INTRODUCTION

This report includes a summary of several key components of the Rapid City Downtown Parking Study and Strategic Plan, including:

- Current Conditions Analysis (Inventory and Occupancy and Length of Stay/Turnover Analysis)
- To-date results of Community Survey (329 responses completed)

The current conditions analysis consists of a detailed survey of parking inventory, followed by a detailed survey of parking occupancies taken at key times. For the purposes of this study, parking inventories were collected on Tuesday, July 18, 2017; occupancies were taken on Wednesday, July 19 at 10 AM, 1 PM, and 6 PM. The occupancies were intended to capture typical peak weekday conditions in the mid-morning, afternoon, and evening.

The study also included a length of stay and turnover analysis using LPR (License Plate Recognition) technology. This analysis is intended to assess typical length of stay and number of violations for each of downtown Rapid City’s major on-street restriction types (10-hour meters, 4-hour meters, 2-hour meters, and 3-hour time-limited) within a certain timeframe. The analysis was conducted on Thursday, July 20, 2017 between 9 AM and 3:30 PM.

Finally, this report includes a brief summary of preliminary results from the Community Survey launched on July 31, 2017, for which 329 responses have already been received. The survey will remain open until August 28, 2017, with a final tally of responses available for the consolidated draft report.

STUDY AREA

The inventory and occupancy analysis included on-street and off-street public and private parking facilities in Rapid City’s downtown. The downtown was divided into two main focus areas: the Historic Core (or West of 5th generally bounded by Omaha Street to the north, 5th Street to the east, Columbus Street to the south, and West Boulevard to the west) and East of 5th (generally bounded by Omaha Street to the north, East Boulevard to the east, Quincy and Columbus streets to the south, and 5th street to the west). See figures 1 and 2 for a depiction of the key study areas.
Figure 1: Historic Core (West of 5th) Study Area

Note: Larger version of this map provided as an attachment.
Street parking used by School of Mines students was also surveyed; however, this portion of the survey was not a focal point of the analysis as occupancies are uncharacteristically low during the summer months.

The study area for the length of stay and turnover analysis was confined to restricted on-street parking on key downtown streets, including:

- Main Street between 2nd St and West Boulevard
- St. Joseph Street between 2nd St and West Boulevard
- Kansas City Street between 2nd St and West Boulevard
The following are key findings from the inventory and occupancy analysis:

HISTORIC CORE

- **Parking Asset Distribution:** There are 5,266 parking stalls in the Historic Core. The majority (51%) are private; 30% are public on-street and the remaining 19% are public off-street.

- **Overall Occupancy:** Overall occupancy in the Historic Core peaked at 10 AM, with 56% of the system full; 1 PM was close behind at 55% full. Utilization was concentrated in public parking areas closest to popular destinations along Main Street and St. Joseph, generally between Mt. Rushmore and 5th streets.

- **Public Visitor Parking:** The majority of the City’s managed public parking assets are located in the Historic Core; as such, analysis of these assets is focused on this study area. Time-limited parking, primarily located along Main and St. Joseph streets, was the most well-utilized type of public visitor parking, with a peak utilization of 73%. Metered on-street parking, generally located on peripheral streets, was the least utilized type of public visitor parking, with a peak utilization of 39%.
EAST OF 5TH

- **Parking Asset Distribution:** There are 3,639 parking stalls in the East of 5th study area. The majority (58%) are private; 29% are public on-street and 13% are public off-street.

- **Overall Occupancy:** Occupancy in the East of 5th study area also peaked at 10 AM at 44% full, with 1 PM less than a percentage point behind. Utilization was concentrated primarily in a few private lots serving mostly office space with heavy daytime utilization, as well as several on-street areas in close proximity to the Historic Core.

- **Public Visitor Parking:** The majority (66%) of off-street public spaces in the East of 5th study area are unrestricted, meaning that no time limit, payment requirement, or other restriction applies. 32% are time-limited, and only 2% are metered. Utilization is heavily concentrated in unrestricted spaces.

PUBLIC MONTHLY PARKING

- **Inventory:** Public monthly parking is primarily concentrated in the Historic Core study area, with only one lot in the East of 5th study area. The City manages a total of 713 stalls in publicly leasable parking lots and in the Main Street Square parking ramp.

- **Utilization:** Utilization of public monthly parking peaked at 10 AM, with 60% of the stalls full.

LENGTH OF STAY AND TURNOVER ANALYSIS

- **Length of Stay:** The overall average length of stay within the route analyzed is 1.3 hours.

- **Violations:** The most violated parking type is 3-Hour Parking, for which 83 violations were recorded within the 7-hour time period.

HISTORIC CORE (WEST OF 5TH)

The Historic Core includes 5,266 parking stalls in its system. The following figure (Figure 3) shows a breakdown of stall inventory by type.

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>% of Total System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>2,666</td>
<td>51%</td>
</tr>
<tr>
<td>Public On-Street</td>
<td>1,573</td>
<td>30%</td>
</tr>
</tbody>
</table>
Note that the public on-street and public off-street inventory types each include some stalls and facilities allocated to specific user groups, such as City employees or emergency vehicles, and are not available to the general public.

There are 71 public ADA stalls and 74 private ADA stalls in the Historic Core parking system.

**OVERALL OCCUPANCY**

Peak weekday occupancy for the Historic Core was recorded at 10 AM during occupancy collection on Wednesday, July 19, 2017. The following figure (Figure 4) depicts occupancy by facility within the study area during the recorded peak conditions. Note that occupancies were performed for two other time periods—1 PM and 6 PM. Occupancy maps for these time periods, as well as a larger version of the figure below, have been provided as an attachment.
As depicted above, utilization is primarily concentrated in public on-street stalls near popular destinations, such as Main Street Square and restaurants along St. Joseph Street.

The following figure (Figure 5) shows the total occupancy of each stall type at each time surveyed.
**Figure 5: Historic Core Occupancy by Stall Type**

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>2,666</td>
<td>1,425 (53%)</td>
<td>1,417 (53%)</td>
<td>596 (22%)</td>
</tr>
<tr>
<td>Public On-Street</td>
<td>1,573</td>
<td>979 (62%)</td>
<td>942 (60%)</td>
<td>735 (27%)</td>
</tr>
<tr>
<td>Public Off-Street</td>
<td>1,027</td>
<td>568 (55%)</td>
<td>566 (55%)</td>
<td>464 (45%)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>5,266</strong></td>
<td><strong>2,972 (56%)</strong></td>
<td><strong>2,925 (55%)</strong></td>
<td><strong>1,795 (34%)</strong></td>
</tr>
</tbody>
</table>

The following figure (Figure 6) graphically depicts occupancy by stall type in the Historic Core. The 90% line is intended to show usable capacity; 90% is generally understood to be the utilization capacity at which the system “feels” full. At utilization levels above 90%, locating an available parking space takes a longer time, especially for users unfamiliar with the system, therefore leading to extensive circulation of parking facilities, traffic congestion, and other negative consequences.

**Figure 6: Historic Core Utilization and Usable Supply**
PUBLIC VISITOR STALLS

A total of 1,645 stalls are available in the study area for public visitor use at all times. The following figure (Figure 7) shows the inventory of each of these stalls by type, and their occupancy at each time surveyed.

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metered Off-Street</td>
<td>99</td>
<td>61 (62%)</td>
<td>79 (80%)</td>
<td>91 (92%)</td>
</tr>
<tr>
<td>Metered On-Street</td>
<td>437</td>
<td>170 (39%)</td>
<td>150 (34%)</td>
<td>136 (31%)</td>
</tr>
<tr>
<td>Time-Limited</td>
<td>759</td>
<td>555 (73%)</td>
<td>547 (72%)</td>
<td>510 (67%)</td>
</tr>
<tr>
<td>Unrestricted</td>
<td>350</td>
<td>247 (71%)</td>
<td>235 (67%)</td>
<td>84 (24%)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1,645</strong></td>
<td><strong>1,033 (63%)</strong></td>
<td><strong>1,011 (61%)</strong></td>
<td><strong>821 (50%)</strong></td>
</tr>
</tbody>
</table>

As shown, time-limited parking stalls, primarily located in the downtown’s most popular areas along Main Street and St. Joseph Street between Mt. Rushmore and 5th, are the most well-utilized parking type. Conversely, metered on-street stalls, despite accounting for 26% of total public inventory available to visitors, only accounts for 10% of the utilization at system peak.

ADA PARKING

The City has noted that ADA parking is of particular concern to the Rapid City community. Note that this study has only entailed an inventory of stalls marked for ADA use and occupancy surveys for these stalls. To determine whether the ADA parking supplied is appropriate and within the confines of ADA regulations, an ADA audit would have to be performed; separate audits must be performed for public ADA spaces and individually-owned private ADA spaces.

The following figure (Figure 8) shows the public and private inventory of ADA stalls and the occupancy of these stalls at each time surveyed.

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1 This number increases when public leased facilities become open to the public between 4 PM and 7 AM on weekdays, and on weekends and holidays; for the purposes of this study, only stalls available to visitors at all times of day were included.
**EAST OF 5TH STUDY AREA**

The East of 5th study area includes 3,639 parking stalls in its system. The following figure (Figure 9) shows a breakdown of stall inventory by type.

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>% of Total System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>2,095</td>
<td>58%</td>
</tr>
<tr>
<td>Public On-Street</td>
<td>1,060</td>
<td>29%</td>
</tr>
<tr>
<td>Public Off-Street</td>
<td>484</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>3,639</td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

As noted above, both public on-street and public off-street totals include some stalls that are reserved for certain user groups, and may not be available to the general public.

There are 23 public ADA stalls and 54 private ADA stalls in the East of 5th parking system.

**OVERALL OCCUPANCY**

Peak weekday occupancy for the East of 5th study area was recorded at 10 AM during occupancy collection on Wednesday, July 19, 2017. The following figure (Figure 10) depicts occupancy by facility within the study area during the recorded peak conditions. Occupancy maps for other time periods during which data was collected (1 PM and 6 PM), as well as a larger version of the figure below, have been provided as an attachment.
As depicted above, utilization is primarily concentrated in a number of private lots located throughout the study area, and in public on-street stalls along Kansas City Street.

The following figure (Figure 11) shows the total occupancy of each stall type at each time surveyed.
Figure 11: East of 5th Occupancy by Stall Type

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>2,095</td>
<td>806 (38%)</td>
<td>772 (37%)</td>
<td>327 (16%)</td>
</tr>
<tr>
<td>Public On-Street</td>
<td>1,060</td>
<td>495 (47%)</td>
<td>504 (48%)</td>
<td>228 (22%)</td>
</tr>
<tr>
<td>Public Off-Street</td>
<td>484</td>
<td>298 (62%)</td>
<td>303 (63%)</td>
<td>135 (28%)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>3,639</strong></td>
<td><strong>1,599 (44%)</strong></td>
<td><strong>1,579 (43%)</strong></td>
<td><strong>690 (19%)</strong></td>
</tr>
</tbody>
</table>

The following figure (Figure 12) graphically depicts occupancy by stall type in East of 5th.
PUBLIC VISITOR STALLS

A total of 1,014 stalls are available in the East of 5th study area for public visitor use at all times. The following figure (Figure 13) shows the inventory of each of these stalls by type, and their occupancy at each time surveyed.

<table>
<thead>
<tr>
<th>Stall Type</th>
<th>Inventory</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metered On-Street</td>
<td>20</td>
<td>0 (0%)</td>
<td>4 (20%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Time-Limited</td>
<td>322</td>
<td>138 (43%)</td>
<td>132 (41%)</td>
<td>64 (20%)</td>
</tr>
<tr>
<td>Unrestricted</td>
<td>672</td>
<td>337 (50%)</td>
<td>346 (51%)</td>
<td>140 (21%)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1,014</strong></td>
<td><strong>475 (47%)</strong></td>
<td><strong>482 (48%)</strong></td>
<td><strong>205 (20%)</strong></td>
</tr>
</tbody>
</table>

As shown above, public visitor parking in East of 5th is considerably less utilized than that in the Historic Core district. Unrestricted stalls are the most abundant and most well-utilized type of public parking in this area, followed by time-limited parking. Metered parking in this area is very limited and not well-utilized.

ADA PARKING

The following figure (Figure 14) shows the public and private inventory of ADA stalls and the occupancy of these stalls at each time surveyed.

<table>
<thead>
<tr>
<th>Stall Type</th>
<th># ADA Stalls</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>23</td>
<td>3 (13%)</td>
<td>5 (22%)</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>Private</td>
<td>54</td>
<td>4 (7%)</td>
<td>3 (5%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

2 This number increases when public leased facilities become open to the public between 4 PM and 7 AM on weekdays, and on weekends and holidays; for the purposes of this study, only stalls available to visitors at all times of day were included.
PUBLIC MONTHLY PARKING

As noted previously, the City manages a total of 713 stalls available for monthly leases by the general public. Exclusive access to these stalls by these lessees is held Monday through Friday between 7 a.m. and 4 p.m. in all facilities; outside of that, stalls become open to the general public.

The following figure (Figure 15) shows the inventory of each facility available for public lease, and the occupancy of each facility at all times surveyed.

<table>
<thead>
<tr>
<th>Facility ID and Location</th>
<th>Inventory</th>
<th>10 AM</th>
<th>1 PM</th>
<th>6 PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 (7th and Rapid)</td>
<td>63</td>
<td>50 (79%)</td>
<td>50 (79%)</td>
<td>51 (81%)</td>
</tr>
<tr>
<td>G1 (Main St. Square Garage)</td>
<td>388</td>
<td>220 (57%)</td>
<td>190 (49%)</td>
<td>188 (48%)</td>
</tr>
<tr>
<td>30 (Mt. Rushmore and Main St)</td>
<td>47</td>
<td>22 (47%)</td>
<td>22 (47%)</td>
<td>29 (62%)</td>
</tr>
<tr>
<td>57 (6th and St. Joseph)</td>
<td>143</td>
<td>97 (68%)</td>
<td>99 (69%)</td>
<td>75 (52%)</td>
</tr>
<tr>
<td>141 (5th and Main St)</td>
<td>72</td>
<td>38 (53%)</td>
<td>41 (57%)</td>
<td>12 (17%)</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>713</strong></td>
<td><strong>427 (60%)</strong></td>
<td><strong>402 (56%)</strong></td>
<td><strong>355 (50%)</strong></td>
</tr>
</tbody>
</table>

As shown above, the stalls available for public monthly lease demonstrate a peak weekday utilization of 60%, indicating additional capacity in the system.

LENGTH OF STAY AND TURNOVER ANALYSIS

The study included a length of stay and turnover analysis of restricted on-street parking on Rapid City’s main downtown streets. This analysis utilized LPR (License Plate Recognition) technology, which records and tracks individual license plates parked in a given location.

The route study included the following areas:

- Main Street between 2nd St and West Boulevard
- St. Joseph Street between 2nd St and West Boulevard
- Kansas City Street between 2nd St and West Boulevard
• Quincy Street between 5th St and West Boulevard

The graphic below shows the streets surveyed for the turn-over analysis:

Data was collected on Thursday, July 20, each hour on the hour, beginning 9 AM and ending the final route at 3:30 PM. 1,688 unique license plates were recorded.

The following figure (Figure 16) shows the average length of stay and number of violations by restriction type. Note that the considerably less common 30-minute time-limited parking and 2-hour time-limited parking were not included in this analysis.

**Figure 16: Length of Stay and Violations by Restriction Type**

<table>
<thead>
<tr>
<th>Restriction Type</th>
<th>Average Length of Stay</th>
<th># Violations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-Hour Metered</td>
<td>1.3 Hours</td>
<td>0 Violations</td>
</tr>
<tr>
<td>4-Hour Metered</td>
<td>2.2 Hours</td>
<td>10 Violations</td>
</tr>
<tr>
<td>2-Hour Metered</td>
<td>1.4 Hours</td>
<td>9 Violations</td>
</tr>
<tr>
<td>3-Hour Time-Limited</td>
<td>1.3 Hours</td>
<td>83 Violations</td>
</tr>
</tbody>
</table>

**Average: 1.3 Hours**

**Total: 102 Violations**
It is worth noting that the time window in which the study was conducted was only 7.5 hours, and therefore no violations for 10-Hour Metered parking could be recorded. However, violating this restriction due to length of stay is an impossibility at this point, as these meters are only enforced between 9 AM and 5 PM (an 8-hour window).

As shown above, 3-Hour Time-Limited parking is the most commonly violated restriction; however, it is the most ubiquitous restriction; 84% of the license plates recorded were parked in 3-Hour Time-Limited parking.

This study does not assess violations due to other factors, such as unpaid parking meters or mis-parking.

TO-DATE COMMUNITY SURVEY RESULTS

329 responses have been received for the Community Survey, launched on July 31, 2017. The survey will remain open until August 28, 2017.

Following are key results from the survey:

- **Mode of Arrival:** 93% of respondents arrive to downtown Rapid City by personal vehicle (car, truck, or van). The remainder take an alternative mode of transportation, the most popular being biking, closely followed by walking.

- **Decision-Making:** 48% of respondents cited proximity to the final destination as the most important factor in deciding where to park on a typical day. This was followed by cost (20%), and how easy it is to access the parking facility from main roads (12%).

- **Historic Core Strengths and Weaknesses:**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public parking garage signage</td>
<td>Wayfinding signage</td>
</tr>
<tr>
<td>On-street signage</td>
<td>Parking for special events</td>
</tr>
<tr>
<td>Appearance of parking facilities</td>
<td>Availability of alternative transportation</td>
</tr>
<tr>
<td>Parking enforcement</td>
<td>Quality of alternative transportation</td>
</tr>
</tbody>
</table>
• East of 5th Strengths and Weaknesses:

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of parking</td>
<td>Wayfinding signage</td>
</tr>
<tr>
<td>Convenience of parking</td>
<td>Availability of alternative transportation</td>
</tr>
<tr>
<td>On-street signage</td>
<td>Quality of alternative transportation</td>
</tr>
<tr>
<td>Appearance of parking facilities</td>
<td></td>
</tr>
<tr>
<td>Parking enforcement</td>
<td></td>
</tr>
</tbody>
</table>
• Parking Best Practices and Technologies:

<table>
<thead>
<tr>
<th>Highest Support</th>
<th>Lowest Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment systems/meters that accept credit cards</td>
<td>Designated parking downtown for tour buses and other specialty vehicles</td>
</tr>
<tr>
<td>Strict enforcement of parking regulations</td>
<td>Higher prices for the most convenient parking</td>
</tr>
<tr>
<td>Signage and wayfinding program</td>
<td></td>
</tr>
<tr>
<td>Remote parking options for tour buses and other specialty vehicles</td>
<td></td>
</tr>
<tr>
<td>Shuttle system for remote parking</td>
<td></td>
</tr>
</tbody>
</table>

ATTACHMENTS

Historic Core and East of 5th Facility Maps
Historic Core Occupancy Maps (10 AM, 1 PM, 6 PM)
East of 5th Occupancy Maps (10 AM, 1 PM, 6 PM)
Rapid City Downtown Parking Study
Rapid City, South Dakota

Downtown Parking Study and Strategic Plan
Task Deliverable #2: Inventory and Occupancy Analysis Summary Attachments
August 8, 2017
Rapid City Downtown Parking Study
Rapid City, South Dakota

1 PM Occupancy
West of 5th St

Legend
- Public Parking
- Parking Stamps
- Lot Identification

Occupancy
- 0% - 19%
- 20% - 44%
- 65% - 89%
- 90% - 100%

August 8, 2017
6 PM OCCUPANCY
WEST OF 5TH ST

SITE PLAN

Legend
- Public Parking
- Parking Garage
- Lot Identifications

Occupancy
- 0% - 50%
- 60% - 74%
- 75% - 89%
- 90% - 100%

SK-01.3
20170905
RAPID CITY DOWNTOWN PARKING STUDY
RAPID CITY, SOUTH DAKOTA

10 AM OCCUPANCY
EAST OF 5TH ST

Legend:
- Public Parking
- Parking Garage
- Lot Identification

Occupancy:
- 0% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%
1 PM OCCUPANCY
EAST OF 5TH ST

Legend:
- Public Parking
- Parking Garage
- Lot Boundaries

Occupancy:
- 0% - 50%
- 50% - 75%
- 75% - 89%
- 90% - 100%

SK-02.2
11-10-17
DOWNTOWN PARKING STUDY AND STRATEGIC PLAN
TASK DELIVERABLE #2: INVENTORY AND OCCUPANCY ANALYSIS SUMMARY ATTACHMENTS
AUGUST 8, 2017

RAPID CITY DOWNTOWN PARKING STUDY
RAPID CITY, SOUTH DAKOTA

6 PM OCCUPANCY
EAST OF 5TH ST

SITE PLAN

Legend
- Public Parking
- Parking Garage
- Lot Identification

Occupancy
- 0% - 59%
- 60% - 74%
- 75% - 89%
- 90% - 100%