926
Excess Reserves	**$ 43,843**	**Excess Reserves**	**$ 77,462**	**Excess Reserves**	**$ 106,801**	**Excess Reserves**	**$ 68,881**	**Excess Reserves**	**$ 74,920**
Operating exp. incl. recharge/MIRA		"Base" fee $150 Same staffing Same LPR No "sinking fund" Operating exp. incl. recharge/MIRA		"Base" fee $200 Add PEO (wages, benefits, and citation rev) Add LPR (one-time, plus amortization) Add "sinking fund" Operating exp. incl. recharge/MIRA		"Base" fee $250 Add PEO (wages, benefits, and citation rev) Add LPR (one-time, plus amortization) Add "sinking fund" Add "deferred maint." contribution Operating exp. incl. recharge/MIRA		"Base" fee $275 Add PEO (wages, benefits, and citation rev) Add LPR (one-time, plus amortization) Add "sinking fund" Add "deferred maint." contribution Operating exp. incl. recharge/MIRA	

Source: Walker Consultants, 2018

Please note that scenario 1 supports neither a “sinking fund” nor the parking system’s deferred maintenance backlog. Scenario 2 only covers the “sinking fund.” And Scenarios 3 and 4 are projected to contribute to both.

USER ASSIGNMENTS

In addition to raising rates and limiting permit allocations (i.e., oversell), consider selling (and selling out) parking permits on a lot-by-lot or zone-by-zone basis. This creates an ability to manage the system more closely and to adjust permit-to-space ratios more finely by demonstrated demand. For any given lot, the University can determine how many permits to sell and to which constituencies (faculty, staff, resident students, commuting students). A carefully managed oversell ratio, can help assure permit holders that they will be able to find a parking space. While Walker recommends that parking within the lot should be first-come, first-served, we recognized that campus culture might dictate that certain bays should be dedicated to different constituencies (e.g., faculty/staff only spaces). Reserving specific bays for certain groups likely will decrease the efficiency of a parking facility.

Eliminating the "hunting permit" by three space types can also reduce customers' search times for parking spaces—this can reduce campus congestion, traffic, and cruising for spaces. These reductions can also translate into increased safety and lower greenhouse gas emissions.

EVENT PARKING PERMITS

As noted earlier in this report, the parking rate per daily event permit decreases as more permits are sold. For example, if 50 daily permits are sold for a peak full-day event, all 50 permits cost $5 each, and total revenue would be $250. However, if 51 permits are sold, each permit costs $3, and total revenue would only be $156 dollars. In this scenario, less revenue is generated for an event with 51 parkers versus an event with 50 parkers. This system is problematic in that it is inequitable for event parking permit purchases and also does not maximize the potential revenue that could be generated.

Walker recommends that the application of current event parking rate structure be adjusted. Instead of discounting the parking rates based on the total quantity of permits sold, charge a certain rate for the first 50 permits, a lower rate for the next 50 permits, etc. Using the 51 permit example described above, only permit #51 should be $3, and the first 50 permits should still be $5, which would increase the revenue earned from $156 to $253.

To provide an added level of convenience for parkers, Walker recommends that UND offer an option to purchase reserved permits for high volume events, such as hockey games. The reserved parking rates should be higher than unreserved parking rates.

CAMPUS SHUTTLE

The campus shuttle routes provide a convenient way for students and faculty/staff to travel around campus. Any changes to the parking permit system should be coupled with communicating the shuttle routes available for parkers who choose to pay less and park in remote lots and take the shuttle to their destination. As some parking lots are taken offline, and others become more heavily used, routes may need to be adjusted.

RAMP OPERATIONS

Walker recommends that most visitor parking is concentrated in the existing parking ramp, for the following reasons:

- As a parking structure, the parking ramp has a higher cost per space than the other parking facilities on campus. Having visitor-only parking at this facility will generate higher revenue per space than permit-only parking.
- The parking ramp is in the core area of campus, a desirable location for visitor parking.
- Having a large portion of the visitor parking within the garage will help with wayfinding, as most visitors can be directed to one central location to park.

PARKING ENFORCEMENT

Walker has the following recommendations for UND's parking enforcement practices.

LICENSE PLATE RECOGNITION

UND has expressed concerns that allowing for multiple license plates to be registered with one permit could lead to abuse of the system. Walker recommends that students are limited to registering only one license plate per permit, unless students with multiple vehicles are able to demonstrate that all listed vehicles are registered in their name (or their parent's name). Furthermore, no more than one license plate associated with one permit should be present on campus at one time. This will help prevent a group of students sharing one permit and parking multiple vehicles on campus at one time. For faculty/staff, Walker recommends that multiple vehicles are allowed to share a permit, but as with student permits, if more than one vehicle is present on campus at one time, both vehicles should be cited.

If UND formalizes a carpool program for campus community members, it will be necessary to allow two or more drivers to share a single set of privileges. A well-designed program will incorporate reasonable controls that can be put in place to discourage abuse.

As mentioned previously, UND currently has two vehicle-mounted LPR cameras, one that services the north route and one that services the south route. UND asked Walker to evaluate whether adding an additional LPR unit would be beneficial. Walker recommends that before a third LPR unit is purchased, UND Parking Services conduct the following test to determine whether adding a unit would lead to more citations:

- Both LPR units should circle the north route at the same time, and then the south route at the same time.
- The number of citations that are issued in the north route and south route on a typical day respectively should be compared to the numbers issued when two LPR units are circling these routes. If a significantly higher number of citations were made with two LPR vehicles, then having a third LPR-equipped vehicle would likely be beneficial.

PARKING CITATIONS

Walker has the following recommendations for parking citations at UND:

- The fine for ADA violations should be maintained at the maximum allowable by law in order to deter violators. Posting the violation amount on ADA signs enhances the deterrent effect. Per to North Dakota Century Code Title 39-01-15(10), this fine is limited to the current $100.

- Similarly, violations of life-safety regulations (e.g., parking in front of a fire hydrant, blocking traffic, or parking on a sidewalk) should have fines significant enough to prevent this behavior. However, Title 39, Section 10 caps these fines at $20. As the State increases the maximum fines, UND should do the same, to the extent allowable by law.
- Violations for theft of services (e.g., forged or stolen permits) currently have fines of $100 attached, plus an additional $20 per week of abuse. Given current permit prices (and therefore the value of the service being stolen), this represents a best practice.
- Most other fines at UND are $20 (in line with State maximums), with the exception of some time-zone or meter violations, which are $10. These fines (given State limitations) are reasonable. Ideally, basic fines, such as parking without a permit, should be increased in pace with increasing permit fees, to reduce the value of "taking one's chances." However, such increases are currently prohibited by statute.
- Given the statutory limitations, the most important thing that the enforcement program can do is to continue to hold all constituents accountable for paying fines, use tools such as the bursar's office, payroll deduction (voluntary), and collection agencies as necessary.

AMBASSADORIAL APPROACH TO PARKING ENFORCEMENT

Walker recommends that UND adopt the "ambassador" program model or approach to parking enforcement. This program is based on positive customer and visitor contact. The perception of parking enforcement is often negative. Enforcement is seen as punitive, which in many cases it is. The manner in which enforcement is presented to the parker is often the reason. This is one way to share the important message that "enforcement is customer service." Specifically, the enforcement function protects the product/service for which permit holders have paid—it serves to add value and generate compliance.

The mission of a "parking ambassador program" would be to provide hospitality, information, and public safety services to students, faculty/staff, and visitors, in addition to enforcing campus parking regulations. These ambassadors would be required to complete multi-faceted training in hospitality and customer service, emergency response and first aid, wayfinding, transportation, and campus services. They should work directly with internal and external clients of the University. This model emphasizes some significant differences between police activities and parking enforcement.

The primary goals of an ambassador program would be to promote the goals of the University, resolve concerns, provide information, deter criminal activity, and help make the campus a better, safer and friendlier place to live, work, and visit. Ambassadors should initiate personal contacts with the parking system users (known as "touches"), issue more warnings and slightly fewer citations, and interact with students, faculty/staff, and visitors in a positive manner. The vision of the program is to help promote a more constructive, dynamic experience by extending this service beyond parking lot enforcement.

The ambassadors may accomplish these goals while providing parking management by monitoring public safety, extending a helping hand in emergency situations, and calling on stakeholders on a regular basis. Beyond enforcing parking regulations, examples of appropriate behaviors of ambassadors would be:

- To greet visitors and offer customer service.
- To provide information and explain local traffic and parking regulations to seek voluntary compliance.
- To give a positive face to many people's first contact with the University.
- To give accurate directions to visitors and direct visitors to local destinations and attractions.
- To distribute brochures and maps.

- To provide a motorist assistance program
- To offer an emergency response and first aid.
- To deter criminal activity by their presence.

Ambassadors would be assigned to patrol areas within the campus. As part of a larger auxiliary organization, the program should be self-funded by citation fees. Parking and Transportation Services should acknowledge and codify that all staff are commuter and parking representatives. As ambassadors, each employee must have a general understanding of and be able to present how Parking and Commuter Services works by being able to answer the following questions:

- Why charge for parking?
- How come employees need to "pay to come to work"?
- How are permits allocated?
- Why do "sold-out" lots appear to have capacity?
- Why do some meters have different policies than others?
- Where does the money come from and go to?

PARKING TECHNOLOGY

Walker suggests the following technology recommendations.

PAY BY CELL

UND should also consider a Pay-by-Cell option for use in the parking ramp and in other metered areas. Pay-by-Cell allows users to pre-register online with a third-party provider, and pay for their parking through that provider's mobile app. This technology works especially well in environments where patrons are open to and familiar with the technology, and with the number of students that park at UND, this has the potential be the most popular way for them to pay.

Regular patrons will also enjoy the convenience of pre-paying for their parking and enjoying the convenience of paying from their phone. In addition, the parking app reminds users when their meters are about to expire, allowing them to avoid a ticket by either returning to their vehicle or, if appropriate, by permitting them to extend their meter from their phone.

The typical fee of $0.35 per transaction (charged and retained by the third-party provider) can either be absorbed by the University, or—as is more common—passed along to the customer as a convenience fee, thereby offsetting the cost. Pay-by-Cell systems are relatively inexpensive to acquire and set up normally costing approximately $5K - $10K in startup costs for a basic system. After set-up, there are ongoing annual system fees and charges for credit card transactions at a per transaction rate and/or monthly fee. Many institutions that employ these systems enjoy additional revenue, improved compliance, and better turnover.

SINGLE SPACE AUTOMATED PARKING GUIDANCE SYSTEM (APGS)

In order to improve wayfinding and better communicate parking availability on campus, Walker recommends that UND consider implementing single-space APGS in the future. Appendix B discusses APGS technology in further detail.

PAYSTATION EUROPAY, MASTER CARD, AND VISA (EMV) COMPLIANCE

Walker recommends that any new paystations that are installed on campus are EMV-compliant. As the United States moves to EMV chip technology for more secure credit and debit payments, the parking industry is recognizing the need to follow suit. It is likely that in the near future, all paystations will be required to be EMV compliant. Therefore, since paystations are at least a ten-year investment, Walker recommends that any technology purchased is EMV compliant.

OTHER RECOMMENDATIONS

In addition to the above-referenced recommendations, Walker suggests the following recommendations.

CROSS TRAINING WITHIN THE PARKING SERVICES DEPARTMENT

As with many parking departments throughout the country, Walker understands that the UND Parking and Transportation is understaffed. When possible, UND should consider adding staff to the department to fill essential roles. As Parking and Transportation Services is a campus auxiliary operation, parking fees should be adjusted to sustain a right-sized workforce; the fees Walker has recommended are designed to accomplish this, among other priorities related to operations, repair, and maintenance. Additionally, Walker recommends that UND implement additional cross-training programs within different roles/positions within the department. This will help when certain staff are on vacation and/or during transition periods.

CONSIDER DECOMMISSIONING UNDERUTILIZED OR CLOSED LOTS

Parking facilities are expensive to operate and maintain. As discussed in the Parking Demand section of this report, there are thousands of parking spaces on campus sitting vacant at the period of peak demand. Consider decommissioning parking facilities that are regularly underutilized. By eliminating the “hunting permit,” creating parking zones as described above, limiting parking permit assignments to certain zones or lots (and eliminating or phasing out assignments in other lots)—demand patterns can be significantly altered. As this transition is implemented, the unassigned lots can be used for overflow as lot-by-lot oversell ratios are fine-tuned, and ultimately these lots can be removed from service. Many lots may be able to be closed within weeks. Walker does recommend that UND maintains a surplus of approximately 15 to 20 percent, to accommodate periods of excess demand, and to plan for campus growth and/or development.

Walker’s fee and zone recommendations identify lots that are likely candidates for decommissioning and recognizes the need for excess parking near certain high-volume campus venues.

LINKING PARKING WITH STUDENT ACCOUNT

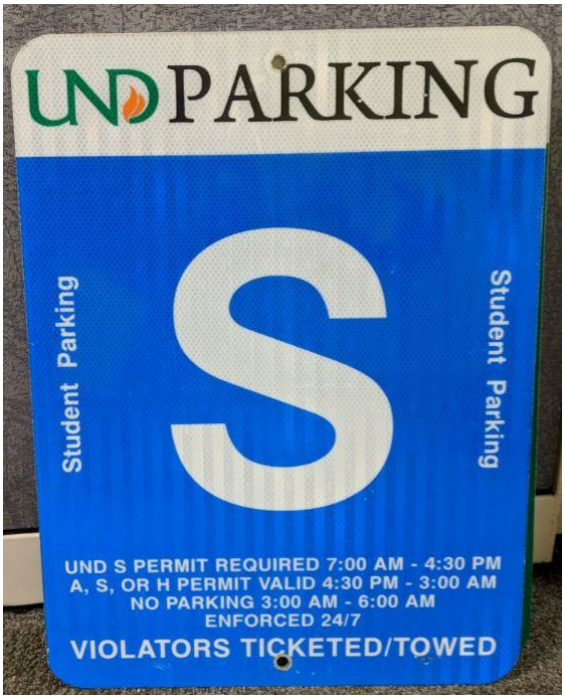
Walker recommends that UND link parking fees and citations to UND student accounts, allowing students to purchase parking permits through their bursar account. This would add a level of convenience and customer service by allowing students to consolidate their purchases into one account.

Keeping parking linked to student accounts should also increase the collection rate for citations. Consolidating all charges into one account provides students with clear information, and with an incentive to pay their citation fees. The issuance of parking privileges, class registration, diplomas, or transcripts may be withheld until a student pays the outstanding debt (including parking fines, library charges, or other unsatisfied expenses).

PARKING SIGNAGE

Certain parking signs on UND campuses should be updated to have consistent time ranges. For example, the Student Parking sign shown in Figure 13, below, has a gap in the hours displayed from 6:00am-7:00am. Either the permit required time range should begin at 6:00am or the period of No Parking begin at 7:00am instead of 6:00am. Walker understands that this correction is already in process.

Figure 13: UND Student Parking Sign



Source: Walker Consultants, 2018

APPENDIX A: FINANCIAL DATA PROVIDED BY UND

FY 2017
Parking Services

		10220 Visitor Pay Lot	10221 Parking Ramp	10223 Parking Permits	10358 Parking Services	10360 Parking Meters / Lot Rentals	10363 Event Parking	10365 Parking Enforcement	Overall Total	New Parking Expenses	Estimated Annual Expenses	
440005	Other Licenses, Fees & Permits	$ 22,845	$ 36,212	$ -	$ (349)	$ 15,285	$ 157,653	$ -	$ 231,645			
440010	Parking Permits	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ 8,000			
440015	Parking Permits Temporary	$ -	$ -	$ 25,532	$ -	$ -	$ 20,014	$ -	$ 45,546			
470137	Fines-Auxiliary	$ -	$ -	$ -	$ 6,862	$ -	$ -	$ 268,698	$ 275,560			
470138	Parking Permits - Aux	$ -	$ -	$ 1,817,428	$ -	$ -	$ -	$ -	$ 1,817,428			
479010	Interdepartmental Revenue	$ -	$ 173	$ 19,046	$ -	$ -	$ 18,885	$ -	$ 38,104			
480005	Cash Long	$ 38	$ 5	$ -	$ 1	$ -	$ 71	$ -	$ 115			
	Total Revenue	**$ 22,882**	**$ 36,390**	**$ 1,870,006**	**$ 6,514**	**$ 15,285**	**$ 196,623**	**$ 268,698**	**$ 2,416,397**		**$ 2,416,397**	
511002	Salaries - Regular - Benefitted	$ -	$ -	$ -	$ 220,647	$ -	$ -	$ 30,591	$ 251,238			
512005	Salaries - Other	$ -	$ -	$ -	$ 7,296	$ -	$ 34,707	$ 19,480	$ 61,483			
513005	Salaries - Temp	$ -	$ -	$ -	$ 3,154	$ -	$ -	$ 5,614	$ 8,769			
514005	Overtime	$ -	$ -	$ -	$ -	$ -	$ 184	$ -	$ 184			
516000	Fringe Benefits	$ -	$ -	$ -	$ 112,556	$ -	$ 887	$ 19,041	$ 132,485			
	Total Salaries & Fringes	$ -	$ -	$ -	$ 343,654	$ -	$ 35,778	$ 74,726	$ 454,158	$ 104,683	$ 558,841	Part of Mike & Laura's Salaries from FM
521045	Motor/Aircraft Pool	$ -	$ -	$ -	$ 4,769	$ -	$ 13,912	$ 9,384	$ 28,064			
521065	Other Transportation & Misc Expense	$ -	$ -	$ -	$ 172	$ -	$ -	$ -	$ 172			
521070	Out of State - Air Transportation	$ -	$ -	$ -	$ 75	$ -	$ -	$ 1,319	$ 1,394			
521075	Out of State - Lodging	$ -	$ -	$ -	$ 2,807	$ -	$ -	$ -	$ 2,807			
521080	Out of State - Meals	$ -	$ -	$ -	$ 520	$ -	$ -	$ -	$ 520			
531015	Software	$ -	$ -	$ -	$ 2,910	$ -	$ -	$ -	$ 2,910			
532020	Books	$ -	$ -	$ -	$ -	$ -	$ -	$ 184	$ 184			
532105	Purchasing Cards	$ -	$ -	$ -	$ 1,680	$ -	$ -	$ -	$ 1,680			
532130	Subscriptions	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,885	$ 3,885			
533005	Food/Beverage	$ -	$ -	$ -	$ 228	$ -	$ -	$ -	$ 228			
534020	Building Supplies	$ -	$ 38	$ -	$ 54	$ -	$ -	$ 59	$ 151			
534025	Custodial Supplies	$ -	$ -	$ -	$ 808	$ -	$ -	$ -	$ 808			
534035	EQ Repair Parts	$ -	$ -	$ -	$ 32	$ -	$ -	$ -	$ 32			
534045	Hardware/Building Supply	$ -	$ -	$ -	$ 25	$ -	$ -	$ -	$ 25			
534105	Paint	$ -	$ -	$ -	$ 126	$ -	$ -	$ -	$ 126			
535045	Other Supplies	$ -	$ 11	$ 1,797	$ 2,034	$ 76	$ 20	$ 425	$ 4,363			
535050	Name Tags, Business/ID Cards	$ -	$ -	$ -	$ 89	$ -	$ -	$ -	$ 89			
535110	Recharge - Facilities Supplies	$ -	$ 13,440	$ -	$ 17	$ -	$ -	$ -	$ 13,457			
536015	Office Supplies	$ -	$ -	$ -	$ 221	$ -	$ 43	$ 2,597	$ 2,861			
536020	Paper Products	$ 871	$ -	$ -	$ -	$ -	$ -	$ -	$ 871			
541030	Postage Stamps	$ -	$ -	$ -	$ 83	$ -	$ -	$ -	$ 83			
542040	Recharge - Copying	$ -	$ 317	$ -	$ 3,347	$ -	$ 229	$ -	$ 3,893			
551005	Computer EQ < $5,000	$ -	$ -	$ -	$ 98	$ -	$ -	$ -	$ 98			
551020	Other IT EQ < $5,000	$ -	$ -	$ -	$ 182	$ -	$ -	$ -	$ 182			
551025	Printer EQ < $5,000	$ -	$ -	$ -	$ 211	$ -	$ -	$ -	$ 211			
552005	Office EQ < $5,000	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,291	$ 2,291			
552030	Other EQ < $5,000	$ -	$ 210	$ -	$ 100	$ -	$ -	$ -	$ 310			
561013	Steam Heat	$ -	$ 21,938	$ -	$ -	$ -	$ -	$ -	$ 21,938			
561015	Electricity	$ -	$ 16,083	$ -	$ -	$ -	$ -	$ -	$ 16,083			
561020	Heating Oil	$ -	$ 99	$ -	$ -	$ -	$ -	$ -	$ 99			
561040	Recharge - Waste Disposal/Landfill	$ -	$ 832	$ -	$ -	$ -	$ -	$ -	$ 832			
561070	Water & Sewer	$ -	$ 3,704	$ -	$ -	$ -	$ -	$ -	$ 3,704			
571025	Property Insurance	$ -	$ -	$ -	$ 140	$ -	$ -	$ -	$ 140			
582035	Land Rental - Operating Lease	$ -	$ -	$ -	$ -	$ 2,900	$ -	$ -	$ 2,900			
591045	Recharge - Repairs	$ -	$ 11,704	$ -	$ 53	$ -	$ -	$ -	$ 11,756			
591070	Repairs IT	$ -	$ -	$ -	$ 402	$ -	$ -	$ -	$ 402			
591095	Repair Services Noncapitalized	$ -	$ -	$ -	$ 6,383	$ -	$ -	$ -	$ 6,383			
602005	Cellular Phones	$ -	$ -	$ -	$ 6,408	$ -	$ -	$ -	$ 6,408			
602030	Recharge - Line Charges	$ -	$ 2,395	$ -	$ 1,120	$ -	$ -	$ -	$ 3,515			
602035	Recharge - Long Distance	$ -	$ 0	$ -	$ 56	$ -	$ 25	$ -	$ 82			
602045	Recharge - Voice/Data	$ -	$ -	$ -	$ 297	$ -	$ -	$ -	$ 297			
602050	Recharge - Tele Service Order	$ -	$ -	$ -	$ 270	$ -	$ -	$ -	$ 270			
621023	Advertising Online/Internet	$ -	$ -	$ -	$ 971	$ -	$ -	$ -	$ 971			
621030	Advertising Services - Print	$ -	$ -	$ -	$ 592	$ -	$ -	$ -	$ 592			
621035	Advertising Services - Other	$ -	$ -	$ -	$ 672	$ -	$ 64	$ -	$ 736			
621065	Bad Debt Expense	$ -	$ 5	$ 918	$ (2,500)	$ -	$ (8)	$ 3,745	$ 2,160			
621071	Credit Card Fees	$ 1,589	$ 2,537	$ 454	$ 15,961	$ -	$ -	$ -	$ 20,541			
621080	Collection Expense	$ -	$ -	$ 224	$ 188	$ -	$ -	$ -	$ 412			
621325	Other Operating Fees	$ -	$ -	$ -	$ 9,992	$ -	$ 50	$ 11,370	$ 21,412	$ 381,728		MIRA Subvention Parking Lot Snow Removal, Sweeping, Sanding & De-Icing from FM
621400	Recharge - Fees	$ -	$ 12,434	$ -	$ 5,356	$ -	$ 53	$ -	$ 17,843	$ 54,391		
623015	Artistic & Design Services	$ -	$ -	$ -	$ 140	$ -	$ -	$ -	$ 140			
623035	Background Investigations	$ -	$ -	$ -	$ 233	$ -	$ 117	$ -	$ 350			
623155	Other Professional Fees	$ -	$ -	$ -	$ -	$ -	$ -	$ 259	$ 259			
631005	Cash Short	$ -	$ -	$ -	$ -	$ -	$ 145	$ -	$ 145			
	Total Operating Expenses	$ 2,460	$ 85,746	$ 3,394	$ 67,323	$ 2,976	$ 14,649	$ 35,518	$ 212,066	$ 436,119	$ 648,185	
	Overall Total Expense	**$ 2,460**	**$ 85,746**	**$ 3,394**	**$ 410,977**	**$ 2,976**	**$ 50,427**	**$ 110,244**	**$ 666,224**	**$ 540,802**	**$ 1,207,026**	
	Revenue Less Expenses	**$ 20,422**	**$ (49,356)**	**$ 1,866,612**	**$ (404,463)**	**$ 12,309**	**$ 146,196**	**$ 158,455**	**$ 1,750,174**		**$ 1,209,372**	**FY 2018 Estimated Amount Transferred to Bond Fund**
											$ 1,165,529	**FY 2018 Debt Service**
722010	Transfer In/(Out) of Bond Fund	$ 20,422	$ (49,356)	$ 1,866,612	$ (404,463)	$ 12,309	$ 146,196	$ 158,455	$ 1,750,174		**$ 43,843**	**Remaining**

Parking Services

Analysis of Revenues, Bond Payment Requirements and Excess Reserves

Actuals thru 6/30/17

FY2017		FY2016		FY2015		FY2014		FY2013		FY2012		FY2011	
Current Year		**Current Year**		**Current Year**		**Current Year**		**Current Year**		**Current Year**		**Current Year**	
Net Revenue FY2017	$ 1,750,123	Net Revenue FY2016	$ 1,752,501	Net Revenue FY2015	$ 1,738,288	Net Revenue FY2014	$ 2,055,517	Net Revenue FY2013	$ 1,987,313	Net Revenue FY2012	$ 1,919,038	Net Revenue FY2011	$ 1,855,939
FY2017 Plant Imprv Transfers	$ (450,000)	FY2016 Plant Imprv Transfers	$ (260,000)	FY2015 Plant Imprv Transfers	$ (294,000)	FY2014 Plant Imprv Transfers	$ (2,225,165)	FY2013 Plant Imprv Transfers	$ (23,760)	FY2012 Plant Imprv Transfers	$ (59,146)	FY2011 Plant Imprv Transfers	$ (262,794)
Net Income FY2017	**$ 1,300,123**	**Net Income FY2016**	**$ 1,492,501**	**Net Income FY2015**	**$ 1,444,288**	**Net Income FY2014**	**$ (169,648)**	**Net Income FY2013**	**$ 1,963,553**	**Net Income FY2012**	**$ 1,859,892**	**Net Income FY2011**	**$ 1,593,145**
FY2017 Bond Payment	$ 1,167,489	FY2016 Bond Payment	$ 1,213,189	FY2015 Bond Payment	$ 1,290,713	FY2014 Bond Payment	$ 878,338	FY2013 Bond Payment	$ 894,545	FY2012 Bond Payment	$ 891,772	FY2011 Bond Payment	$ 893,014
Current Year Excess (Loss)	**$ 132,634**	**Current Year Excess (Loss)**	**$ 279,312**	**Current Year Excess (Loss)**	**$ 153,575**	**Current Year Excess (Loss)**	**$ (1,047,986)**	**Current Year Excess (Loss)**	**$ 1,069,008**	**Current Year Excess (Loss)**	**$ 968,120**	**Current Year Excess (Loss)**	**$ 700,131**
Bond Covenant Debt Coverage %		**Bond Covenant Debt Coverage %**		**Bond Covenant Debt Coverage %**		**Bond Covenant Debt Coverage %**		**Bond Covenant Debt Coverage %**		**Bond Covenant Debt Coverage %**		**Bond Covenant Debt Coverage %**	
(Net Revenue/Bond Payment)	**149.90%**	**(Net Revenue/Bond Payment)**	**144.45%**	**(Net Revenue/Bond Payment)**	**134.68%**	**(Net Revenue/Bond Payment)**	**234.02%**	**(Net Revenue/Bond Payment)**	**222.16%**	**(Net Revenue/Bond Payment)**	**215.19%**	**(Net Revenue/Bond Payment)**	**207.83%**
Bond Debt Coverage Requirement	*110%*	*Bond Debt Coverage Requirement*	*110%*	*Bond Debt Coverage Requirement*	*110%*	*Bond Debt Coverage Requirement*	*110%*	*Bond Debt Coverage Requirement*	*110%*	*Bond Debt Coverage Requirement*	*110%*	*Bond Debt Coverage Requirement*	*110%*
Reserves		**Reserves**		**Reserves**		**Reserves**		**Reserves**		**Reserves**		**Reserves**	
Excess Reserves as of 6/30/16	$ 2,954,443	Excess Reserves as of 6/30/15	$ 2,675,131	Excess Reserves as of 6/30/14	$ 2,521,556	Excess Reserves as of 6/30/13	$ 3,569,542	Excess Reserves as of 6/30/12	$ 2,500,534	Excess Reserves as of 6/30/11	$ 1,532,414	Excess Reserves as of 6/30/10	$ 832,283
Current Year Excess (Loss)	$ 132,634	Current Year Excess (Loss)	$ 279,312	Current Year Excess (Loss)	$ 153,575	Current Year Excess (Loss)	$ (1,047,986)	Current Year Excess (Loss)	$ 1,069,008	Current Year Excess (Loss)	$ 968,120	Current Year Excess (Loss)	$ 700,131
Total Excess Reserves	$ 3,087,077	Total Excess Reserves	$ 2,954,443	Total Excess Reserves	$ 2,675,131	Total Excess Reserves	$ 2,521,556	Total Excess Reserves	$ 3,569,542	Total Excess Reserves	$ 2,500,534	Total Excess Reserves	$ 1,532,414
Internal Reserve Requirement	***$ 1,284,645***	***Internal Reserve Requirement***	***$ 1,284,645***	***Internal Reserve Requirement***	***$ 1,334,508***	***Internal Reserve Requirement***	***$ 1,334,508***	***Internal Reserve Requirement***	***$ 1,334,508***	***Internal Reserve Requirement***	***$ 1,334,508***	***Internal Reserve Requirement***	***$ 1,334,508***
Excess Reserves as of 6/30/17	**$ 1,802,432**	**Excess Reserves as of 6/30/16**	**$ 1,669,798**	**Excess Reserves as of 6/30/15**	**$ 1,340,623**	**Excess Reserves as of 6/30/14**	**$ 1,187,048**	**Excess Reserves as of 6/30/13**	**$ 2,235,034**	**Excess Reserves as of 6/30/12**	**$ 1,166,026**	**Excess Reserves as of 6/30/11**	**$ 197,906**
Additional Information		***Additional Information***		***Additional Information***		***Additional Information***		***Additional Information***		***Additional Information***		***Additional Information***	
Internal Reserve Requirement		***Internal Reserve Requirement***		***Internal Reserve Requirement***		***Internal Reserve Requirement***		***Internal Reserve Requirement***		***Internal Reserve Requirement***		***Internal Reserve Requirement***	
Highest Remaining Bond Payment	*$ 1,167,859*	*Highest Remaining Bond Payment*	*$ 1,167,859*	*Highest Remaining Bond Payment*	*$ 1,213,189*	*Highest Remaining Bond Payment*	*$ 1,213,189*	*Highest Remaining Bond Payment*	*$ 1,213,189*	*Highest Remaining Bond Payment*	*$ 1,213,189*	*Highest Remaining Bond Payment*	*$ 1,213,189*
Bond Coverage Requirement	*110%*	*Bond Coverage Requirement*	*110%*	*Bond Coverage Requirement*	*110%*	*Bond Coverage Requirement*	*110%*	*Bond Coverage Requirement*	*110%*	*Bond Coverage Requirement*	*110%*	*Bond Coverage Requirement*	*110%*
Bond Payment Reserve Requirement	*$ 1,284,645*	*Bond Payment Reserve Requirement*	*$ 1,284,645*	*Bond Payment Reserve Requirement*	*$ 1,334,508*	*Bond Payment Reserve Requirement*	*$ 1,334,508*	*Bond Payment Reserve Requirement*	*$ 1,334,508*	*Bond Payment Reserve Requirement*	*$ 1,334,508*	*Bond Payment Reserve Requirement*	*$ 1,334,508*
Plant Improvement Transfers		***Plant Improvement Transfers***		***Plant Improvement Transfers***		***Plant Improvement Transfers***		***Plant Improvement Transfers***		***Plant Improvement Transfers***		***Plant Improvement Transfers***	
Parking Ramp Pavement Rehab Project	$ 400,000	License Place Recognition System	$ 180,000	Parking Annual Repairs & Striping	$ 85,000	Parking Enforcement & Admin Costs	$ 63,836	Summer Parking Lot Repairs	$ 72,400	Summer Parking Lot Repairs	$ 59,146	Pavement Assessment Project	$ 193,294
Summer Parking Lot Repairs	$ 50,000	Summer Parking Lot Maintenance	$ 80,000	Parking Ramp Energy Project	$ 209,000	Parking Lot Repairs	$ 70,000	Remaining Fund from Lot Repairs	$ (2,841)			2011 Parking Lot	$ 69,500
	$ 450,000		$ 260,000		$ 294,000	Remaining Fund from Lot Repairs	$ (8,670)	Remaining Funds from Parking Survey	$ (45,799)				$ 262,794
						Parking Lot Reconstruction	$ 2,100,000		$ 23,760				
						Housing Improvements	$ 2,225,165						

Bond Payment Requirements by Fiscal Year

Fiscal Year	Total	Fiscal Year	Total	Fiscal Year	Total	Fiscal Year	Total	Fiscal Year	Total
2011	$ 893,014	2016	$ 1,213,189	2021	$ 1,163,968	2026	$ 1,162,566	2031	$ 1,165,055
2012	$ 891,772	2017	$ 1,167,489	2022	$ 1,167,859	2027	$ 1,163,342	2032	$ 1,164,557
2013	$ 894,545	2018	$ 1,165,529	2023	$ 1,163,092	2028	$ 1,164,917	2033	$ 1,165,206
2014	$ 878,338	2019	$ 1,162,061	2024	$ 1,164,658	2029	$ 1,165,582	2034	$ 1,165,983
2015	$ 1,290,713	2020	$ 1,164,533	2025	$ 1,165,720	2030	$ 1,163,372	2035	$ 1,165,741

APPENDIX B: AUTOMATED PARKING GUIDANCE SYSTEM (APGS)

Automated parking guidance systems could provide parking availability and directional guidance to motorists at key decision points throughout University's parking facilities. APGS utilizes dynamic signage to display occupancy information and/or directional arrows at the key decision points so that motorists know what to expect and where to find parking as they drive to or through a facility. Real-time parking availability can also be distributed via open API's to websites and mobile payment providers.

There are three basic levels of Parking Guidance:

1. Facility Status
2. Level Space Availability
3. Single Space Monitoring

Figure 14: Level Availability Sign

FACULTY STATUS

Facility Status is used to communicate parking availability to motorists before they enter a facility. Count modules (loops, ultrasonic sensors, or cameras) monitor the number of vehicles that enter and exit the facility to maintain an overall count of vehicles in the facility. The count modules track the number of vehicles traveling in and out of the facility and communicate the facility status to a dynamic sign via a zone controller, communication points, a gateway, and a server. For example, if a facility has 1,000 stalls when the facility is empty the counter is set at 1,000. Each time a car enters the facility, the count is reduced by one and each time a car exits the facility the count is increased by one, thereby keeping a count of the number available stalls. Dynamic signage (typically LED) can display the number of available spaces, and/or color-coded messages such as "Full" in red, or "Open" in green. Directional arrows may also be displayed if multiple zones are monitored.

LEVEL SPACE AVAILABILITY

Level Space Availability is similar to Facility Status, but it provides the parking availability on a per level, per space or per row basis. Count modules (loops, magnetic sensors, or ultrasonic sensors) are strategically located at the entrance and exit point(s) of each level or row to count the number of cars on each level or in each area. Dynamic signage is strategically located so motorists can see the availability and/or arrows prior to entering the level or row, enabling them to proceed to the next level or row rather than needlessly circulating a full level or row.

Disabled-person stalls (or other reserved stalls) can pose a challenge for Facility Status and/or Level Space Availability as these systems are unable to identify/segregate/communicate the status of Disabled stalls vs. stalls that are open to the general public. It is not uncommon for a facility to be full except for Disabled stalls, which could result in the system indicating that spaces are available to the general public when the only available spaces are Disabled. To avoid this scenario, we recommend excluding Disabled stalls (or other reserved stalls) from the overall inventory. This will still result in an inaccurate count when cars park in Disabled stalls, as they will still trigger a click on the overall inventory, but this will not result in the exasperating consequence of a visitor searching for a non-existent space. In this scenario, the count will actually reach zero when there are still spaces remaining (equal to the number of cars parked in Disabled stalls). A manual adjustment can be conducted by staff if and when the count falls below a significant threshold such as 50 spaces in the surface lot and/or 20 spaces in the garage (staff would count the number of cars parked in Disabled stalls and add that number to the system inventory).

SINGLE SPACE MONITORING

Single space monitoring utilizes individual count modules in every parking stall. Real-time occupancy data is sent and displayed as cars pull in and out of parking stalls. In covered facilities, ultrasonic sensors with multi-colored colored LEDs are installed above each stall. The standard colors are red (to indicate a full space) and green (to indicate an open space). When a motorist approaches a row, they can easily identify available parking stalls by looking for a green light. Other color options include blue (to indicate an open disabled stall) and yellow (to indicate a reserved stall). This is particularly helpful in facilities with long drive lanes that motorists are not required to drive through to get to the next section.

Figure 15: End of Aisle Space Availability Sign.

Surface parking lots can utilize wireless in-ground magnetic field sensors in place of ultrasonic sensors and multi-colored LEDs. The occupancy data is still sent and displayed at key decision points, but there is no light above the parking stall to signal the motorist. Several manufacturers utilize cameras and imaging algorithms rather than ultrasonic sensors, thereby providing License Plate Recognition (LPR) that adds security features such as License Plate Identification (LPI) and also lost car assistance. Loop detectors can also be used but will require additional equipment to communicate with separate LED devices.

Single space monitoring provides the highest level of accuracy, as there is minimal opportunity for a car to drive out of the range of the sensors (or cameras), and the type of stall (disabled, reserved, carpool, etc.) may also be monitored. As one would expect, single space monitoring is the most expensive level of parking guidance and is sometimes cost-prohibitive in a low-cost parking scenario.

STATEMENT OF LIMITING CONDITIONS

1. This report is to be used in whole and not in part.

2. Walker's report and recommendations are based on certain assumptions pertaining to the future performance of the local economy and other factors typically related to individual user characteristics that are either outside Walker's control or that of the client. To the best of Walker's ability, we analyzed available information that was incorporated in projecting future performance of the proposed subject site.

3. Sketches, photographs, maps and other exhibits are included to assist the reader in visualizing the property. It is assumed that the use of the land and improvements is within the boundaries of the property described and that there is no encroachment or trespass unless noted.

4. All information, estimates, and opinions obtained from parties not employed by Walker Parking Consultants/Engineers, Inc. are assumed to be true and correct. We assume no liability resulting from misinformation.

5. None of this material may be reproduced in any form without our written permission, and the report cannot be disseminated to the public through advertising, public relations, news, sales, or other media.

6. We take no responsibility for any events or circumstances that take place subsequent to the date of our field inspections.

7. This report was prepared by Walker Parking Consultants; all opinions, recommendations, and conclusions expressed during the course of this assignment are rendered by the staff of Walker Parking Consultants as employees, rather than as individuals.

8. The conclusions and recommendations presented were reached based on Walker's analysis of the information obtained from the client and our own sources. Information furnished by others, upon which portions of this study may be based, is believed to be reliable; however, it has not been verified in all cases. No warranty is given to the accuracy of such information; moreover, any significant differences between these assumptions and actual performance may impact the financial projections for the subject parking operation.