Downtown Bozeman Structured Parking.

FEASIBILITY STUDY

SANDERSON STEWART

a&e

DOWNTOWN BOZEMAN

WALKER CONSULTANTS

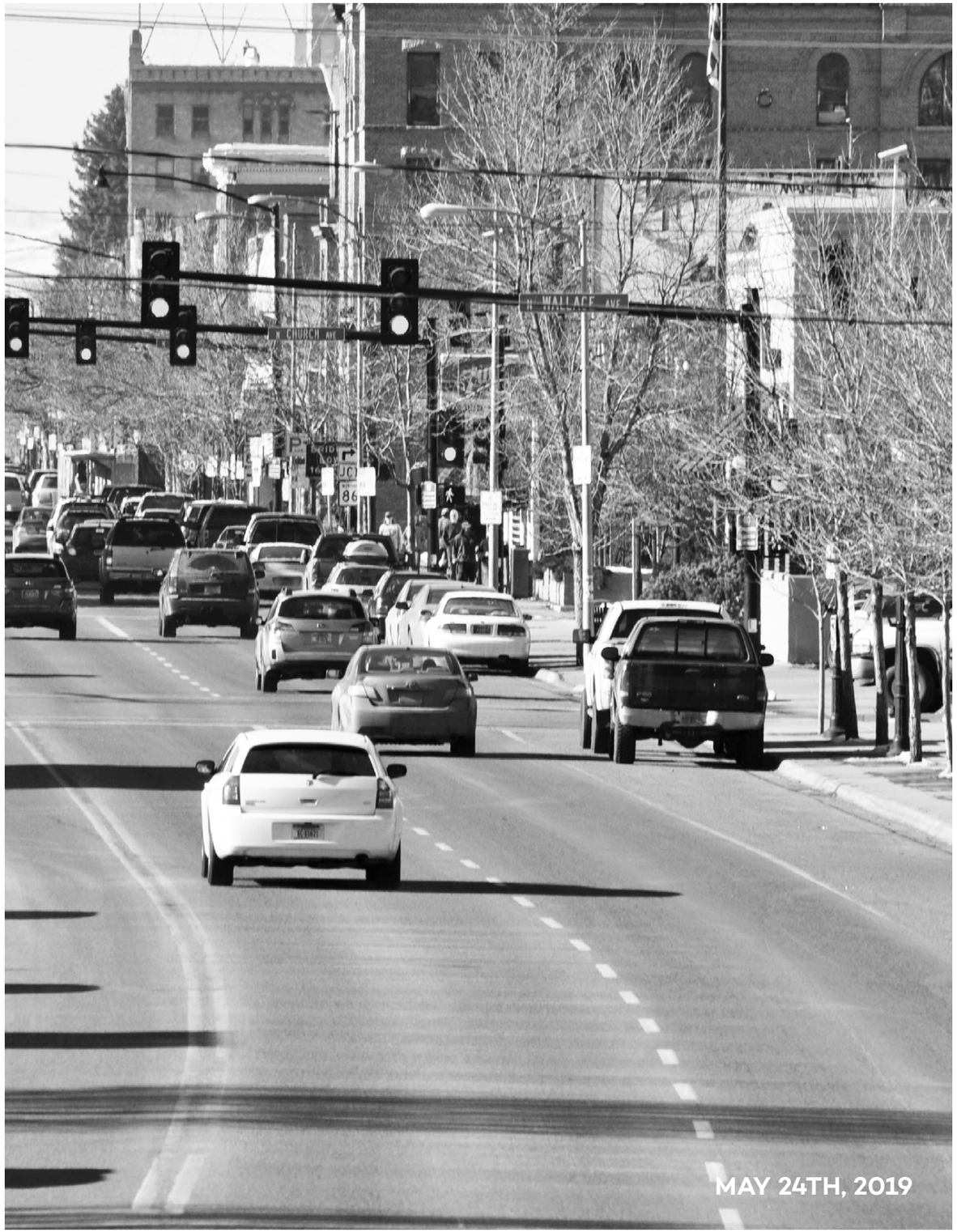


TABLE OF CONTENTS

Introduction 1
Existing Conditions 2
Potential Sites 3
Overview - Sites 4
Design Concepts 11
Anticipated Cost 11
Site Evaluation 12
Site Evaluation Matrix 12
Next Steps 13
Appendix A
Parking Structure Design Concepts
Appendix B
Adaptive Reuse of Parking Structures

INTRODUCTION

Background

Bozeman, Montana is experiencing record growth and Downtown Bozeman continues to be the cultural and commercial heart of this growing community and region. The Downtown Bozeman Partnership and City of Bozeman recently completed the 2019 Downtown Improvement Plan. One of the key initiatives in improving access to Downtown focuses on parking. A new parking structure in Downtown Bozeman could help to address concerns about available parking capacity today while also providing the opportunity for future redevelopment. Following the recommendation of the recently adopted 2019 Downtown Improvement Plan, this study evaluates the feasibility of a potential second parking structure and assesses the potential sites available in Downtown Bozeman for a project of this scale.

This study consists of two phases. Phase 1 includes the initial site assessments, development of an evaluation matrix, and priority rankings. This report summarizes the Phase 1 analysis and findings. Phase 2 will be completed at some point in the near future and will include much more detailed concept designs and cost estimates for the top two or three highest-priority sites.

Related Projects

The following projects are related to the Downtown Bozeman Structured Parking Site Feasibility Study.

2019 Downtown Bozeman Improvement Plan. The Downtown Bozeman Partnership and the City of Bozeman recently completed a comprehensive update to the Downtown Improvement Plan. The Bozeman City Commission adopted the final draft plan on April 15, 2019. This plan is focused around five guiding principles, one of which is titled “The Heart of a Thriving Bozeman.” A key component of that guiding principle is managing and regulating parking to ensure appropriate access and balanced supply. There is a strong desire/need for more office space downtown, but one key barrier that exists is parking. The future development model used for the Downtown Improvement Plan provides the basis for this study’s analysis of future development which could be supported by each potential parking structure location.

Bridger Park Garage Expansion Feasibility Study. A separate feasibility study, focused entirely on the potential expansion of the existing Bridger Park Garage located on Mendenhall Street between Black Avenue and Tracy Avenue, was also recently completed. This study evaluated the feasibility of expanding the existing garage with up to two (2) additional parking levels, as well as adding a roof to the existing structure. Various alternatives were considered, and the study concluded the maximum amount of parking that could be added would be 143 additional spaces. The information from this study will be referenced throughout this document in the analysis of the existing Bridger Park Garage site.

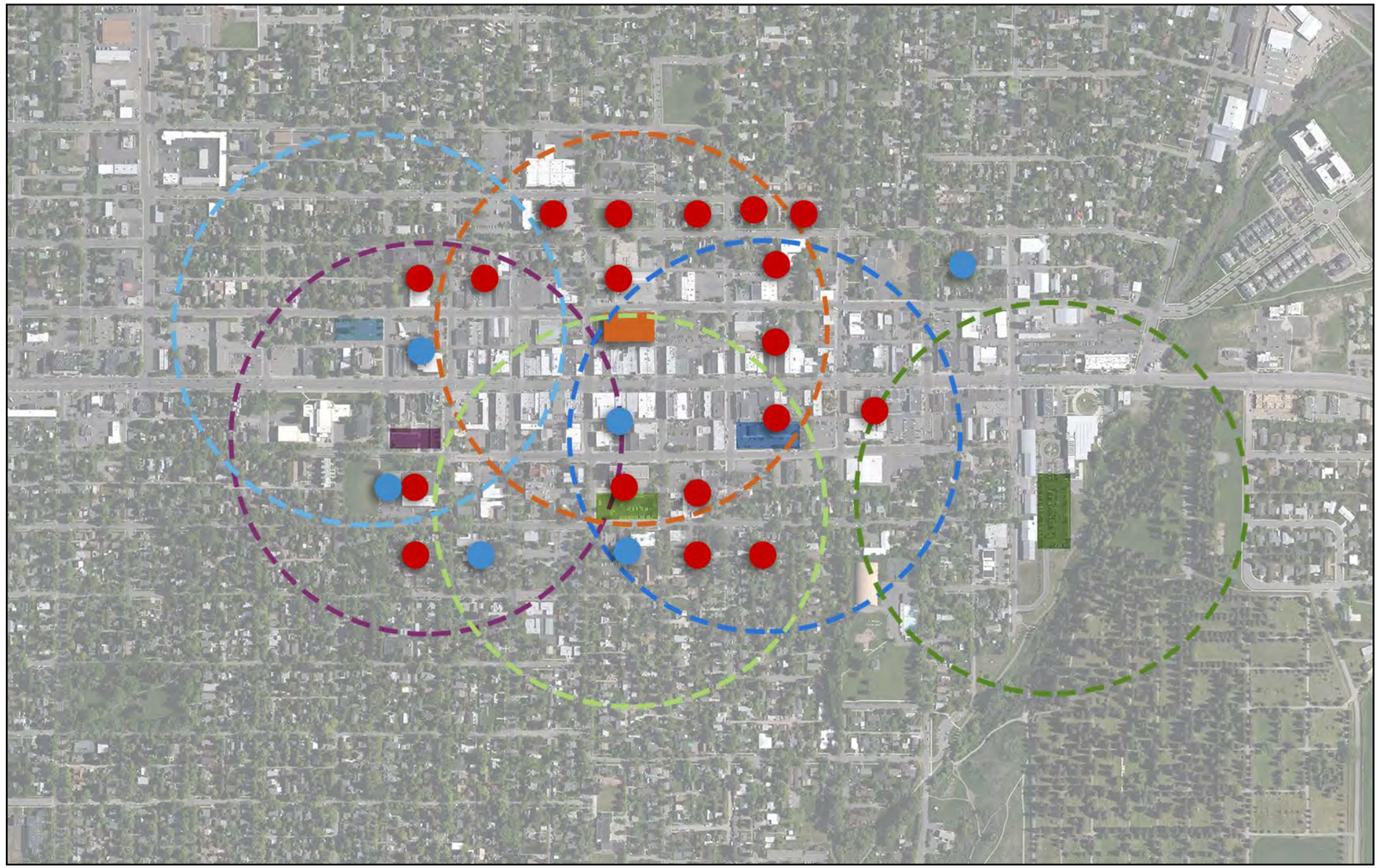
Downtown Bozeman Parking Study. The Western Transportation Institute (WTI) at Montana State University has been conducting parking counts and utilization studies for the Downtown area since 2010. The data has been updated and methodology refined in 2012, 2014, and 2017. The 2017 data was summarized in the 2019 Downtown Improvement Plan and will be similarly referenced in this document, particularly for the estimation of current demand that could be served by each of the potential sites.

Downtown Strategic Parking Management Plan. Completed in 2016, this plan outlined multiple strategies that are primarily focused on parking management. It also recommended expanding capacity with new parking supply and identified potential sites for future structured parking, several of which are consistent with this study. The plan also recommended further evaluation of each of the potential sites.

EXISTING CONDITIONS

Downtown Bozeman has a variety of public parking options today with approximately 2,500 existing parking spaces. There are over 1,500 on-street parking spaces that provide up to two hours of free parking throughout the district. There are four public parking lots located one block from Main Street, with a total of 180 public spaces available. These lots also provide up to two hours of free parking. Bridger Park Garage, the existing parking structure located on Mendenhall Street between Tracy Avenue and Black Avenue, accommodates all-day parking for 435 vehicles with the first two hours free. The existing parking garage also serves as the primary hub for the free Streamline public bus system. The north and west sides of the facility feature a variety of stores, restaurants, and offices.

The 2017 Downtown Bozeman Parking Study by WTI showed that overall there is available parking capacity Downtown, but there are quite a few blocks that exceed 85% utilization in either on-street parking or off-street parking (surface lots and structures, both private and public). The map to the right shows a summary of the 2017 data with a dot representing each block with greater than 85% utilization for both on-street and off-street parking. The circles represent a 1,000-foot radius around each potential site for a new garage, which are described in greater detail in the following section of this report. This map shows the number of near-capacity blocks that could be alleviated by each potential garage location.



On-Street Parking that Exceeds 85% Utilization

Off-Street Parking that Exceeds 85% Utilization

POTENTIAL SITES

Prior to beginning this feasibility study, five potential sites for a future parking structure were identified by the Downtown Bozeman Partnership and the City of Bozeman. As noted previously, a sixth site is also being considered for potential expansion of the existing Bridger Park Garage. The following paragraphs provide a brief description of the location and general characteristics of each potential site.

1. Federal Building

The potential parking structure on the Federal Building site would be located on Olive Street between Tracy Avenue and Black Avenue. It would be located immediately south of the Federal Building where an existing surface parking lot exists today. The first level of the parking structure would include commercial space along the public street frontage on three sides.

2. First Security Bank

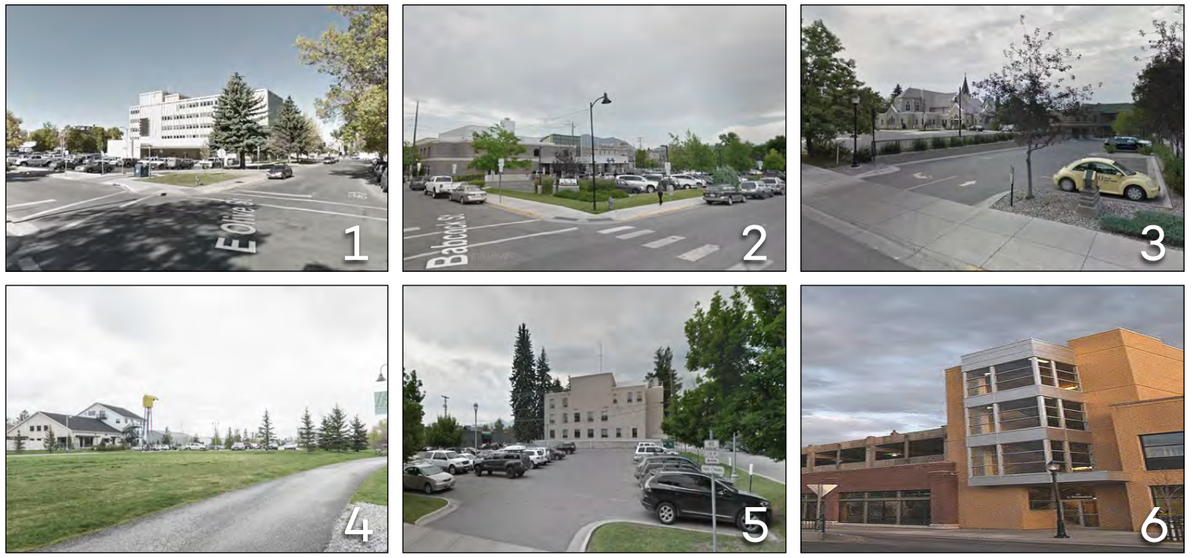
The First Security Bank site is located on the northeast corner of Babcock Street and Bozeman Avenue. It would be located to the south of the existing bank building in the area currently occupied by the bank's drive-through service and surface parking lots. The existing drive-through service could be relocated to the first floor of the parking structure and could function much like it does today. The first level of the parking structure would also include commercial space along the public street frontage on two sides.

3. First Interstate Bank

The First Interstate Bank site is located on the north side of Babcock Street from Grand Avenue to 3rd Avenue. It would be located on the existing surface parking lots located immediately south of First Interstate Bank and Holy Rosary Catholic Church. Commercial space would be included along the public street frontage on three sides. There is a fairly significant grade difference between the bank parking lot and church parking lot that would need to be accounted for in the design of the potential parking structure.

4. Public Library

The Public Library site is located on the southern portion of the existing surface parking lot at the library, which is accessed near the south end of Wallace Avenue. This site has fewer constraints than the other locations, but there may also be a need to coordinate with other possible improvements on the site, including potential expansion of the library. There is no commercial space requirement on this site because it does not have direct frontage on any of the adjacent public streets.



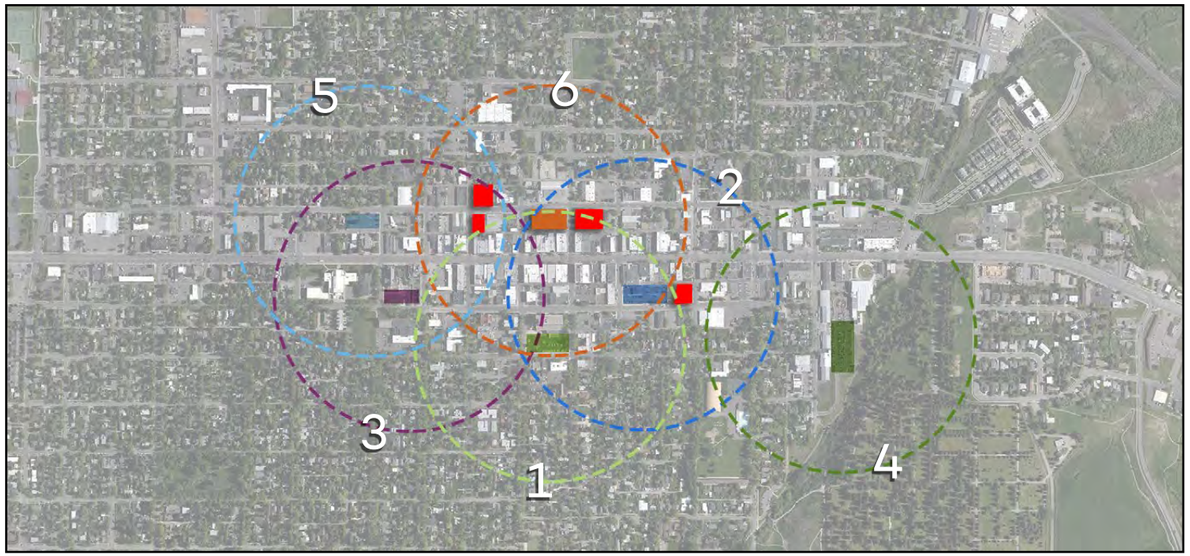
5. County Courthouse

The County Courthouse site is located on the southwest corner of Mendenhall Street and North 3rd Avenue. It would be located to the north of the existing County Courthouse and the Gallatin History Museum in the area currently occupied by the County's surface parking lots. Commercial space would be included along the public street frontage on two sides.

6. Bridger Park Garage

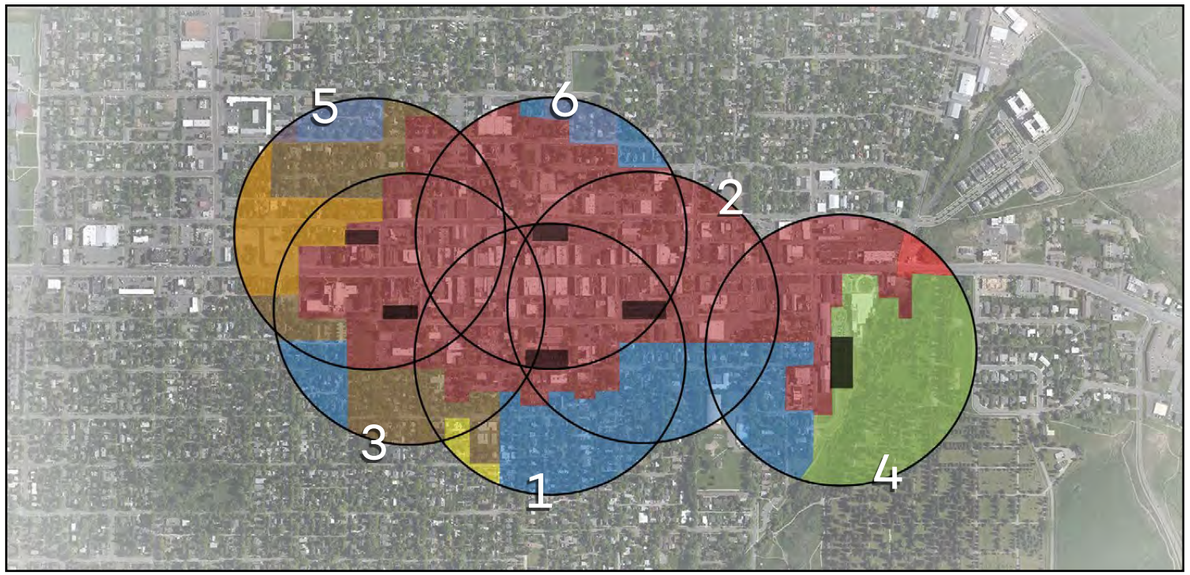
The sixth and final potential site considered in the feasibility study represents an expansion of the existing Bridger Park Garage. A separate but related study was recently conducted to evaluate the feasibility of expanding the existing garage with up to two (2) additional parking levels and adding a roof to the existing structure. Initial feedback from the Downtown Bozeman Partnership and the City of Bozeman on the findings of that study has indicated a preference for the alternative with 1.5 additional levels and 143 additional parking spaces, but no roof (Option 2B in the Bridger Park Garage Expansion Feasibility Study).

The overall study area maps on the following page show the location of the proposed sites relative to one another, a 1,000-foot radius around each site, and the existing zoning within each radius. The 1,000-foot radius is based on the provision in the Unified Development Code that allows off-site parking for non-residential uses, located no more than 1,000 feet from the building. Each subsequent page shows a full one-page summary of information about each site, including lot size, number of spaces, potential future development, and other information.



Existing Public Parking

------- 1000' Radius



Overview - Sites

1 **Federal Building**
Northwest corner of Olive/Black
Lot Size ≈ 35,000 SF

2 **First Security Bank**
Northeast corner of Babcock/Bozeman
Lot Size ≈ 40,000 SF

3 **First Interstate Bank**
Northwest corner of Babcock/Grand
Lot Size ≈ 15,000 SF

4 **Public Library**
Parking lot off Wallace
Lot Size ≈ 40,000 SF

5 **County Courthouse**
Southwest corner of Mendenhall/N. 3rd
Lot Size ≈ 27,000 SF

6 **Bridger Parking Garage**
Southwest corner of Mendenhall/Black
Lot Size ≈ 45,000 SF

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B-2 B-3 B-2M R-4 R-3 R-2 R-1 PLI

S1

OVERVIEW

FEDERAL BUILDING LOT

Location
Northwest corner of Olive/Black

Lot Size
≈ 35,000 SF

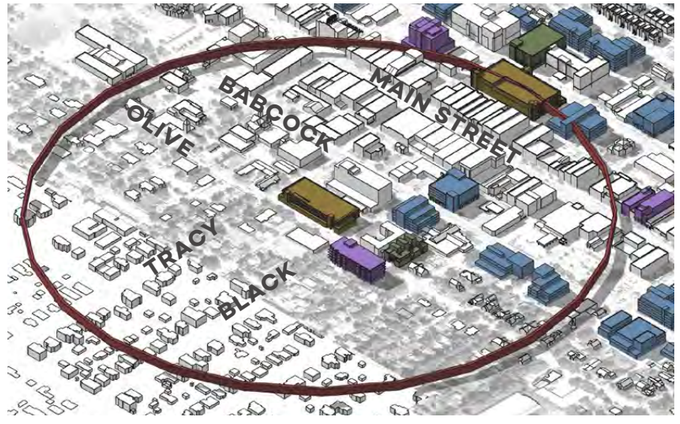
Parking Space
Ground: 44
2nd: 119
3rd: 120
4th: 120
Top: 64
Total: 467

Opportunities & Constraints
- Publicly Owned
- Borders Commercial & Residential
- Adjacent to 5+ story buildings
- Close to Downtown core
- Centrally located, high parking demand

Potential Adjacent Development
Commercial SF: 158,000
Residential Units: 305

Overall Project Cost
$11,810,000

On-Site Commercial
15,109 SF



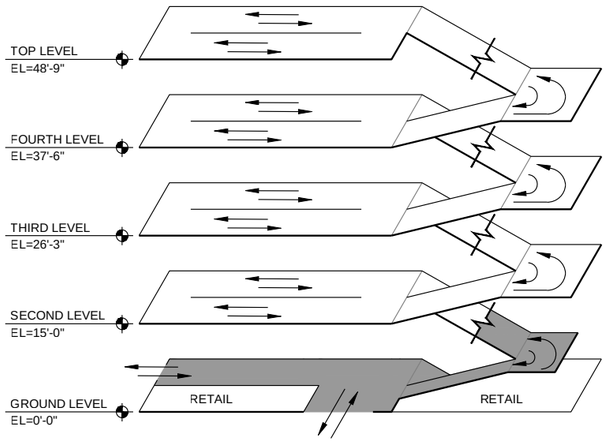
Potential Adjacent Development

Existing | Potential Capacity | Recently Constructed | Approved, Proposed

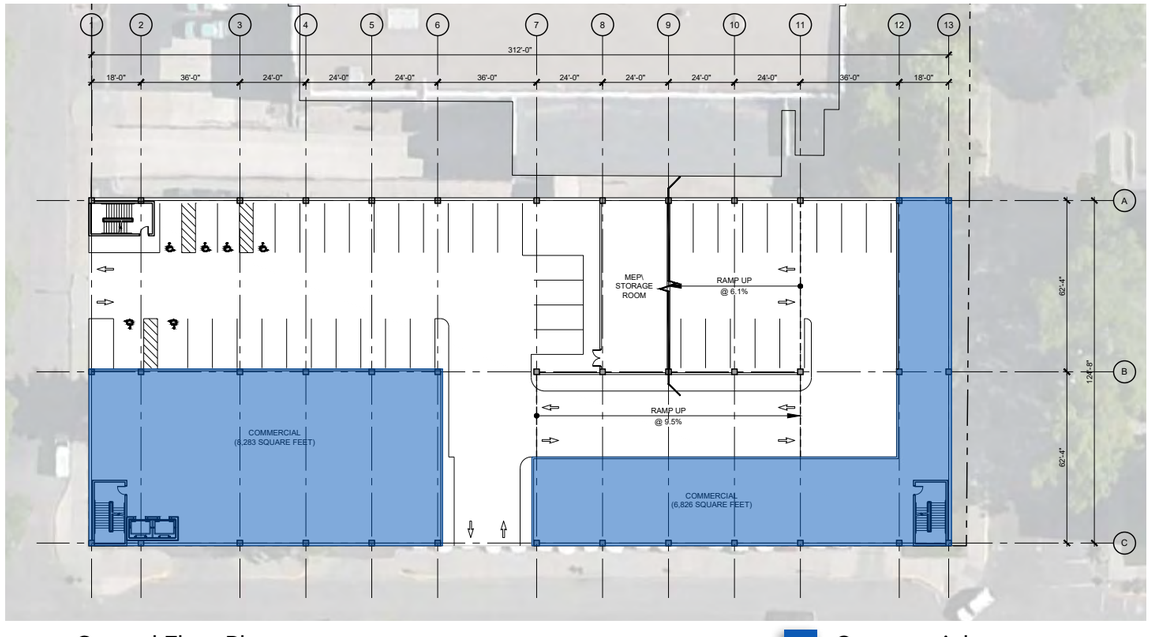
SITE

Vicinity Map - 1000' Radius

Lot Plan



Isometric Diagram



Ground Floor Plan

Commercial

S2

OVERVIEW

FIRST SECURITY BANK LOT

Location
Northeast corner of Babcock/Bozeman

Lot Size
≈ 40,000 SF

Parking Space
Ground: 27
2nd: 129
3rd: 129
4th: 130
Top: 73
Total: 488

Opportunities & Constraints
- Privately Owned
- Mostly Borders Commercial

Potential Adjacent Development
Commercial SF: 193,000
Residential Units: 295

Overall Project Cost
$13,400,000

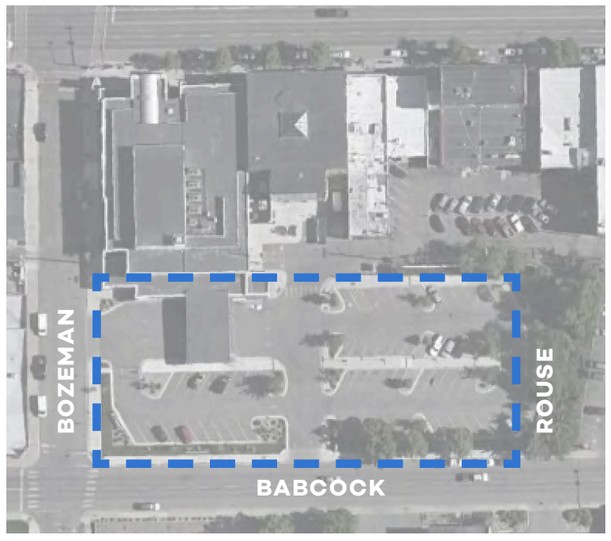
On-Site Commercial
14,881 SF

Potential Adjacent Development

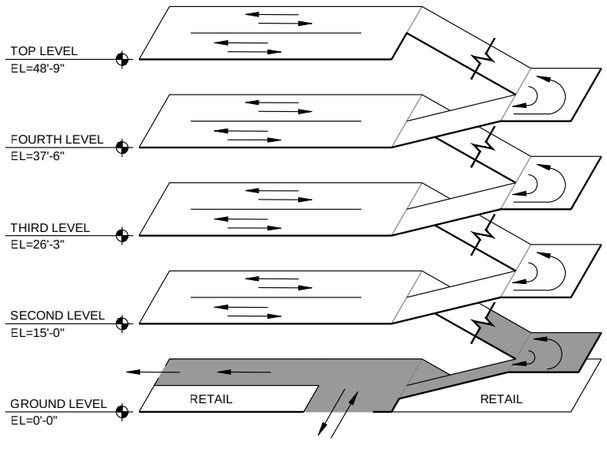
Existing | Potential Capacity | Recently Constructed | Approved, Proposed

SITE

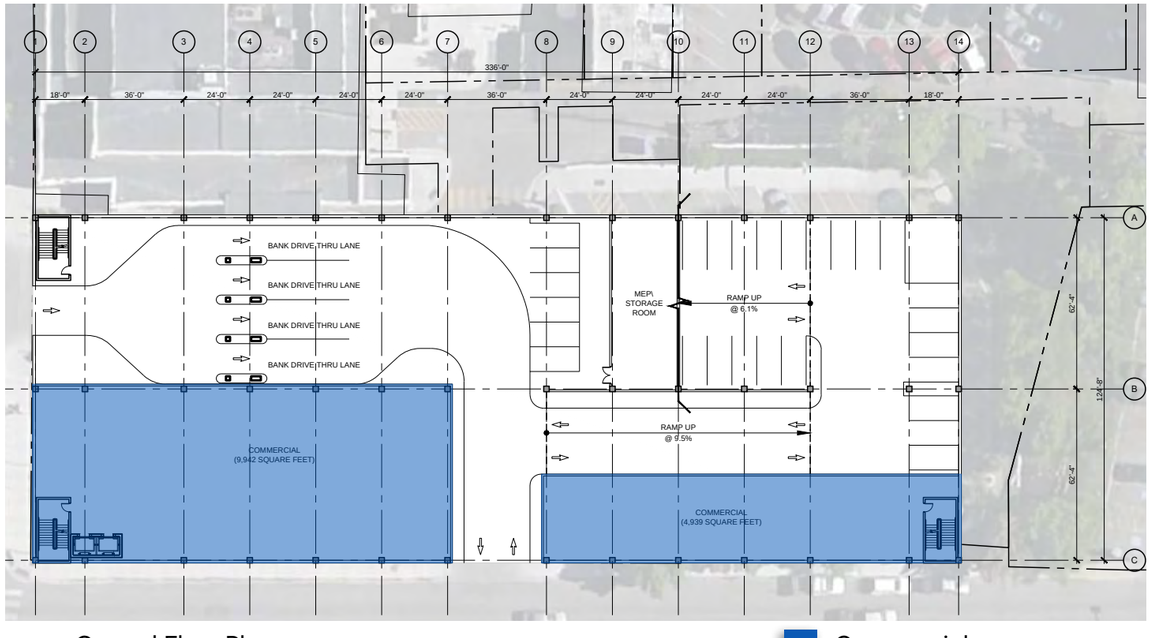
Vicinity Map - 1000' Radius



Lot Plan



Isometric Diagram



Ground Floor Plan

Commercial

PARKING STRUCTURE STUDY

S3

OVERVIEW

FIRST INTERSTATE BANK LOT

Location
Northwest corner of Grand/Babcock

Lot Size
≈ 29,000 SF

Parking Space
Ground: 33
2nd: 83
3rd: 83
4th: 83
Top: 47
Total: 329

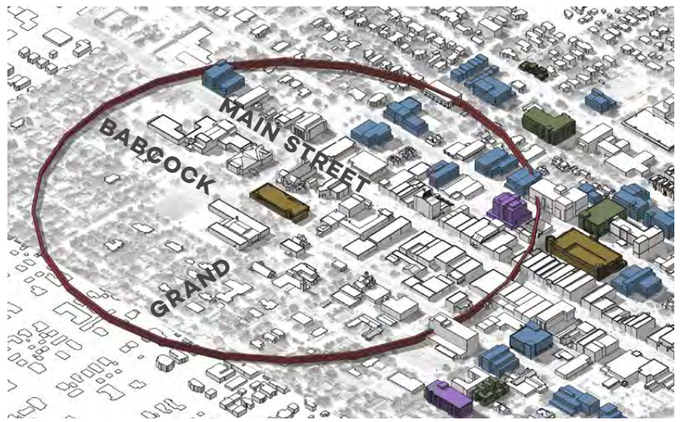
+/- Opportunities & Constraints

- Privately Owned
- Surrounded by large institutional properties; less development potential
- Existing site constraints
- Further from Downtown Core

Potential Adjacent Development
Commercial SF: 130,000
Residential Units: 199

Overall Project Cost
$9,925,000

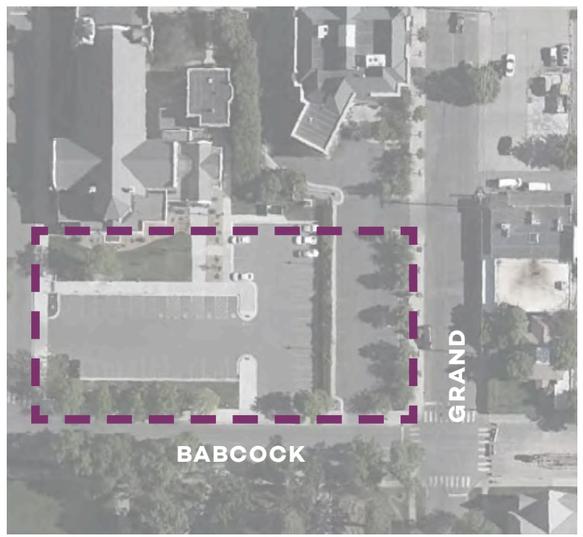
On-Site Commercial
10,389 SF



Potential Adjacent Development

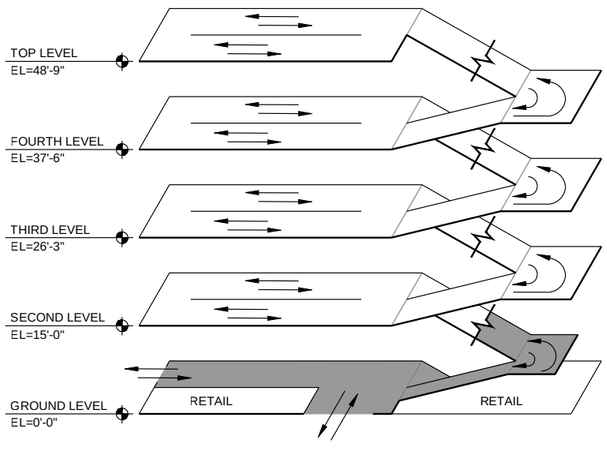
Existing | Potential Capacity | Recently Constructed | Approved, Proposed

Vicinity Map - 1000' Radius

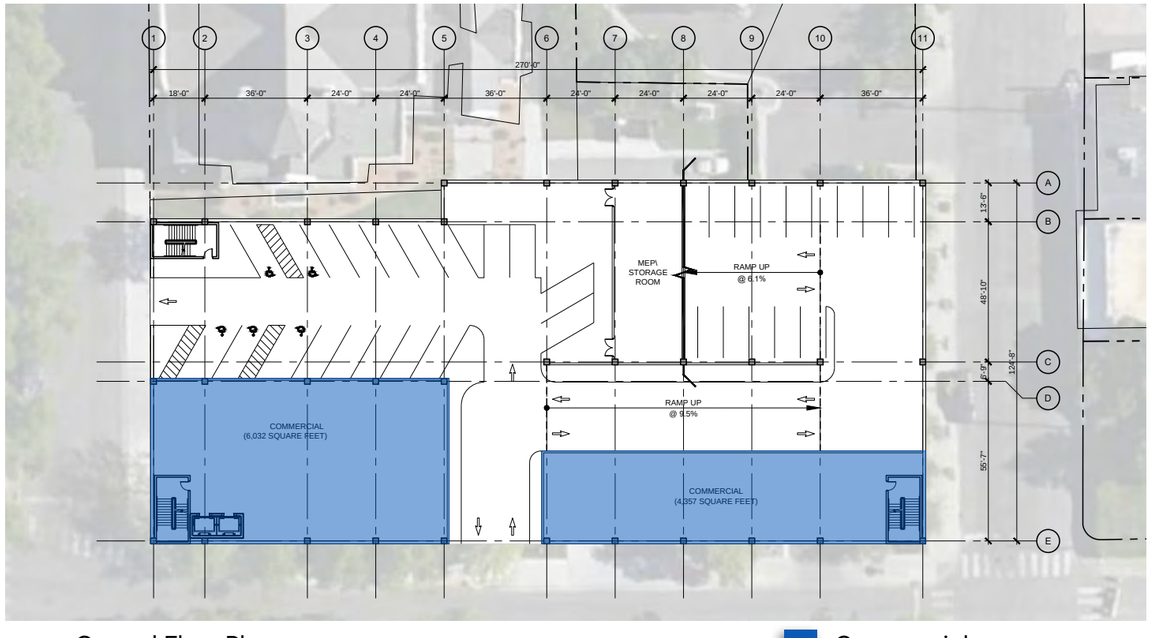


Lot Plan

SITE



Isometric Diagram



Ground Floor Plan

Commercial

PARKING STRUCTURE STUDY

S4

OVERVIEW

LIBRARY LOT

Location
Parking lot off Wallace

Lot Size
≈ 40,000 SF

Parking Space
Ground: 89
2nd: 97
3rd: 97
4th: 97
Top: 69
Total: 449

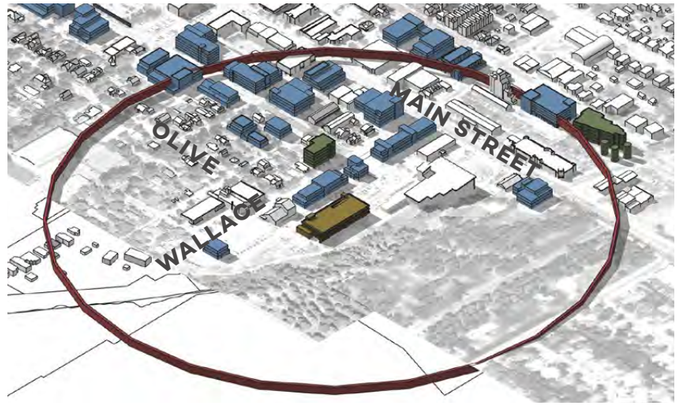
+/- Opportunities & Constraints

- City Owned
- Borders Commercial, Residential, & Institutional
- No retail requirements; more parking potential
- Further from Downtown core
- Surrounded by large institutional properties, less development potential
- Could serve other area uses/ events

Potential Adjacent Development
Commercial SF: 189,000
Residential Units: 260

Overall Project Cost
$10,975,000

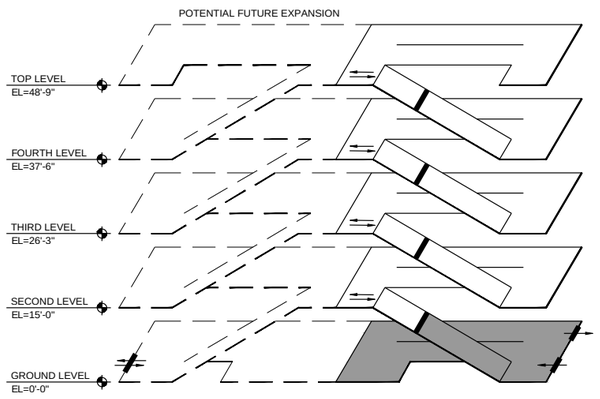
On-Site Commercial
0 SF



Potential Adjacent Development

Existing | Potential Capacity | Recently Constructed | Approved, Proposed

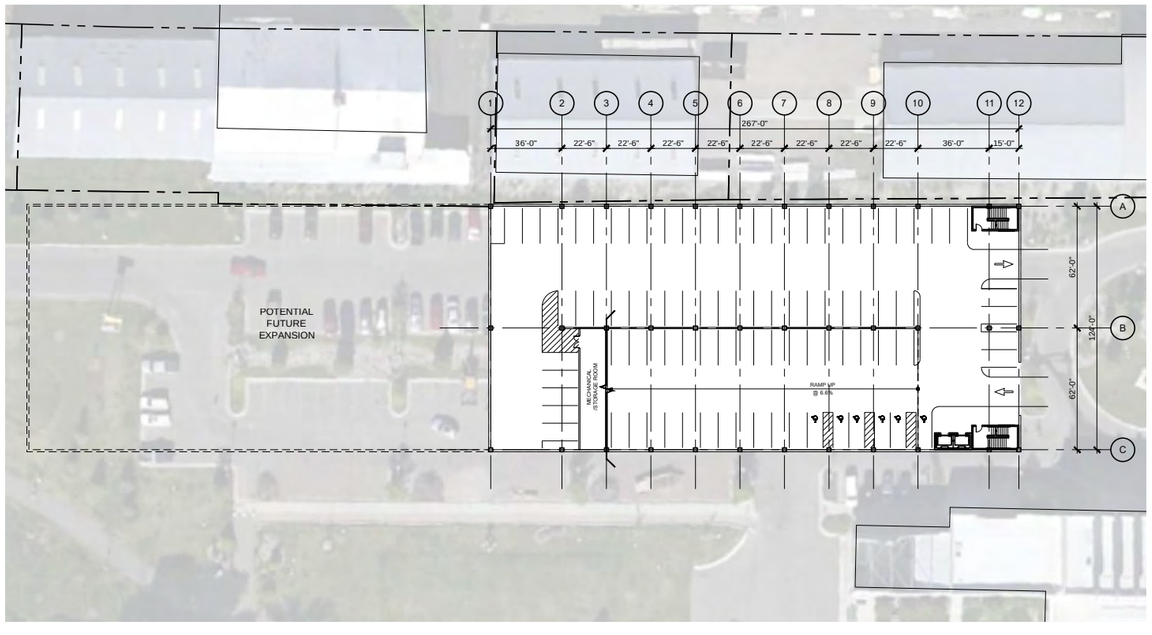
SITE



Isometric Diagram

Vicinity Map - 1000' Radius

Lot Plan



Ground Floor Plan

S5

OVERVIEW

COUNTY COURTHOUSE LOT

Location
Southwest corner of Mendenhall/3rd

Lot Size
≈ 27,000 SF

Parking Space
Ground: 53
2nd: 90
3rd: 91
4th: 91
Top: 75
Total: 400

Opportunities & Constraints
- Publicly Owned
- Borders Com. & Res.
- Further from Downtown Core
- Surrounded by large institutional properties, less development potential
- Located on same side of Main St. as existing garage

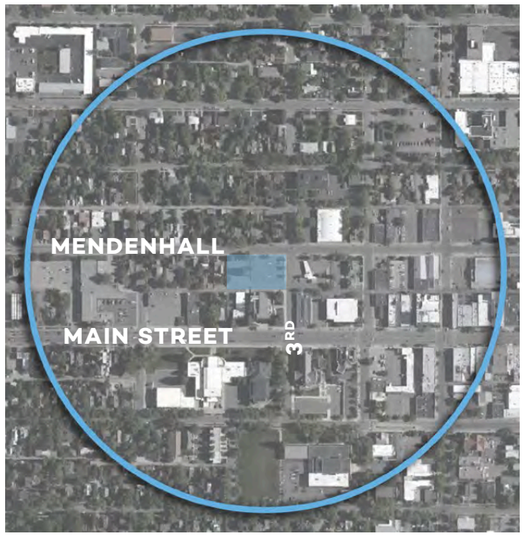
Potential Adjacent Development
Commercial SF: 126,000
Residential Units: 274

Overall Project Cost
$10,500,000

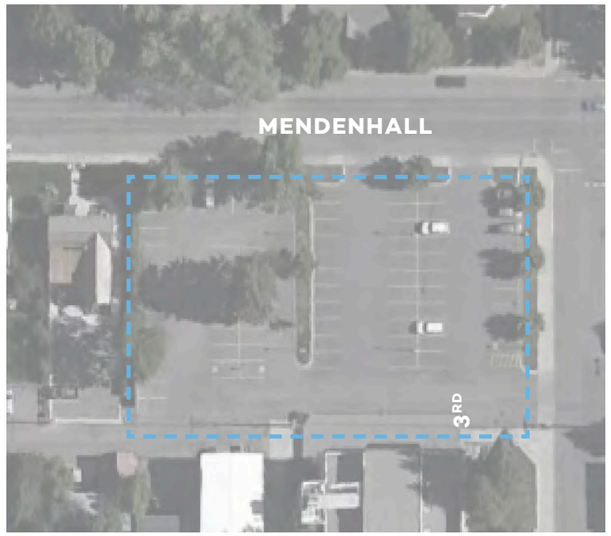
On-Site Commercial
7,776 SF

Potential Adjacent Development

Existing | Potential Capacity | Recently Constructed | Approved, Proposed

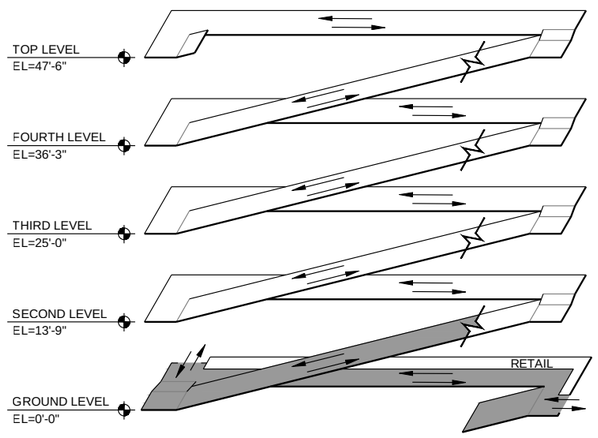


Vicinity Map - 1000' Radius

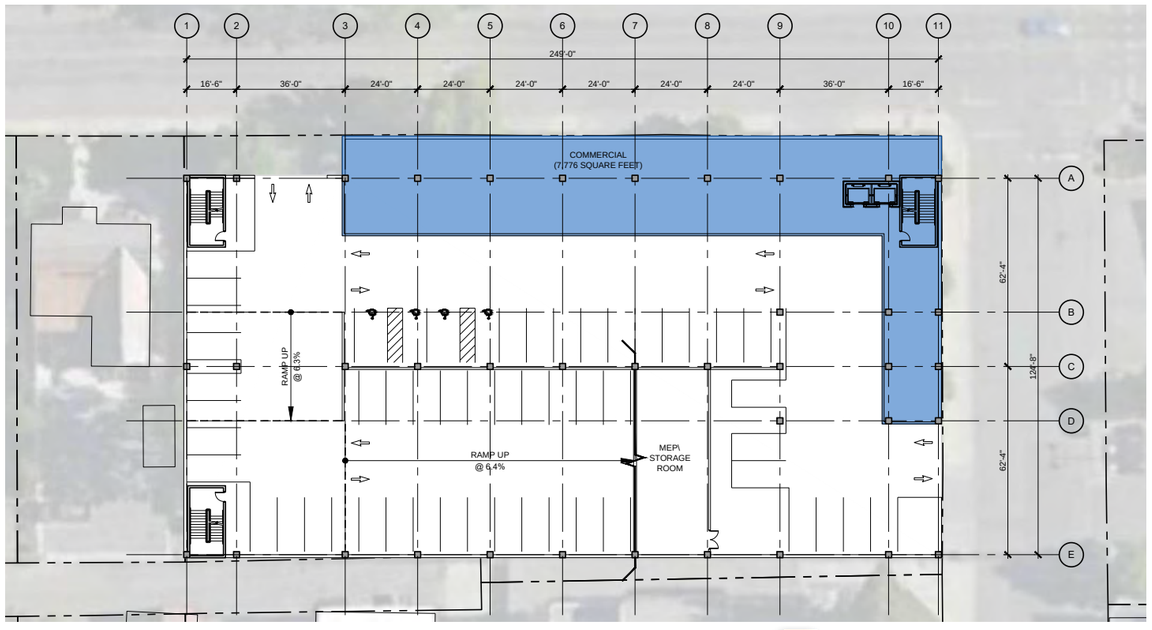


Lot Plan

SITE



Isometric Diagram



Ground Floor Plan

Commercial

S6

OVERVIEW

BRIDGER PARKING GARAGE

Location
Southwest corner of Mendenhall/Black

Lot Size
≈ 42,000 SF - Existing

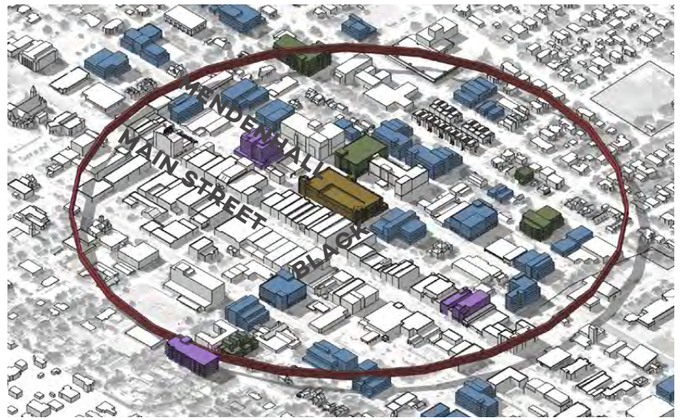
Parking Space
Top: 143
Total: 143

Opportunities & Constraints
- Less expensive than a new site
- Less potential for development than a new site
- Significant impact to existing parking supply during construction

Potential Adjacent Development
Commercial SF: 35,000
Residential Units: 108

Overall Project Cost
$3,943,000

On-Site Commercial
0 SF New



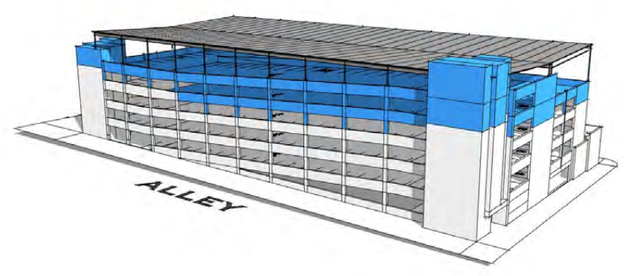
Potential Adjacent Development

Existing | Potential Capacity | Recently Constructed | Approved, Proposed

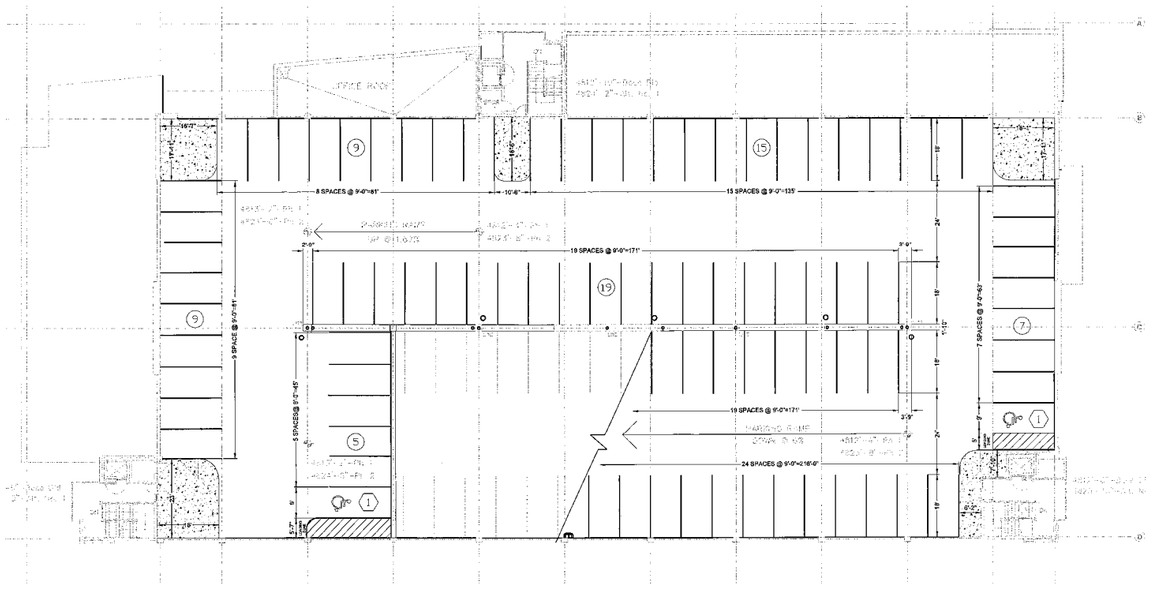
Vicinity Map - 1000' Radius

Lot Plan

SITE



Isometric Diagram



Top Floors (Typical)

PARKING STRUCTURE STUDY

DESIGN CONCEPTS

Design concepts were developed for each of the potential sites by Walker Consultants, who specialize in structured parking design. Two alternatives were developed for the Federal Building site, but the first option is the one presented in the one-page summary and the site evaluation matrix. Two alternatives were developed for the Public Library site as well, but the second option is the one presented in the one-page summary and matrix. These concepts represent the maximum number of parking spaces that could be anticipated on each site within existing code requirements for maximum building height, commercial space, etc. The ground level and isometric views of the concepts are included on the one-page summaries for each site and the full concept designs are presented in Appendix A.

As part of the site feasibility analysis, the potential for future re-purposing of these parking structures through adaptive reuse was a consideration. The concept of adaptive reuse should not be confused with potential parking structure expansion opportunities, either horizontal or vertical. The potential sites where adaptive reuse, either partial or full, would best be suited include the Federal Building and First Security Bank sites. The library site is best suited for horizontal expansion. A copy of a white paper authored by Walker Consultants is provided in Appendix B, which further discusses the topic of adaptive reuse and considerations to be taken.

ANTICIPATED COST

Concept-level cost estimates were prepared for each of the potential sites. They were broken down by the cost of the parking structure, commercial space, and design fees. It has been assumed that any commercial space would be sold, before or after construction, to a private party. The commercial construction costs are noted, but are not included in the cost per space calculations. These costs, along with the resulting cost per new parking space, are reported to the right. These costs correspond directly to the cost information reported in the site evaluation matrix.

S1	**1. Federal Building**	
	Parking Structure	$11,810,000
	Commercial (Core & Shell)	$2,800,000 (no tenant finish)
	Design	$950,000
	Cost per space	**$27,320***
S2	**2. First Security Bank**	
	Parking Structure	$13,400,000
	Commercial (Core & Shell)	$2,750,000 (no tenant finish)
	Design	$1,050,000
	Cost per space	**$29,610***
S3	**3. First Interstate Bank**	
	Parking Structure	$9,925,000
	Commercial (Core & Shell)	$1,900,000 (no tenant finish)
	Design	$770,000
	Cost per space	**$32,500***
S4	**4. Public Library**	
	Parking Structure	$10,975,000
	Commercial (Core & Shell)	$0 (no tenant finish)
	Design	$713,500
	Cost per space	**$26,000***
S5	**5. County Courthouse**	
	Parking Structure	$10,500,000
	Commercial (Core & Shell)	$1,450,000 (no tenant finish)
	Design	$775,000
	Cost per space	**$28,190***
S6	**6. Bridger Park Garage**	
	Parking Structure	$3,934,191**
	Commercial (Core & Shell)	$0 (no tenant finish)
	Design	$393,419**
	Cost per space	**$27,512****

* Cost per space includes design cost. Tenant core and shell space is excluded from the cost per space added.
** Figures from Bridger Park Garage Expansion Feasibility Study

SITE EVALUATION

In order to assist the City of Bozeman and Downtown Bozeman Partnership with the evaluation of individual sites, a site evaluation matrix has been developed. Several iterations of criteria were considered throughout this process. The following criteria was ultimately selected based on several conversations with the Downtown Bozeman Partnership and the City of Bozeman.

Evaluation Criteria

Parking Capacity Potential. This is the maximum number of parking spaces anticipated at a given site based on current zoning requirements and the concept designs prepared for this study. The number of parking spaces reported in the matrix corresponds directly to the summary tables shown with each design concept in Appendix A.

Cost per Space Gained. This criterion represents the anticipated total cost of the project divided by the number of new parking spaces gained. This cost includes design fees and construction costs for the parking structure.

Potential Adjacent Development. This criterion represents the level of nearby development (within a 1,000-foot radius) that could be accommodated by the potential structured parking location. The development potential considered includes both commercial and residential development, based on previous modeling efforts completed for the Downtown Improvement Plan and a recent sewer capacity study.

Distance to the Core. This criterion represents the proximity to the Downtown Core, which for the purposes of this analysis was centered on Main Street between Tracy Avenue and Black Avenue. This criterion was assessed by measuring the distance from each site to the middle of the block identified above.

Existing Parking Capacity. This criterion addresses the number of existing blocks within a 1,000-foot radius of each site that are currently over 85% capacity based on the 2017 Downtown Bozeman Parking Study by WTI. It represents the relative level of existing parking capacity issues that could be addressed with each site.

SITE EVALUATION MATRIX

EVALUATION CRITERIA	Rating	Weight %	Site 1		Site 2		Site 3		Site 4		Site 5		Site 6	
			Federal Building		First Security Bank		First Interstate		Public Library		Cnty Courthouse		Bridger Park	
			Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating	Value	Rating
Parking Capacity Potential	High to Low	20%	467	5	488	6	329	2	449	4	400	3	143	1
Cost Per Space Gained	Low to High	20%	$27,320	5	$29,610	2	$32,500	1	$26,000	6	$28,190	3	$27,512	4
Potential Adjacent Development	High to Low	30%	158,000SF 305 Units	5	193,000SF 295 Units	6	130,000SF 199 Units	2	189,000SF 260 Units	4	126,000SF 274 Units	3	35,000 SF 108 Units	1
Distance to the Core	Near to Far	15%	565 ft.	4	340 ft.	5	987 ft.	3	2,210 ft.	1	1,270 ft.	2	300 ft.	6
Existing Parking Demand	High to Low	15%	8	4	10	5	7	3	1	1	5	2	12	6
Unweighted Average		100%		4.6		4.8		2.2		3.2		2.6		3.6
Unweighted Rank				2		1		6		4		5		3
Weighted Average				4.7		4.9		2.1		3.5		2.7		3.1
Weighted Rank				2		1		6		3		5		4

Priority Rankings

The criteria noted above are presented in a matrix, with weighting provided by the Downtown Bozeman Partnership and the City of Bozeman based on their assessment of the relative importance of each criterion.

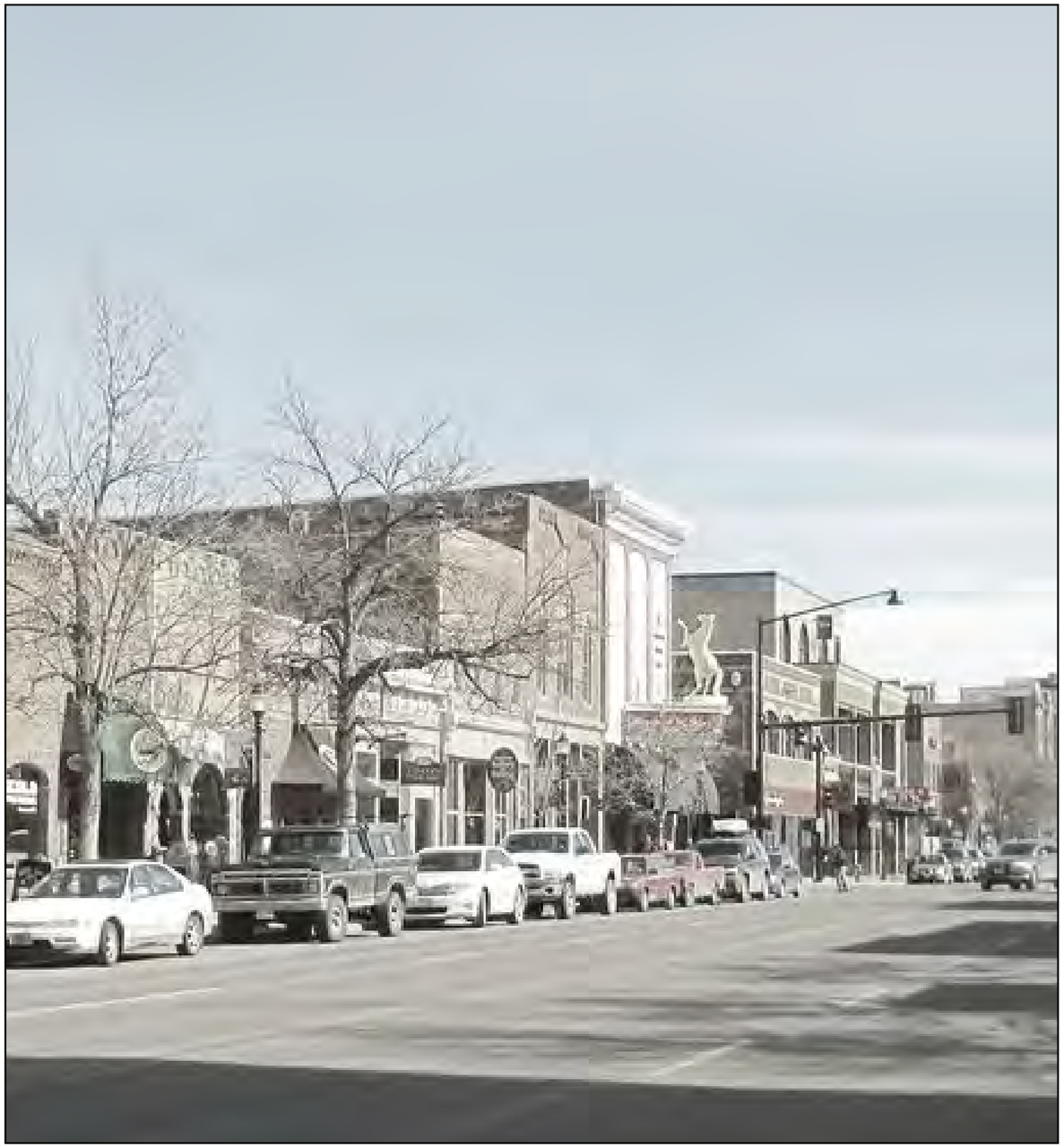
The results of this analysis show that the potential sites can be ranked in the following order based on the primary evaluation criteria and the weighting provided by the Downtown Bozeman Partnership and the City of Bozeman.

1. **First Security Bank**
2. **Federal Building**
3. **Public Library**
4. **Bridger Park Garage**
5. **County Courthouse**
6. **First Interstate Bank**

NEXT STEPS

This study presents an initial review of the five potential sites for a second parking structure in Downtown Bozeman, along with a side-by-side comparison of the potential expansion of the existing Bridger Park Garage. As noted in the introduction, this study consists of two phases. This report provides a summary of the initial site assessments completed for Phase 1 and Phase 2 will include more detailed design concepts and cost estimates for the top two or three highest-ranked sites.

Next steps in this effort should include the Phase 2 design concepts, along with additional conversations with the project partners for each of the highest-ranked sites. This would also be the appropriate time to begin developing the anticipated funding picture for the eventual design and construction of the preferred site. The ultimate decision on the final preferred site will be based on this analysis, Phase 2 design concepts, and upcoming conversations with the potential project partners.



Downtown Bozeman Structured Parking.

APPENDIX A

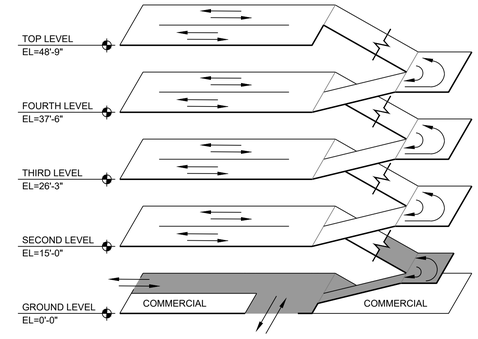
Parking Structure Design Concepts

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

GROUND LEVEL

SITE 1 - FEDERAL BUILDING OPTION 1



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	PARKING AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	38	4	2	44	24,309	552
SECOND	116	3	0	119	38,896	327
THIRD	120	0	0	120	38,896	324
FOURTH	120	0	0	120	38,896	324
TOP	64	0	0	64	23,076	361
TOTAL	458	7	2	467	164,073	351

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG100.1

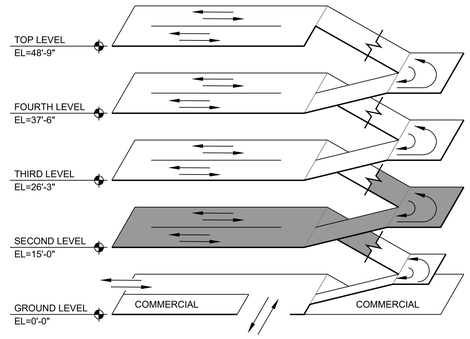
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

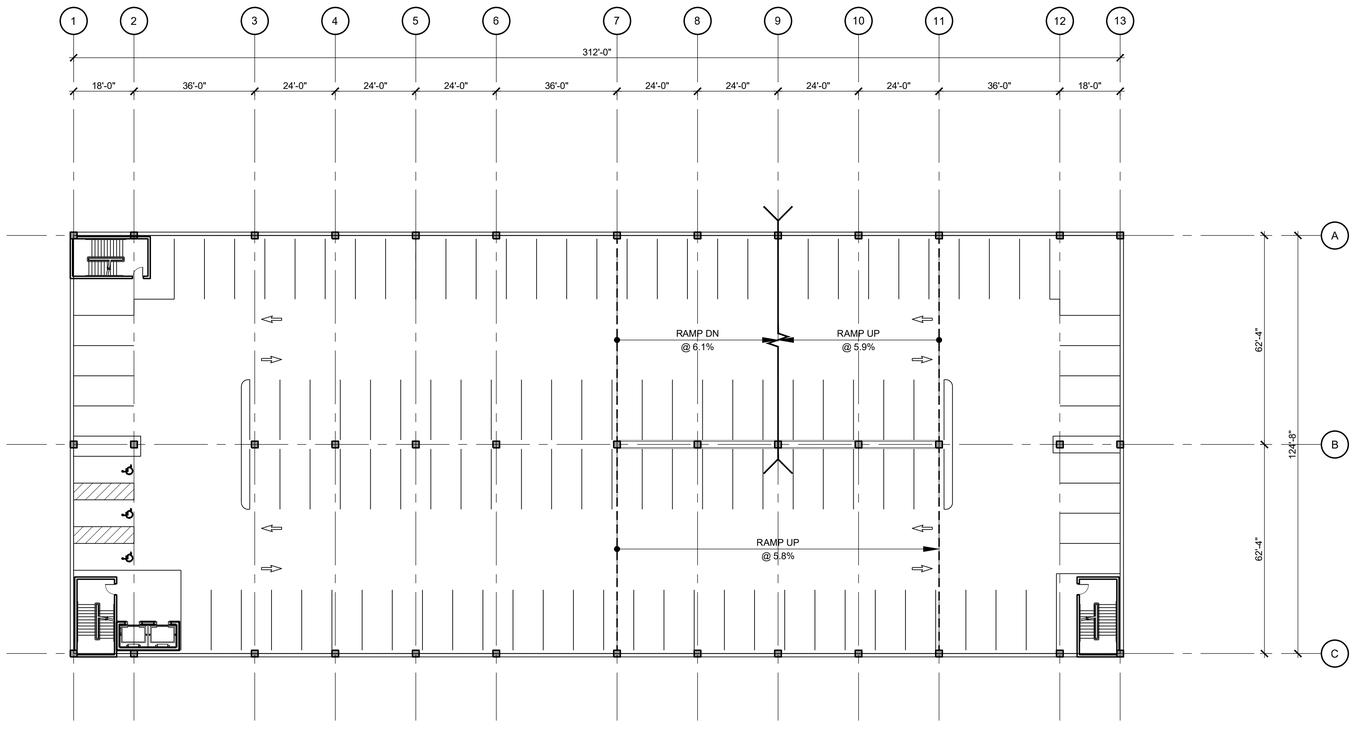
WALKER CONSULTANTS

SECOND LEVEL

SITE 1 - FEDERAL BUILDING OPTION 1



ISOMETRIC



LEGEND

NORTH

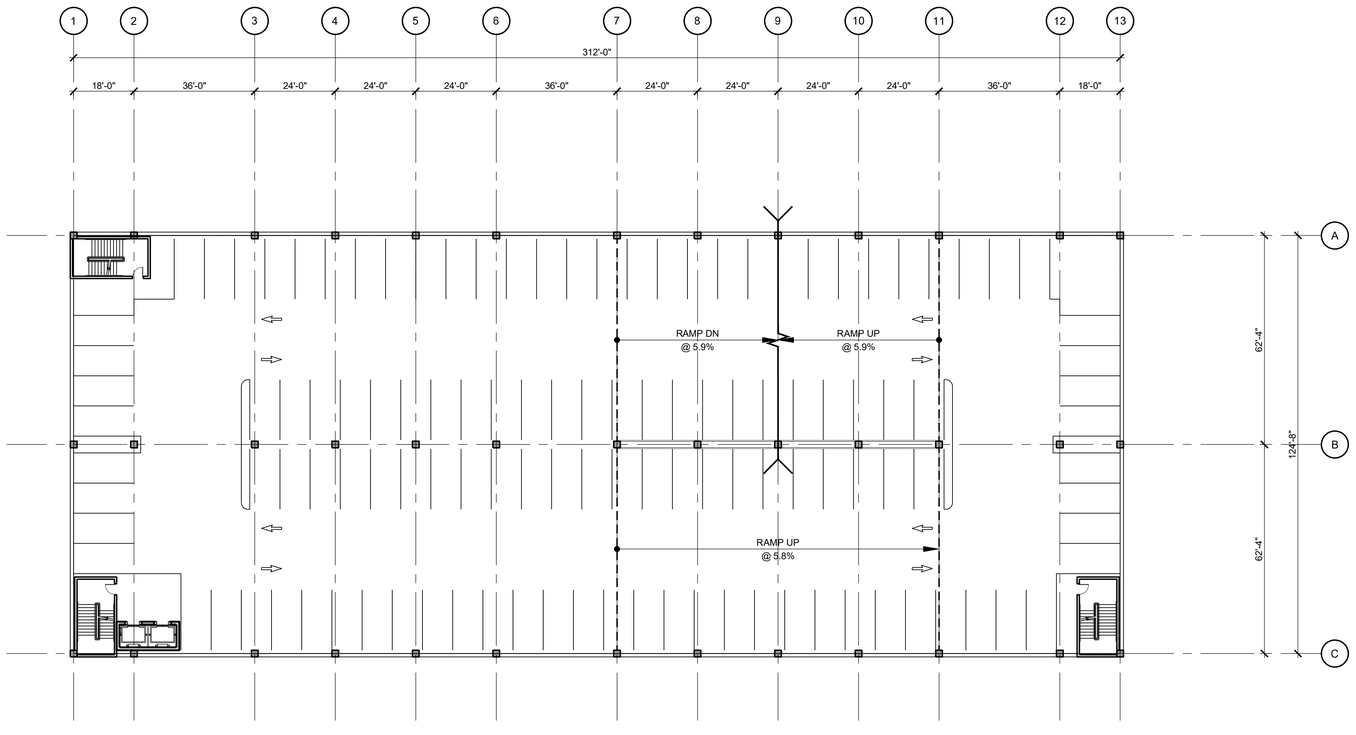
Scale: 3/64" = 1'-0"

AG101.1

APRIL 11, 2019 / 23-7891.00

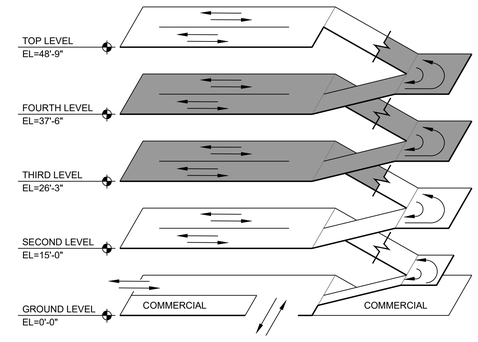
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TYPICAL LEVEL

SITE 1 - FEDERAL BUILDING OPTION 1



ISOMETRIC

LEGEND

NORTH

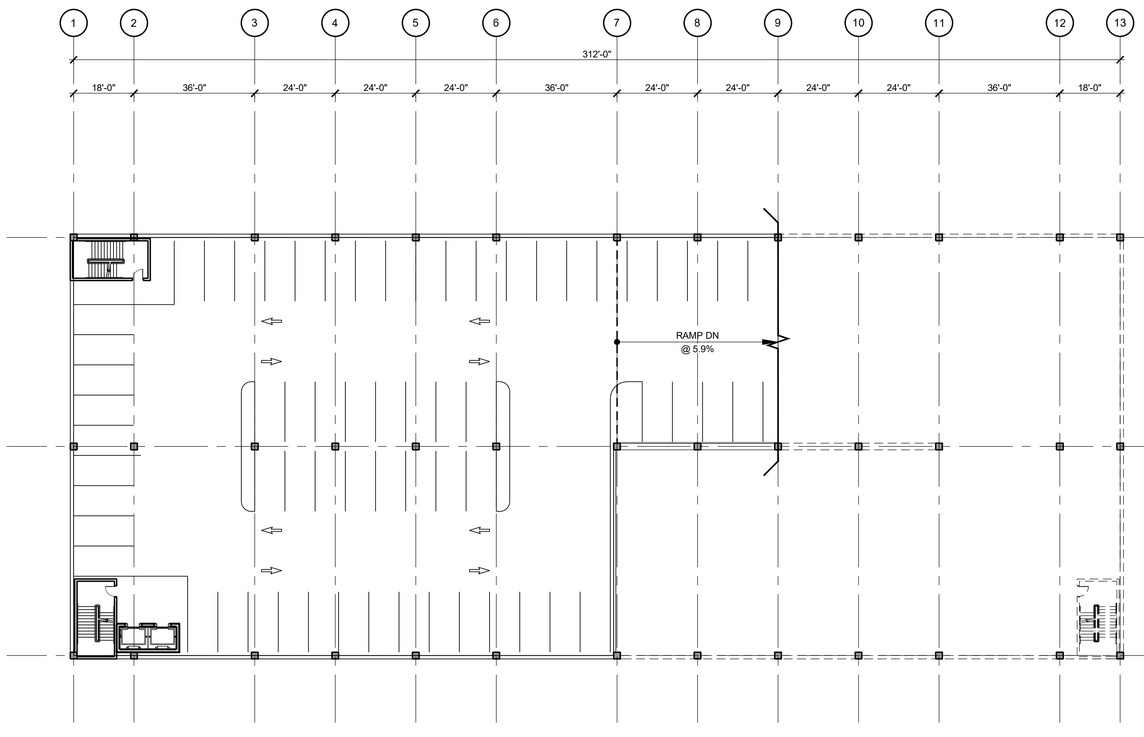
Scale: 3/64" = 1'-0"

AG102.1

APRIL 11, 2019 / 23-7891.00

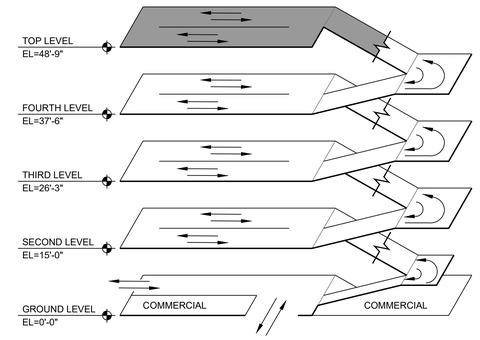
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 1 - FEDERAL BUILDING OPTION 1



ISOMETRIC

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG103.1

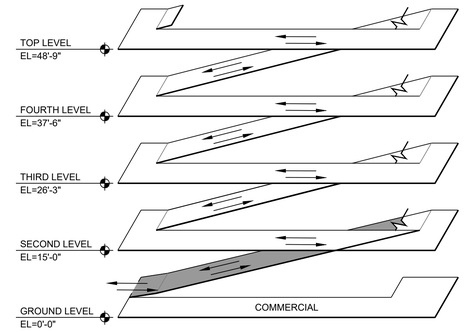
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

GROUND LEVEL

SITE 1 - FEDERAL BUILDING OPTION 2



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	PARKING AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	50	0	0	50	14,689	294
SECOND	114	4	2	120	39,551	330
THIRD	118	3	0	121	39,551	327
FOURTH	122	0	0	122	39,551	324
TOP	83	0	0	83	29,180	352
TOTAL	487	7	2	496	162,522	328

LEGEND

NORTH

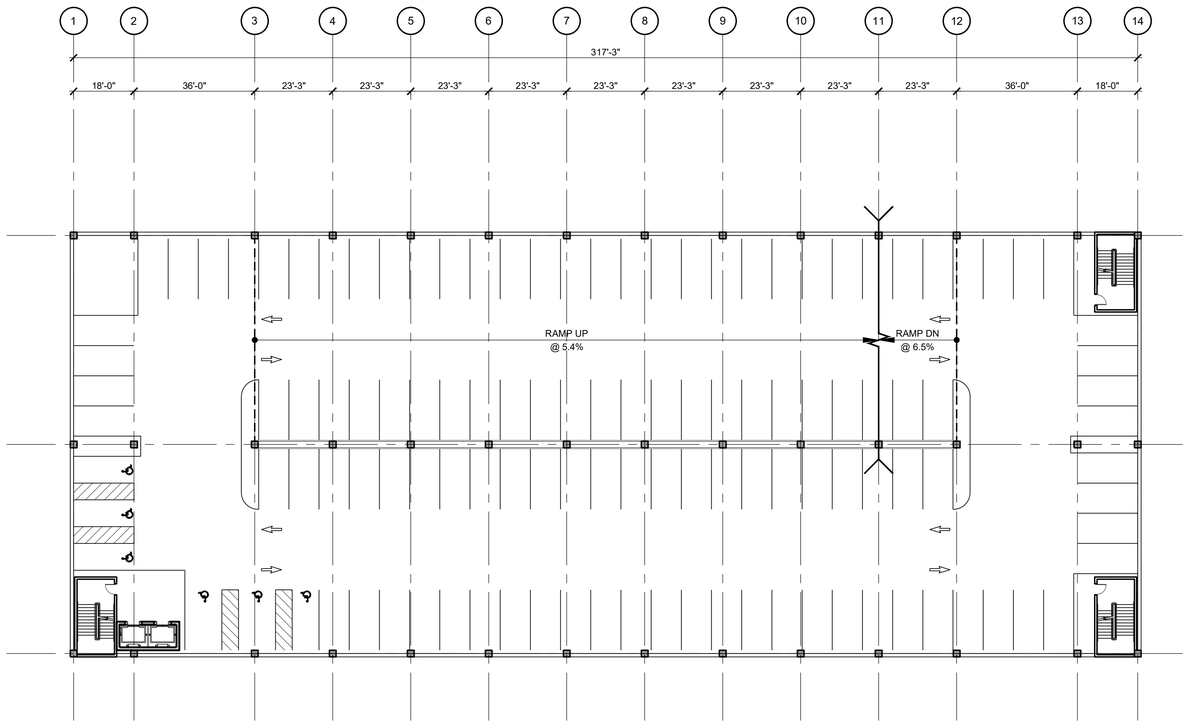
Scale: 3/64" = 1'-0"

AG100.2

APRIL 11, 2019 / 23-7891.00

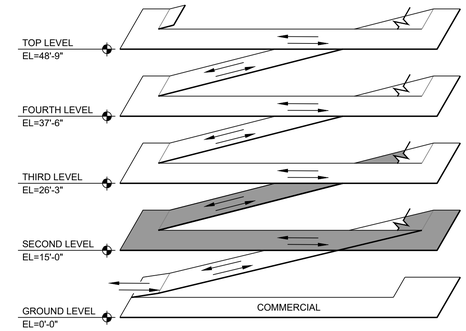
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



SECOND LEVEL

SITE 1 - FEDERAL BUILDING OPTION 2



ISOMETRIC

LEGEND

NORTH

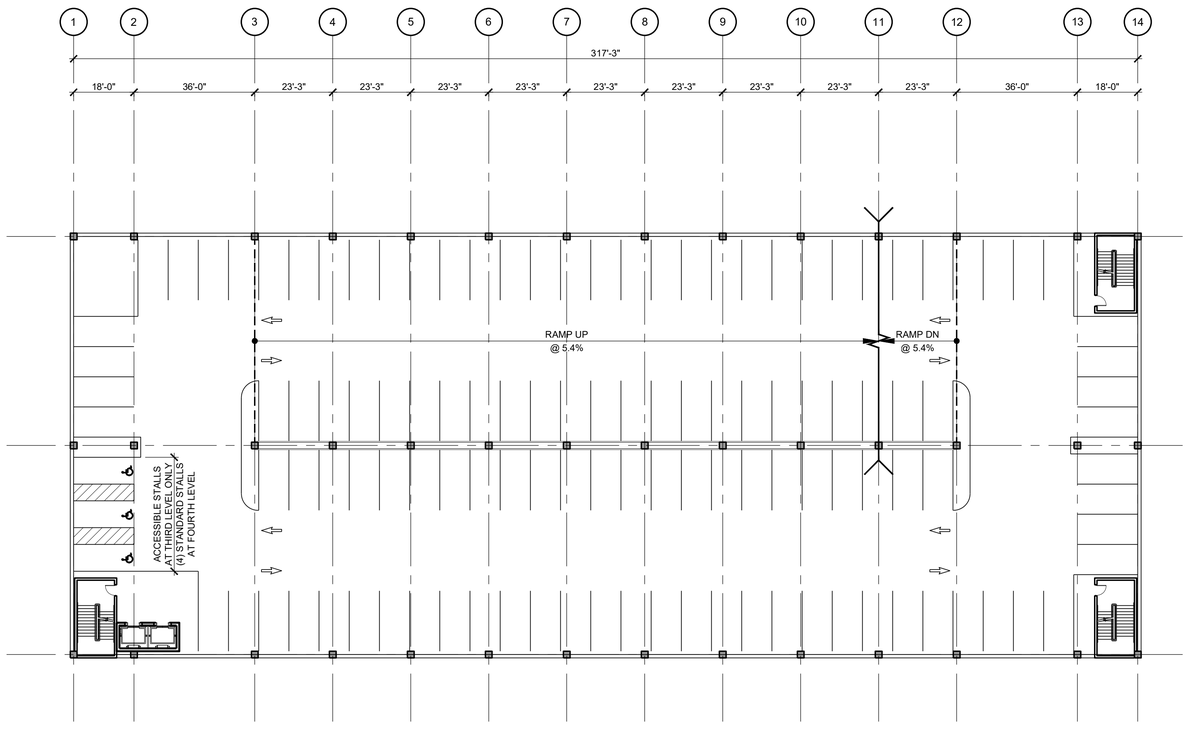
Scale: 3/64" = 1'-0"

AG101.2

APRIL 11, 2019 / 23-7891.00

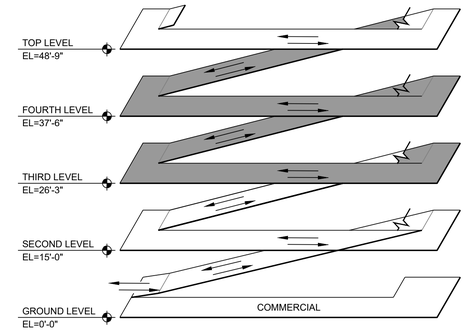
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TYPICAL LEVEL

SITE 1 - FEDERAL BUILDING OPTION 2



ISOMETRIC

LEGEND

NORTH

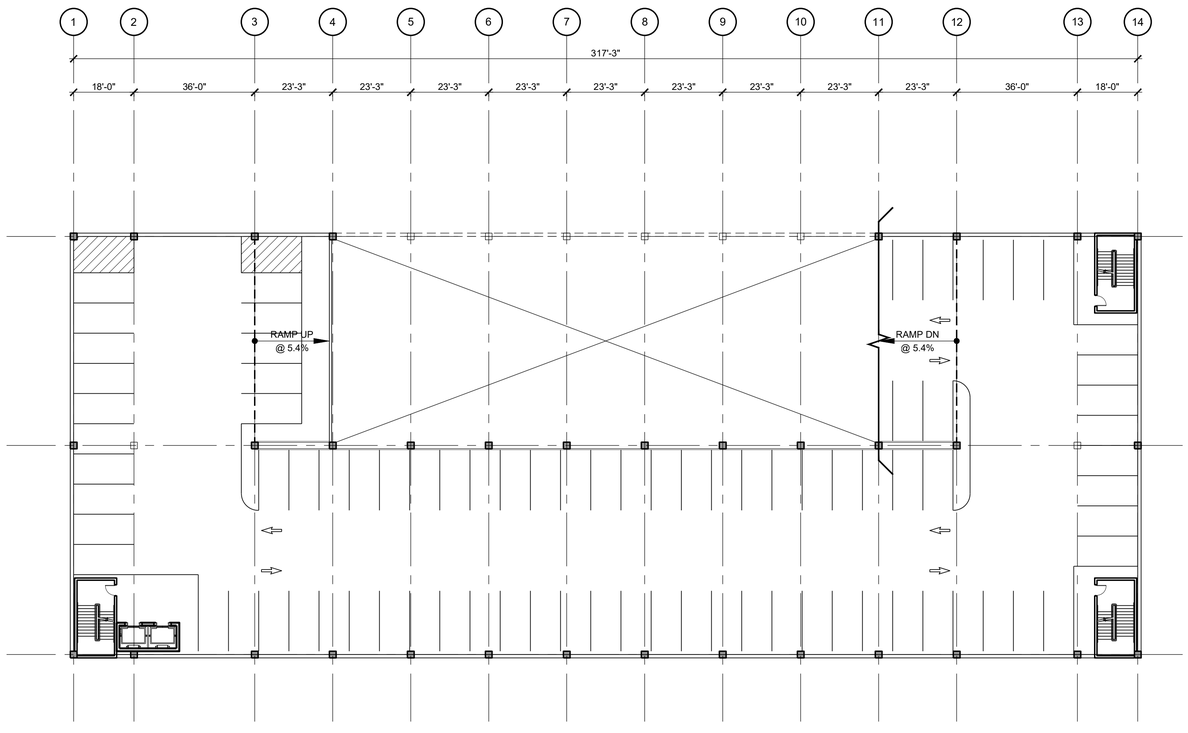
Scale: 3/64" = 1'-0"

AG102.2

APRIL 11, 2019 / 23-7891.00

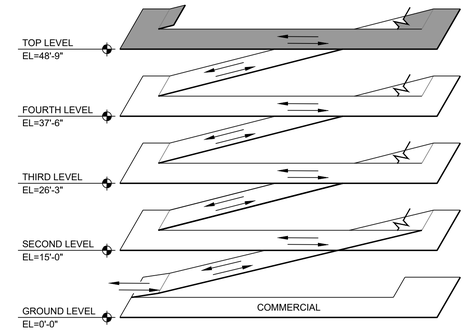
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 1 - FEDERAL BUILDING OPTION 2



ISOMETRIC

LEGEND

NORTH

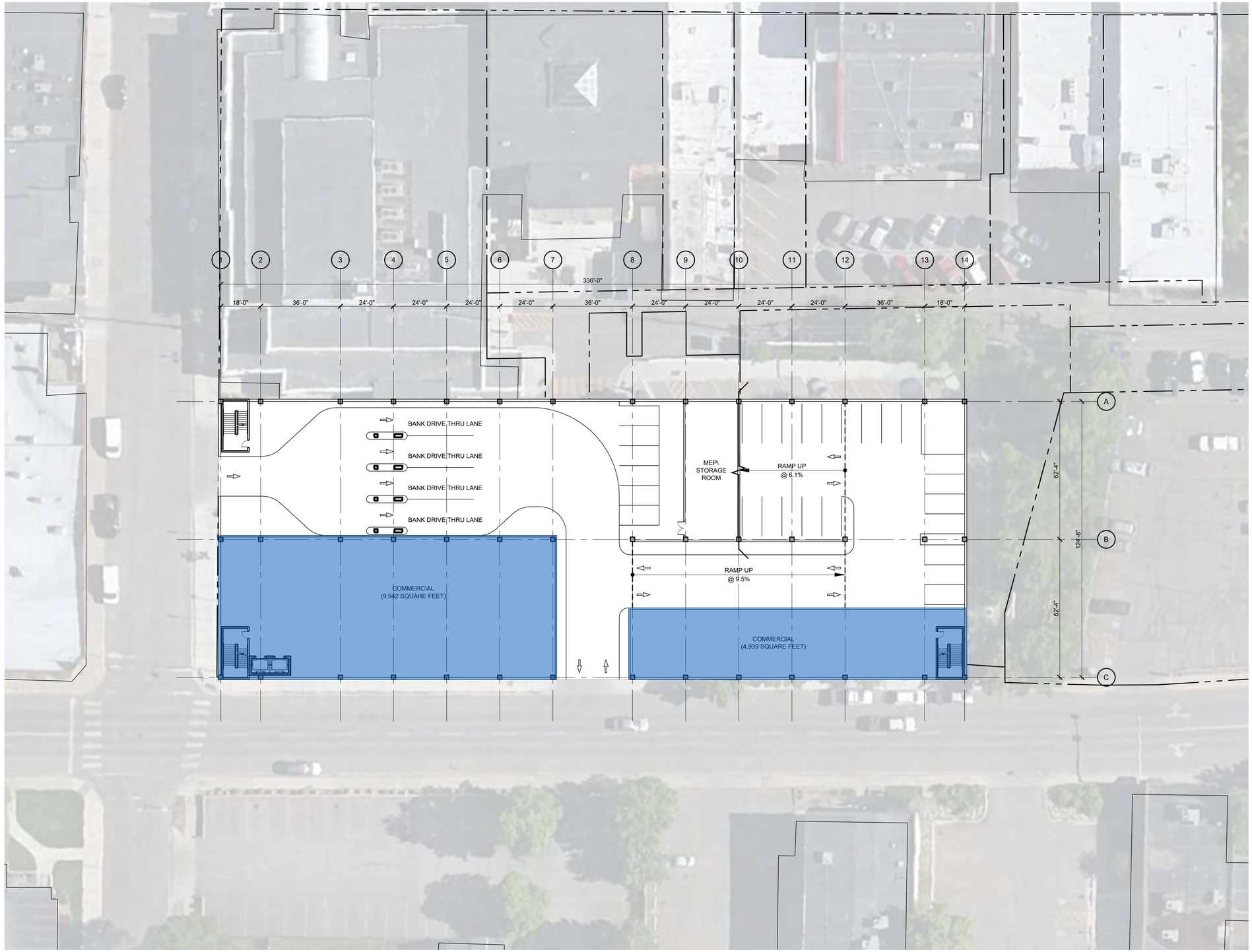
Scale: 3/64" = 1'-0"

AG103.2

APRIL 11, 2019 / 23-7891.00

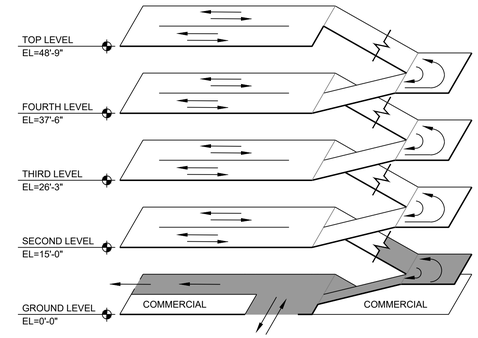
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



GROUND LEVEL

SITE 2 - FIRST SECURITY BANK OPTION 1



ISOMETRIC

CAR COUNT

9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	PARKING AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	27	0	0	27	27,441	1016
SECOND	124	3	2	129	41,888	325
THIRD	125	4	0	129	41,888	325
FOURTH	130	0	0	130	48,888	376
TOP	73	0	0	73	26,068	357
TOTAL	479	7	2	488	186,173	382

LEGEND

NORTH

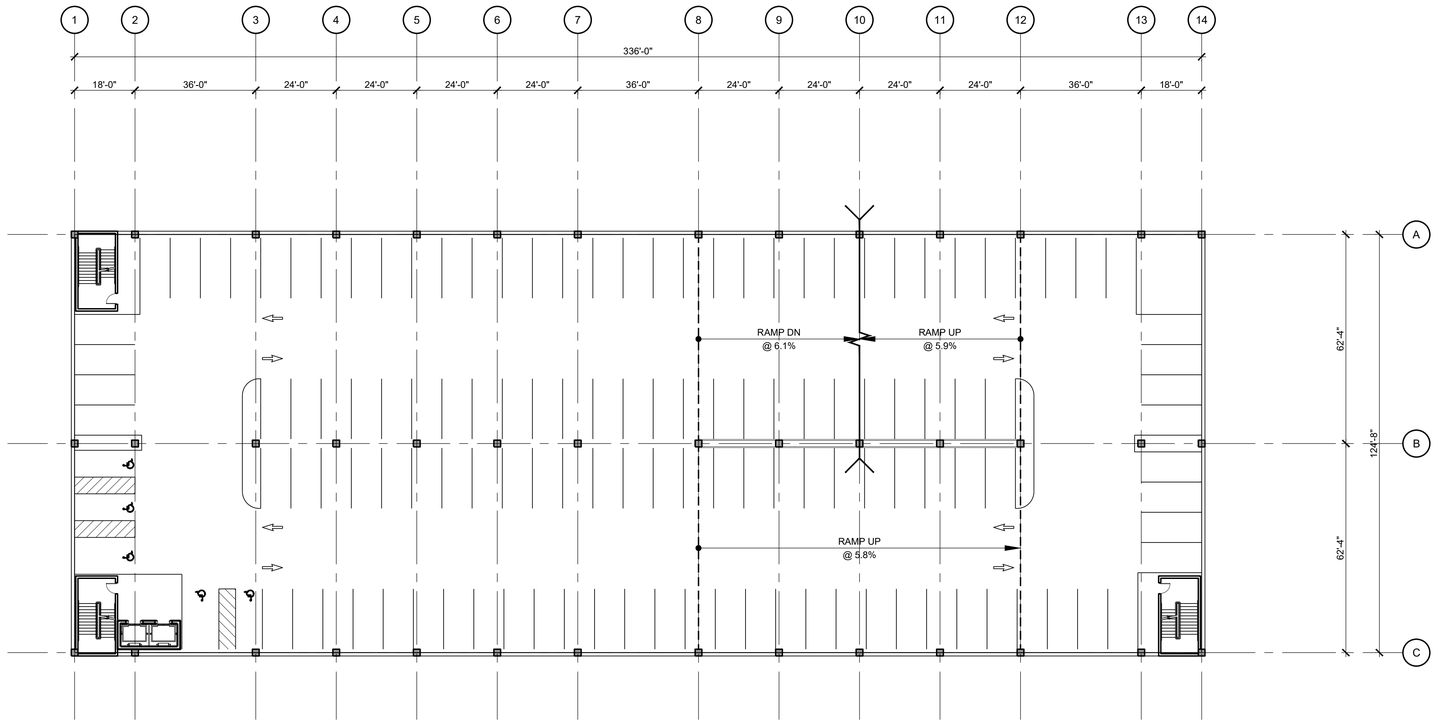
Scale: 3/64" = 1'-0"

AG200.1

APRIL 11, 2019 / 23-7891.00

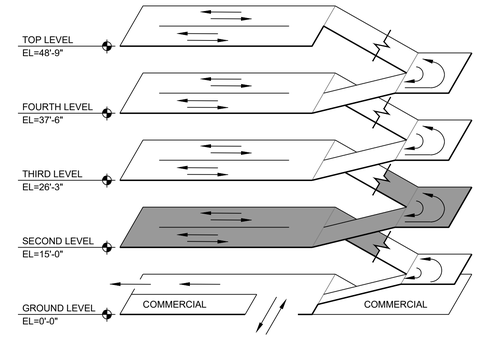
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



SECOND LEVEL

SITE 2 - FIRST SECURITY BANK OPTION 1



ISOMETRIC

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG201.1

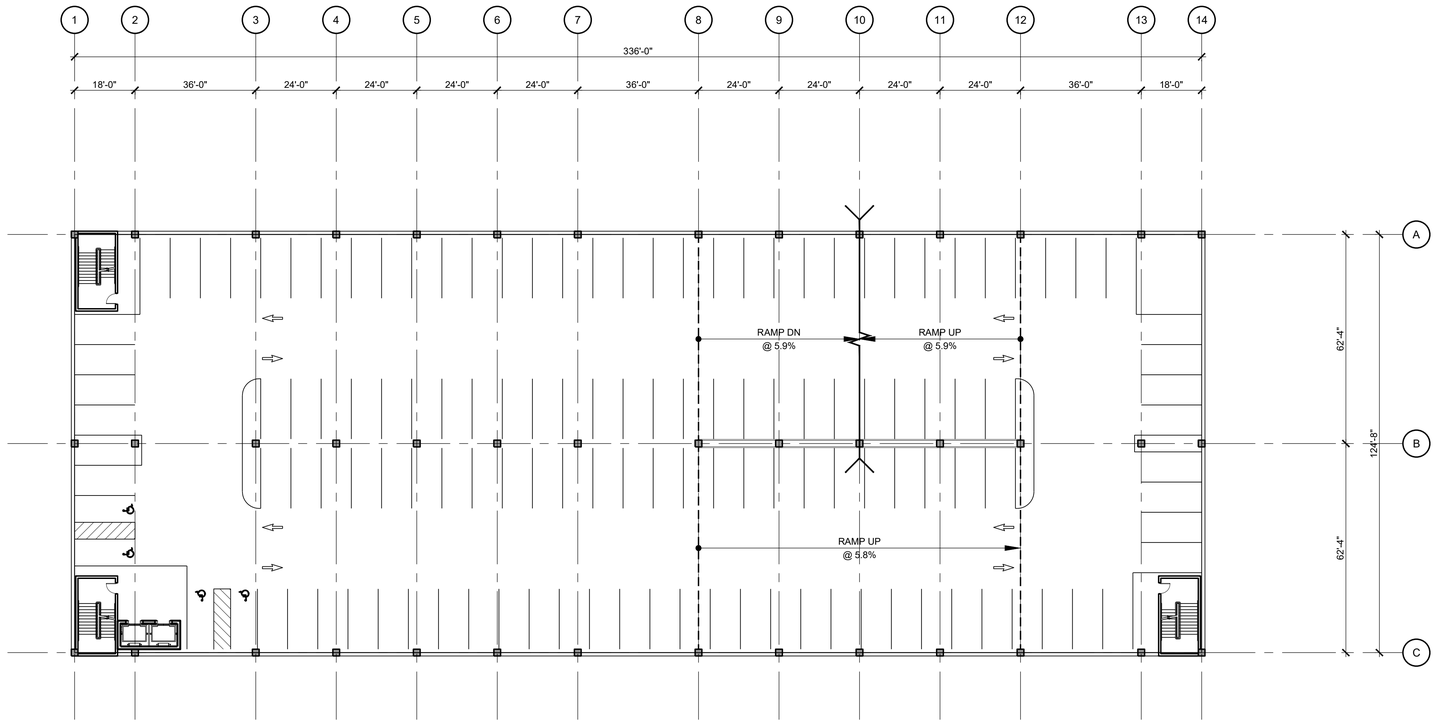
APRIL 11, 2019 / 23-7891.00

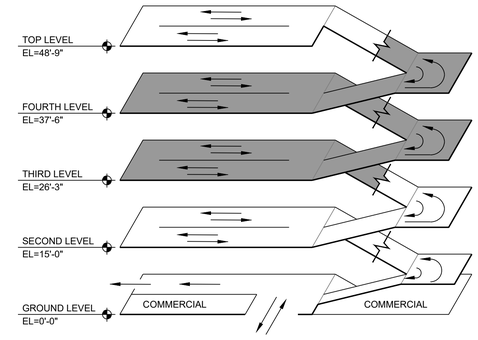
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

TYPICAL LEVEL

SITE 2 - FIRST SECURITY BANK OPTION 1





ISOMETRIC

LEGEND

NORTH

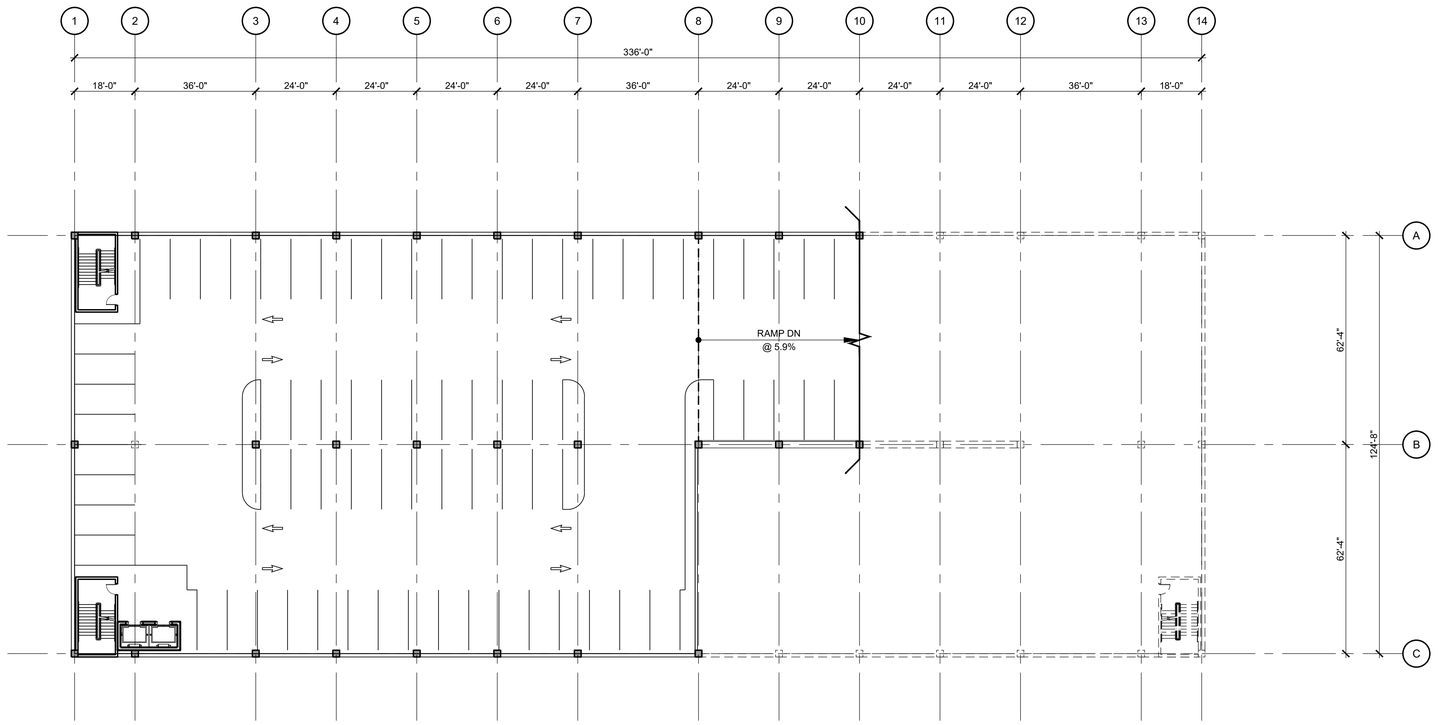
Scale: 3/64" = 1'-0"

AG202.1

APRIL 11, 2019 / 23-7891.00

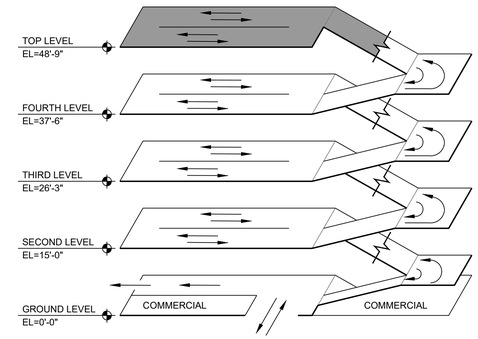
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 2 - FIRST SECURITY BANK OPTION 1



ISOMETRIC

LEGEND

NORTH

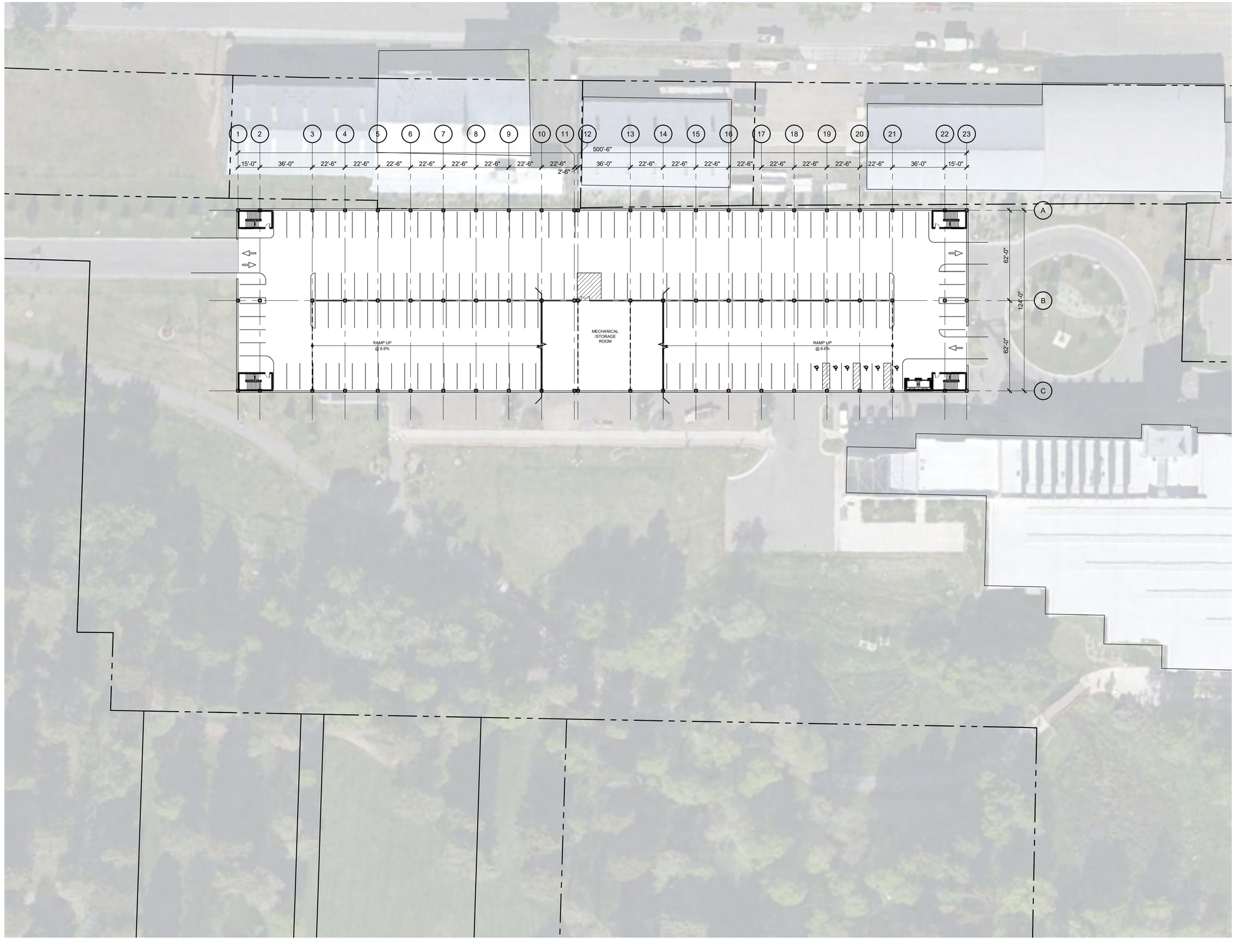
Scale: 3/64" = 1'-0"

AG203.1

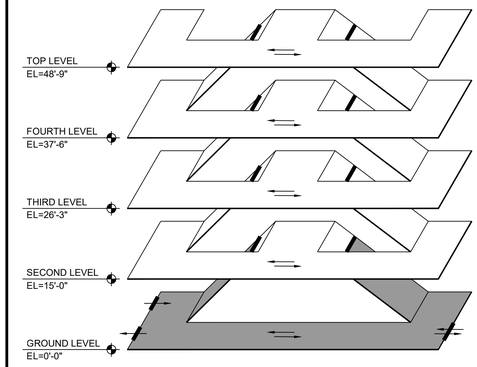
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



GROUND LEVEL
SITE 3 - LIBRARY OPTION 1



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	166	4	2	172	62,062	361
SECOND	183	4	2	189	62,062	328
THIRD	183	4	2	189	62,062	328
FOURTH	183	4	2	189	62,062	328
TOP	130	0	0	130	45,160	347
TOTAL	845	16	8	869	293,408	338

LEGEND

NORTH

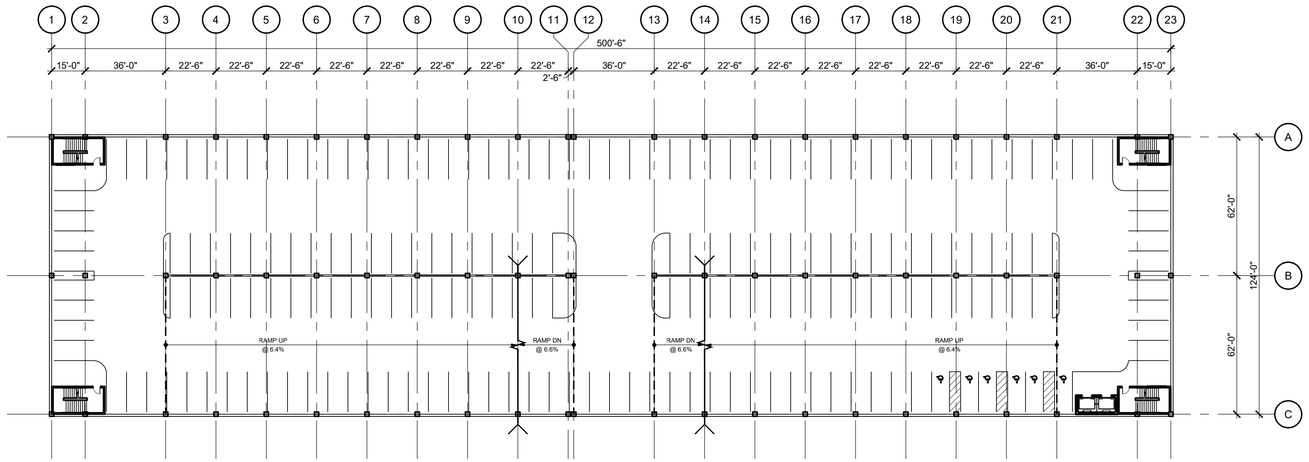
Scale: 1/32" = 1'-0"

AG300.1

APRIL 11, 2019 / 23-7891.00

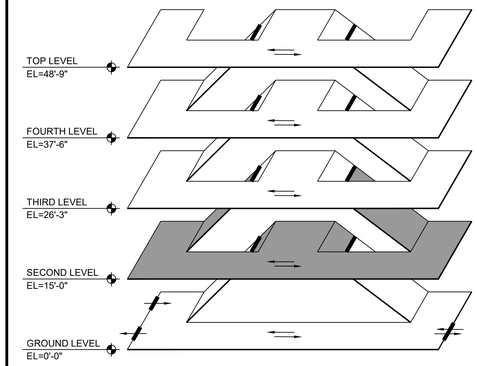
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



SECOND LEVEL

SITE 3 - LIBRARY OPTION 1



ISOMETRIC

LEGEND

NORTH

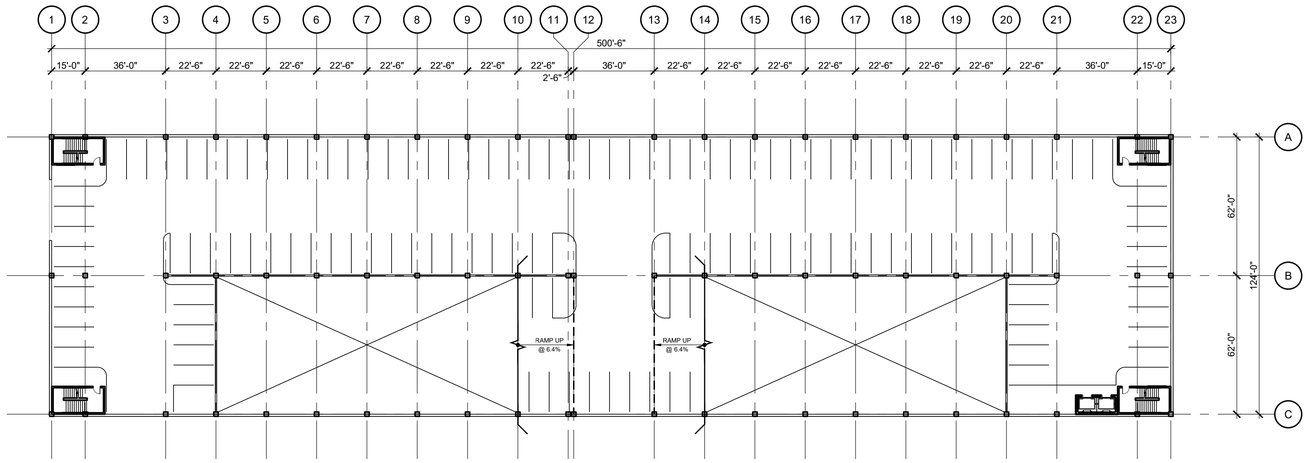
Scale: 1/32" = 1'-0"

AG301.1

APRIL 11, 2019 / 23-7891.00

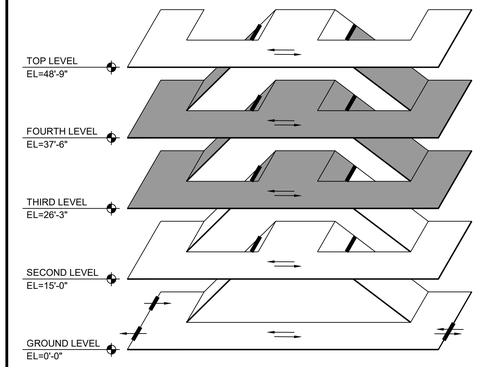
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TYPICAL LEVEL

SITE 3 - LIBRARY OPTION 1



ISOMETRIC

LEGEND

NORTH

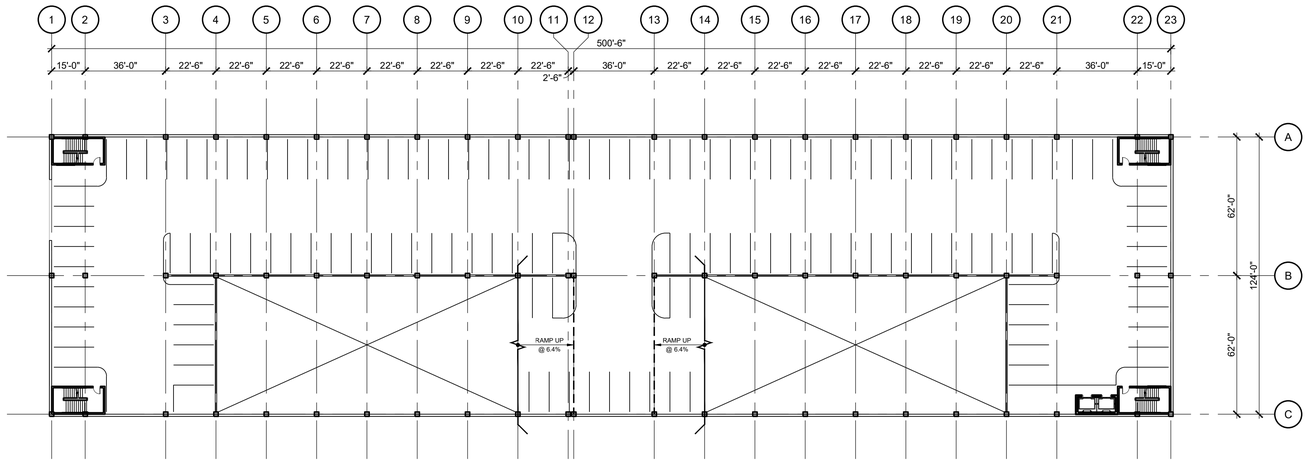
Scale: 1/32" = 1'-0"

AG302.1

APRIL 11, 2019 / 23-7891.00

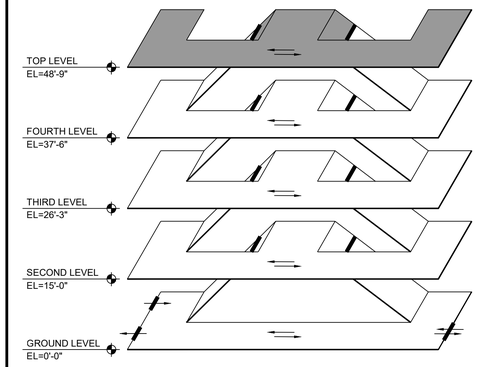
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 3 - LIBRARY OPTION 1



ISOMETRIC

LEGEND

NORTH

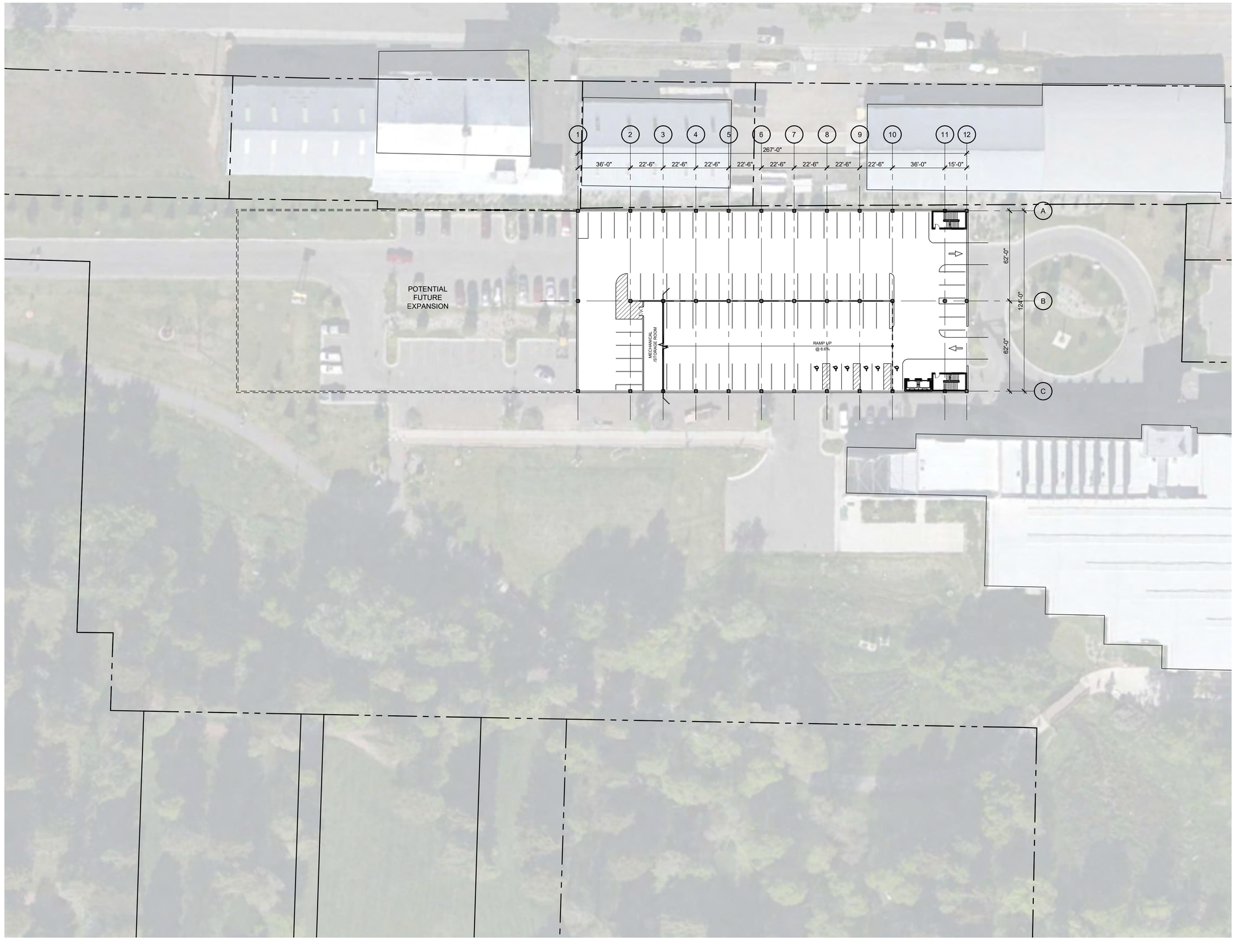
Scale: 1/32" = 1'-0"

AG303.1

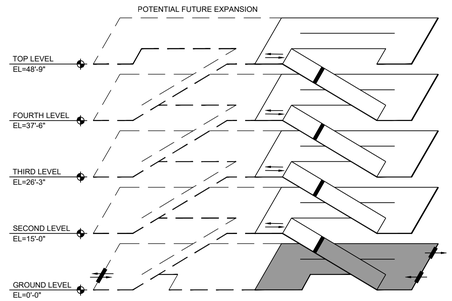
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



GROUND LEVEL
SITE 3 - LIBRARY OPTION 2



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	83	4	2	89	31,506	354
SECOND	91	4	2	97	32,353	334
THIRD	91	4	2	97	32,353	334
FOURTH	91	4	2	97	32,353	334
TOP	69	0	0	69	23,886	346
TOTAL	425	16	8	449	152,451	340

LEGEND

NORTH

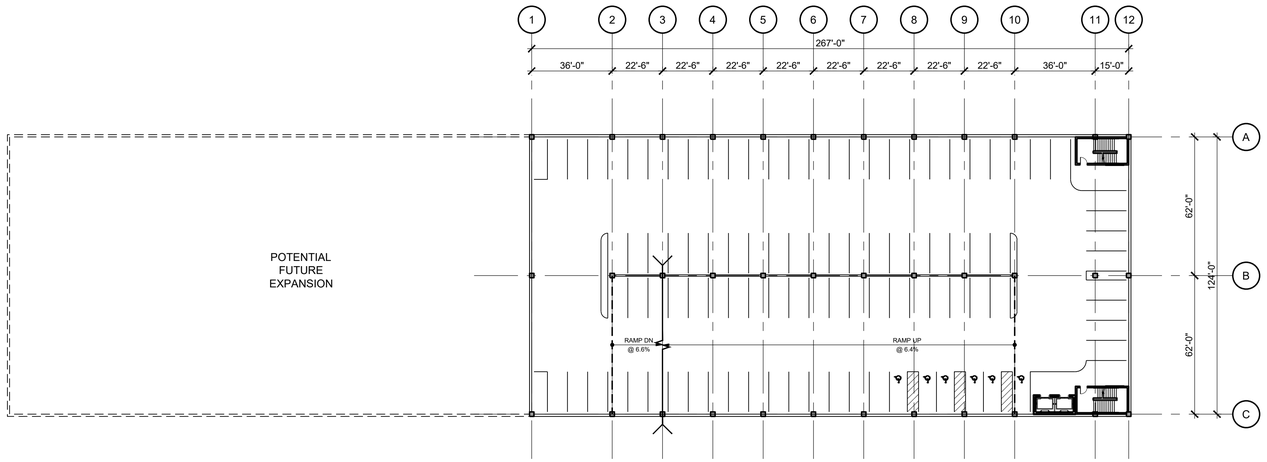
Scale: 1/32" = 1'-0"

AG301.2

MAY 15, 2019 / 23-7891.00

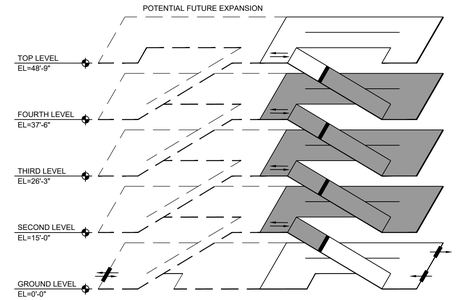
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TYPICAL LEVEL

SITE 3 - LIBRARY
OPTION 2



ISOMETRIC

LEGEND

NORTH

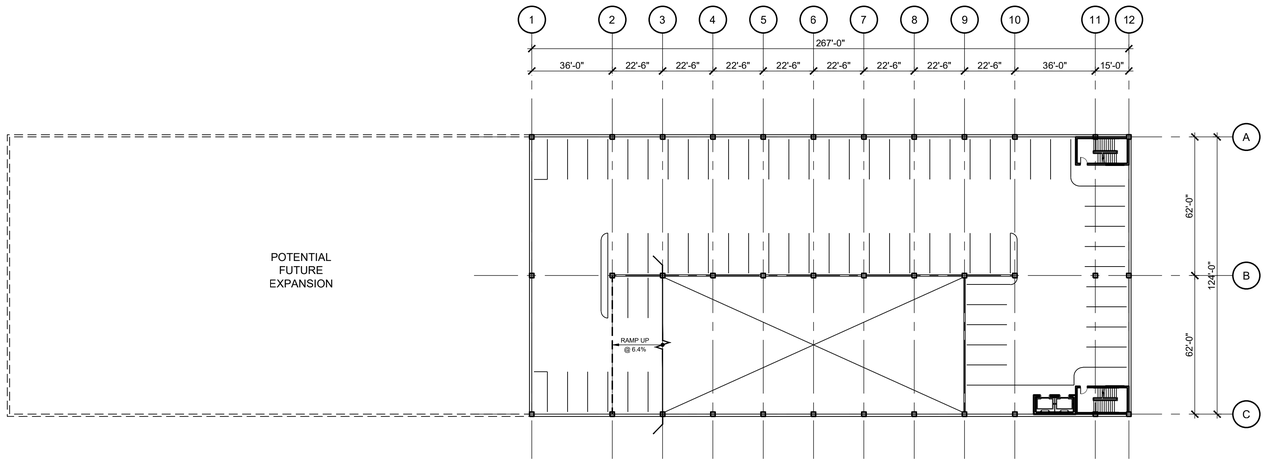
Scale: 1/32" = 1'-0"

AG302.2

MAY 15, 2019 / 23-7891.00

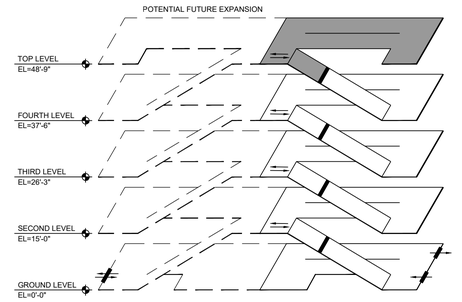
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 3 - LIBRARY OPTION 2



ISOMETRIC

LEGEND

NORTH

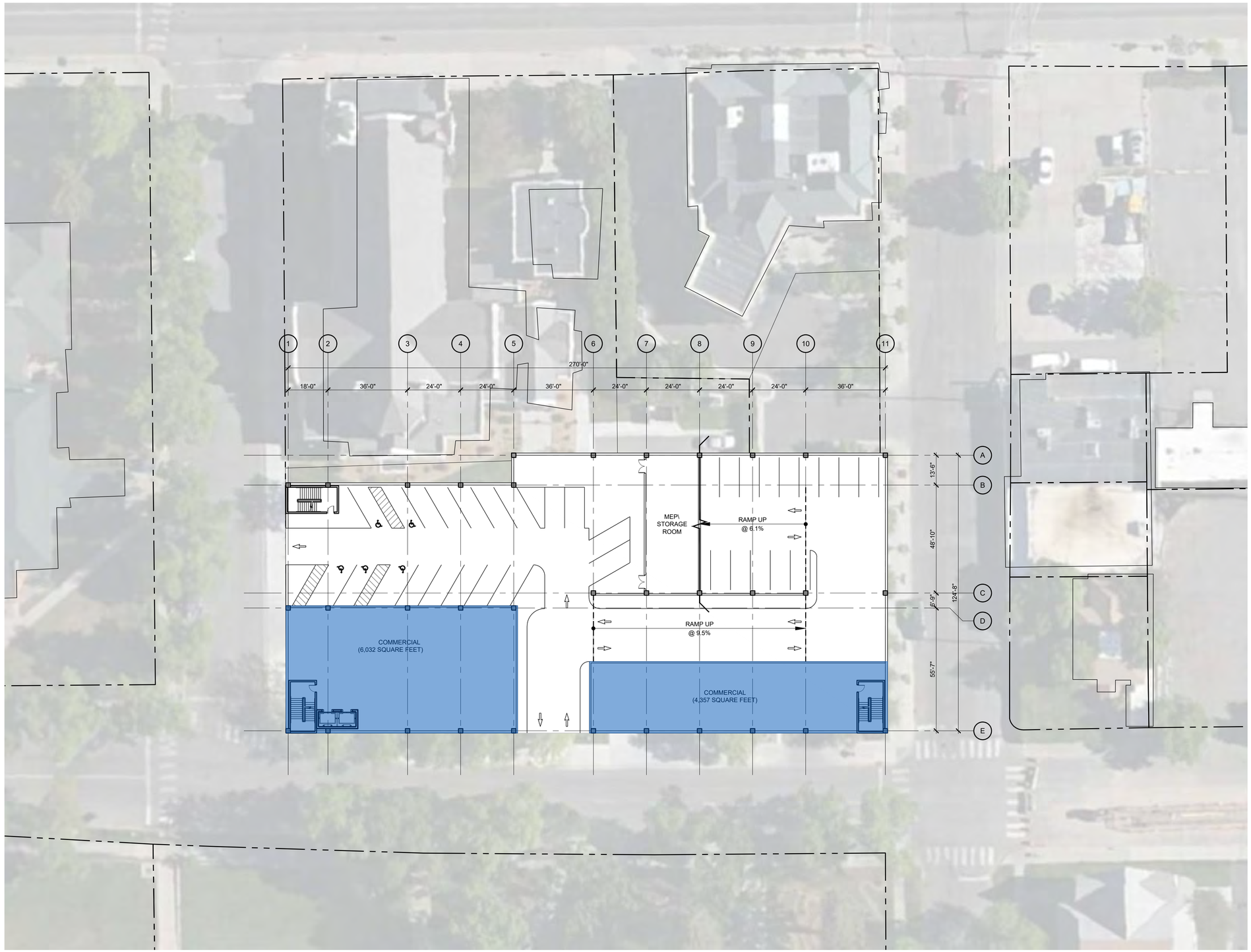
Scale: 1/32" = 1'-0"

AG303.2

MAY 15, 2019 / 23-7891.00

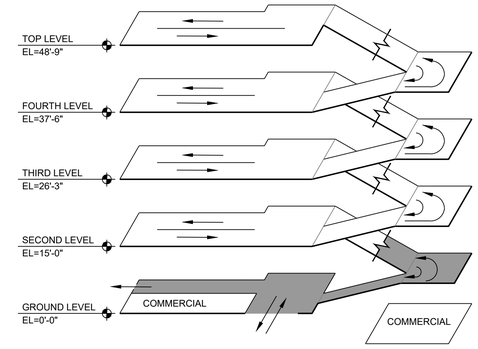
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



GROUND LEVEL

SITE 4 - FIRST INTERSTATE BANK OPTION 1



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE
9'-0" 60° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	PARKING AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	28	3	2	33	22,254	674
SECOND	81	2	0	83	32,283	389
THIRD	83	0	0	83	32,283	389
FOURTH	83	0	0	83	32,283	389
TOP	47	0	0	47	18,708	398
TOTAL	322	5	2	329	137,811	419

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG400.1

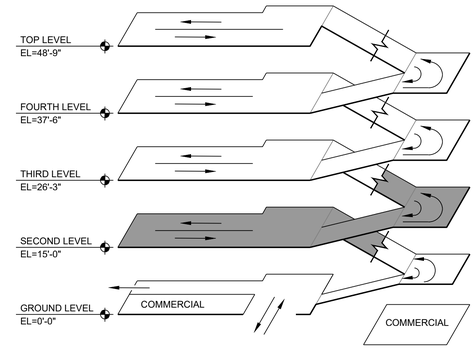
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

SECOND LEVEL

SITE 4 - FIRST INTERSTATE BANK OPTION 1



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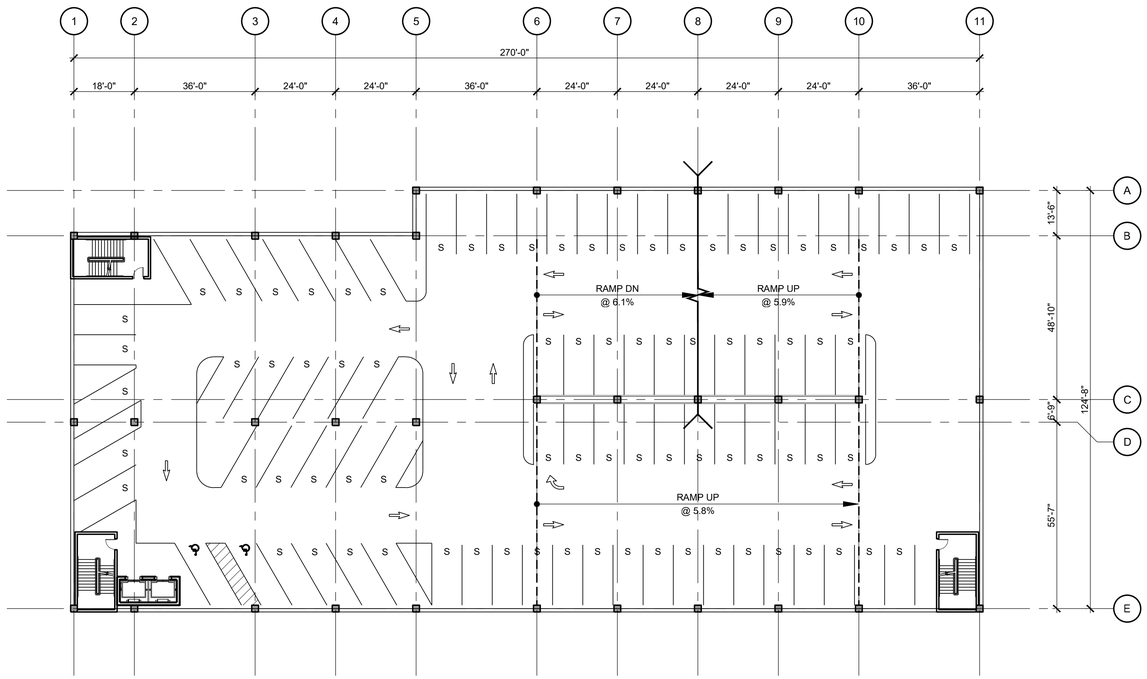


LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG401.1

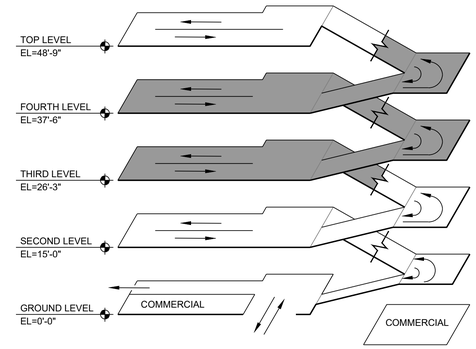
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

TYPICAL LEVEL

SITE 4 - FIRST INTERSTATE BANK OPTION 1



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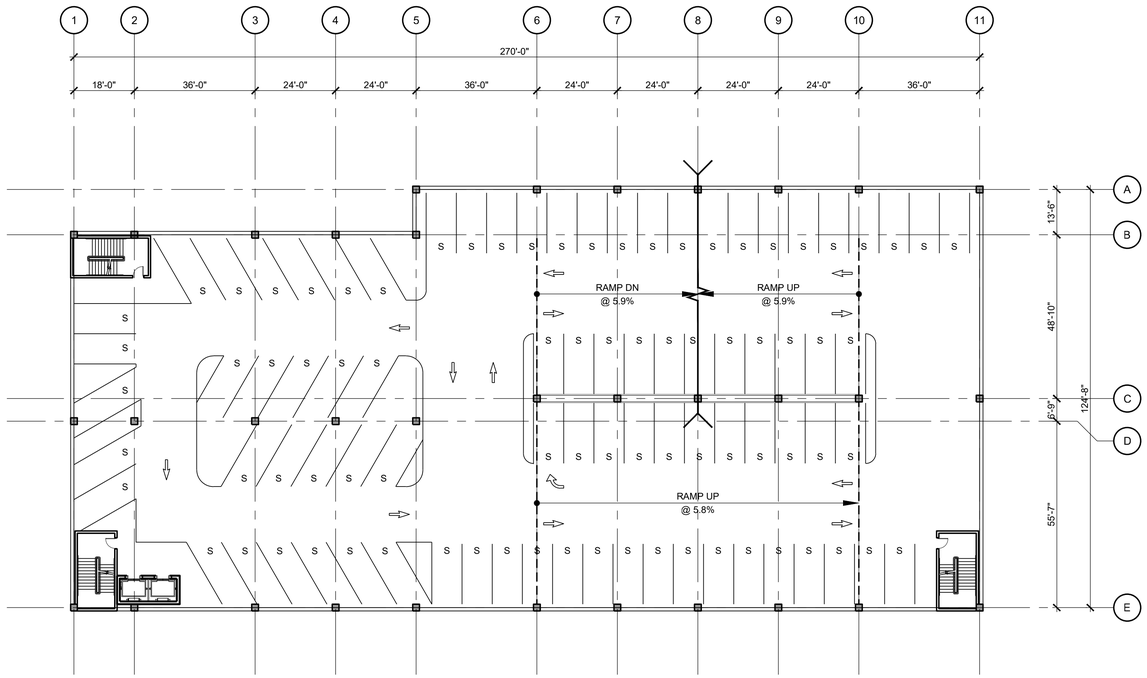


LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG402.1

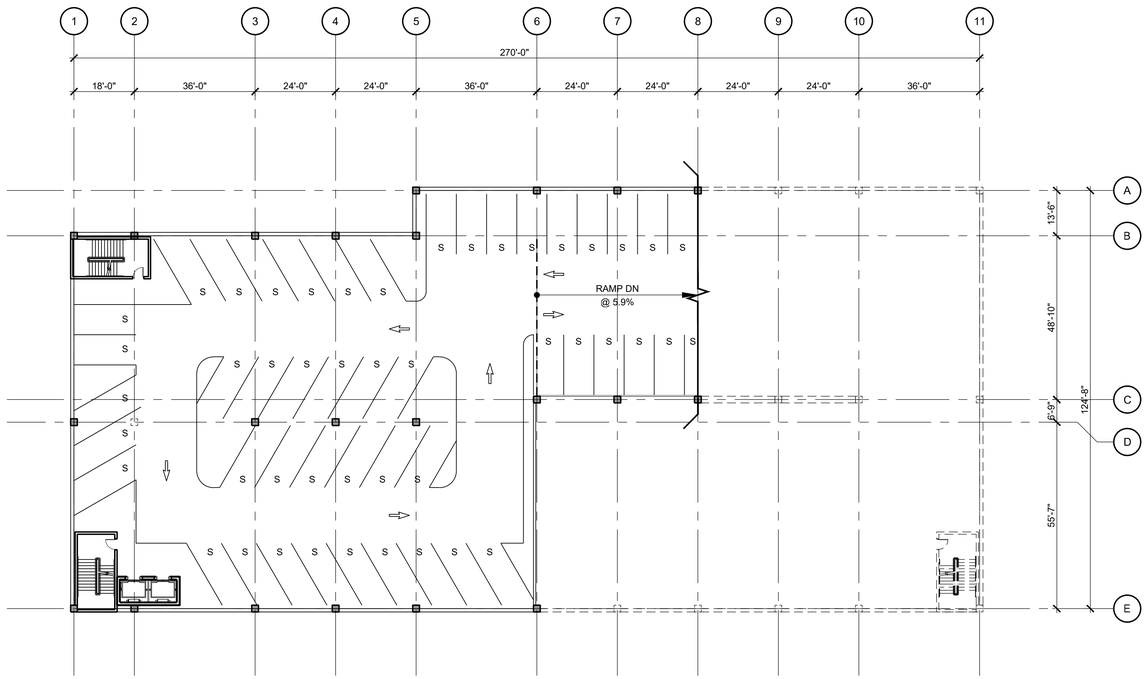
APRIL 11, 2019 / 23-7891.00

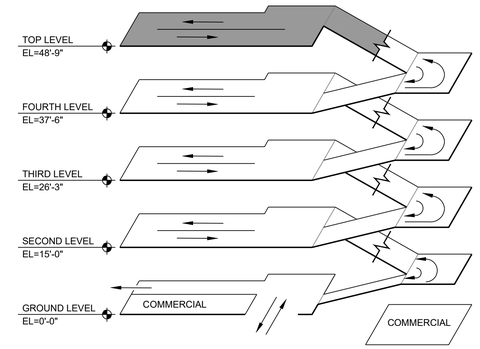
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

TOP LEVEL

SITE 4 - FIRST INTERSTATE BANK OPTION 1





ISOMETRIC

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG403.1

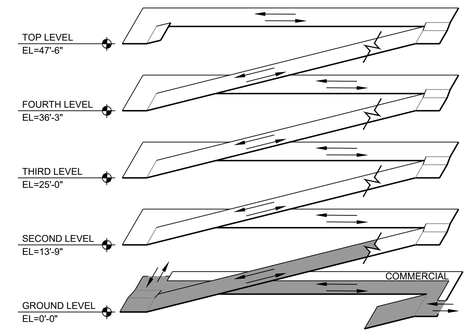
APRIL 11, 2019 / 23-7891.00

STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS

GROUND LEVEL

SITE 5 - COUNTY COURTHOUSE OPTION 1



ISOMETRIC

CAR COUNT
9'-0" 90° STANDARD SPACE

LEVEL	STANDARD	CAR ACCESSIBLE	VAN ACCESSIBLE	TOTAL	PARKING AREA (SQ FT)	EFFICIENCY (SQ FT/STALL)
GROUND	49	2	2	53	26,126	493
SECOND	86	4	0	90	31,042	345
THIRD	91	0	0	91	31,042	341
FOURTH	91	0	0	91	31,042	341
TOP	75	0	0	75	26,461	353
TOTAL	392	6	2	400	145,713	364

LEGEND

NORTH

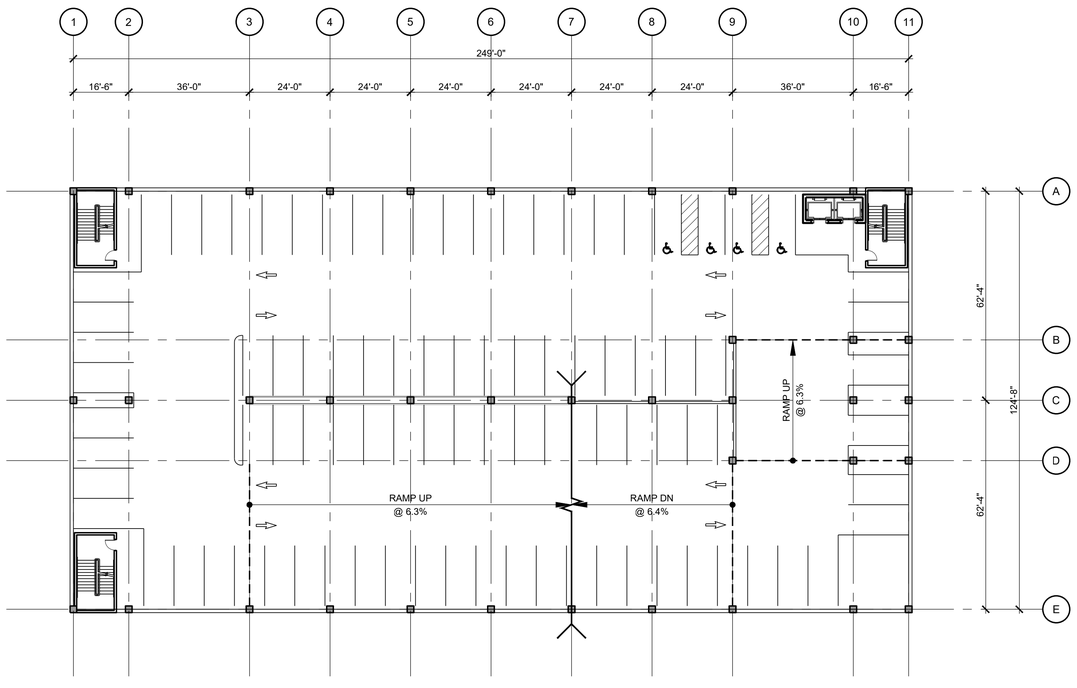
Scale: 3/64" = 1'-0"

AG500.1

APRIL 11, 2019 / 23-7891.00

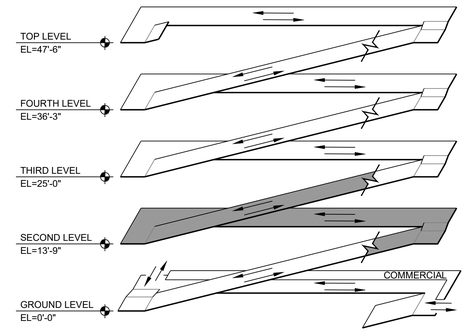
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



SECOND LEVEL

SITE 5 - COUNTY COURTHOUSE OPTION 1



ISOMETRIC

LEGEND

NORTH

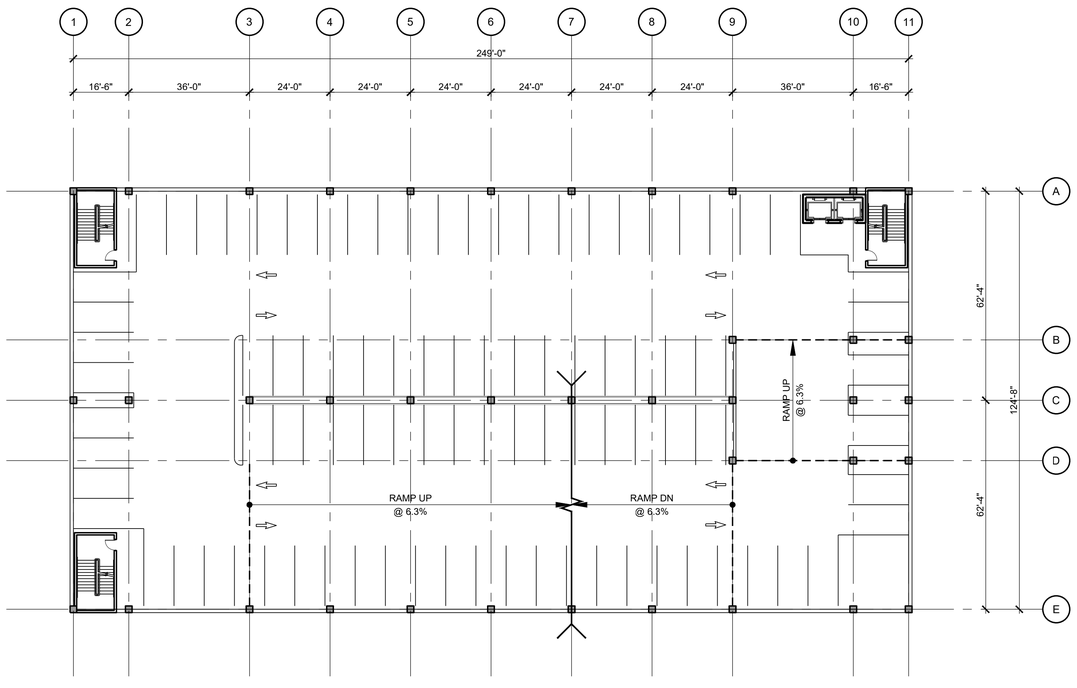
Scale: 3/64" = 1'-0"

AG501.1

APRIL 11, 2019 / 23-7891.00

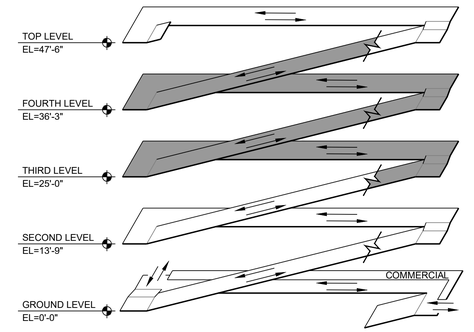
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TYPICAL LEVEL

SITE 5 - COUNTY COURTHOUSE OPTION 1



ISOMETRIC

LEGEND

NORTH

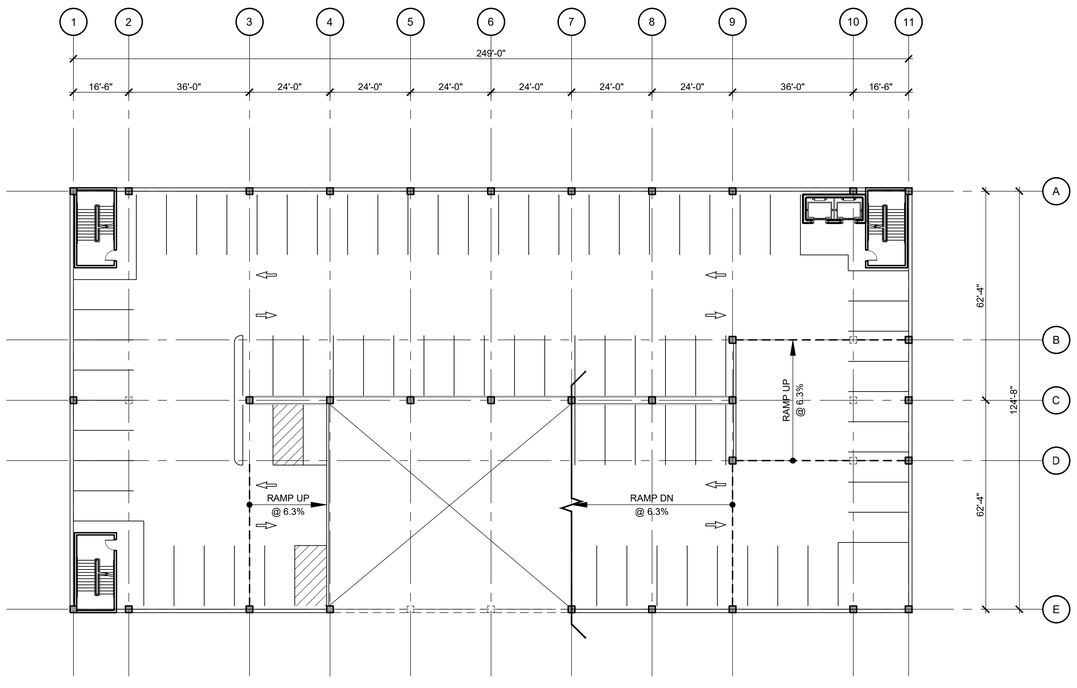
Scale: 3/64" = 1'-0"

AG502.1

APRIL 11, 2019 / 23-7891.00

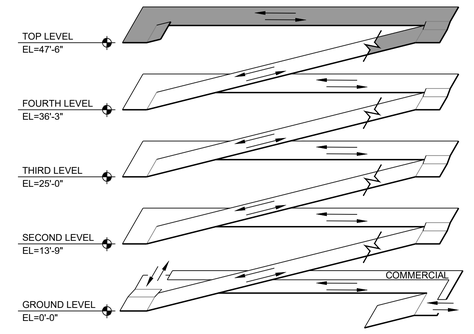
STRUCTURED PARKING FEASIBILITY ANALYSIS
BOZEMAN, MONTANA

WALKER CONSULTANTS



TOP LEVEL

SITE 5 - COUNTY COURTHOUSE OPTION 1



ISOMETRIC

LEGEND

NORTH

Scale: 3/64" = 1'-0"

AG503.1

APRIL 11, 2019 / 23-7891.00

Downtown Bozeman Structured Parking.

APPENDIX B

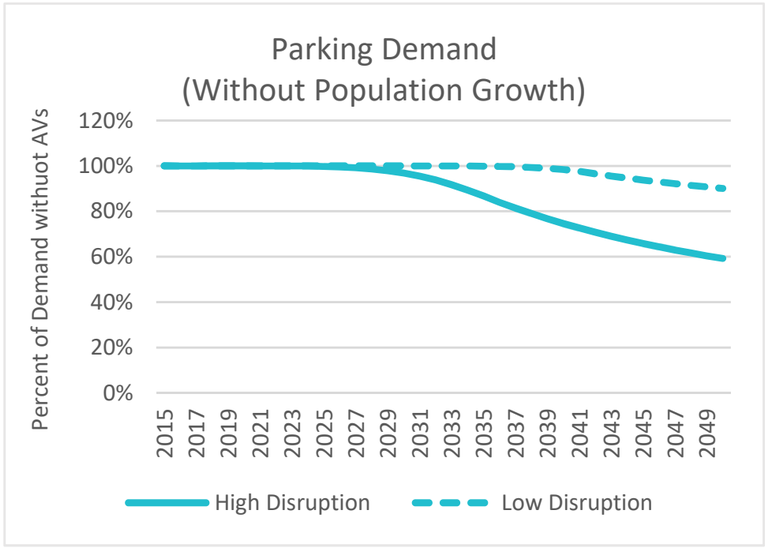
Adaptive Reuse of Parking Structures

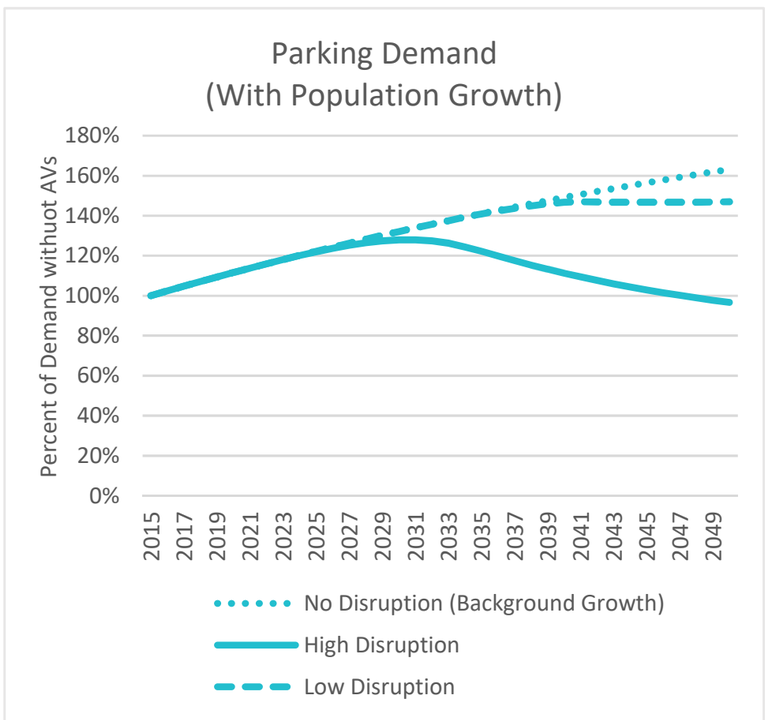
ADAPTIVE REUSE OF PARKING STRUCTURES

An overview created by Walker Consultants

Image Source: (https://inhabitat.com/wp-content/blogs.dir/1/files/2011/01/Plug-In-Parking-14.jpg)

There are numerous media reports that parking facilities will become dinosaurs in the future due to autonomous vehicles, particularly if many people give up car ownership and use ride-hailing services like Uber and Lyft. The first issue in planning for the future is understanding the potential reduction in parking demand and the timeline for that reduction. We estimate that the realistic overall maximum reduction, **nationally**, is about 40% at a high disruption scenario, and as low as 10% in a low disruption scenario. Further, we have created a projection of vehicles on the road based on a nationally recognized consultant's[1] projections of vehicles sales as well as historic vehicle scrappage rates.[2] The top graph to the right would apply to a parking structure serving a single land use with a specific amount of leasable area or residential units. However for destinations that tend to grow over time with population growth and economic development, such as downtowns, airports, and campuses, the graph below would apply and also indicates the overall impact on parking demand in the US. For more information on these graphs see our white paper entitled "The 90% Fallacy".





There have been some creative ideas to adaptively reuse parking structures. One, developed by students at the Savanah College of Arts and Design, proposed moving in modular “micro” housing units that would fit in two or three standard parking stalls, leaving the aisle and stalls opposite for continued parking use. The plumbing and electrical would be self-contained under the unit in a false floor, making it very easy to move units in as parking demand declines over time. The only significant requirement is a bit more floor-to-floor height and a vertical pathway for utilities.

Many in the planning community are calling for new parking structures to be designed for eventual, complete conversion to other uses such as residential, retail and/or office. This is a very complex topic. Most of the proponents only recommend a few simple steps, which include providing adequate floor to floor height for other uses (typically 12 to 15’ rather than 10 to 12’ as commonly used in parking), and nominally flat floors with express ramps rather than parking ramps (that is with parking on the ramps.) The increased floor to floor height typically increases costs 1% or less, primarily affecting ramping, stair and elevator tower design and costs. Using express ramps instead of parking ramps may reduce the parking efficiency (typically stated as square foot of floor area per parking space), and increase the cost per space and overall cost another 10 to 15%. This approach puts off the cost of fully preparing the building for conversion until the decision to convert is made. However, we believe that approach can significantly increase the cost of future conversion.

It is noted that residential and hotel are the only uses where there is not any increase in code-required design loads versus parking; office increases the design loads from 40 psf to 50 psf, but that is still a 25% increase.

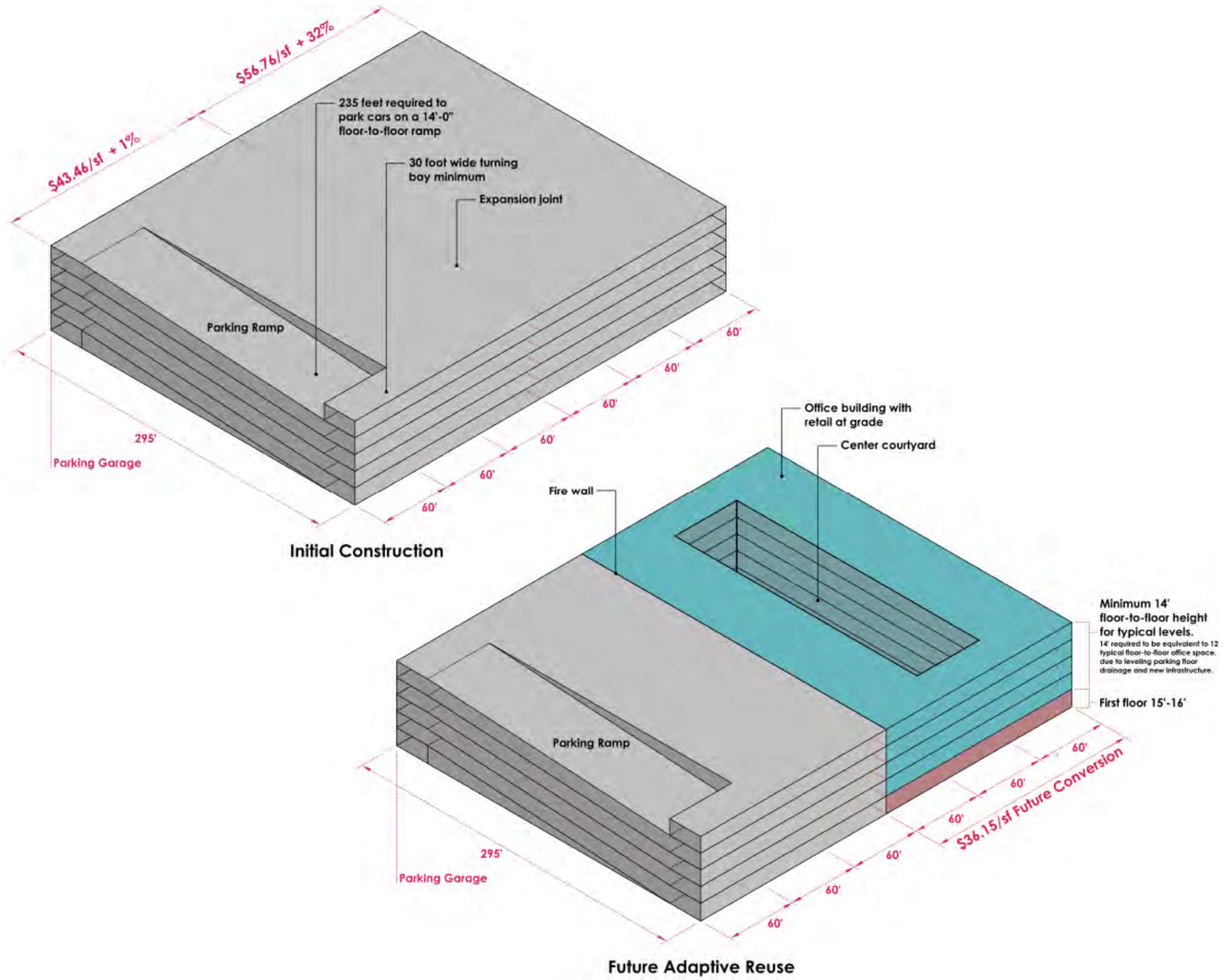
To better understand the cost of converting a parking structure to another land use, a Walker task force performed a cost analysis, categorizing design changes in ranges of cost premiums for converting parking structures to other future uses.

Recommended Adaptive Reuse Designs at Relative Percent Premiums Above New Structure Cost

Up to 10 % Premium	11-25 % Premium	>25% Premium & Above
• Design for taller floor-to-floor heights, especially at grade; • Design for increased floor loads; • Design for less drift (lateral deflection) for future occupied space; • Design for less vertical differential settlement and deflection for future occupied space; • Design for ramps on the edge of floor plan for partial conversion; • Design façade for future building conversion; • Design for future shafts and floor penetrations; • Plan for additional empty utility infrastructure (duct banks, blank panels, sleeves, etc.); • Plan for oversized or additional MEP rooms; and • Design for wider stairs for more occupants in future or provide areas for future stairs and elevators.	• Review if medium span construction is required for future alternate use (30x45 ft.); • Increased set back to property line for future liner buildings, stairs/elevators, etc. on one or more sides; and • Design top level of parking for assembly or other “heavy” use like a garden or park, or events.	• Review if short span construction (30x30 grid) is required for future alternate use; • Provide all express ramps, all flat parking areas for future removal of express ramps; • Design all floors (or many floors) for 80 psf (or more) live load for future occupant flexibility; and • Provide one level of the parking below grade for future support space (MEP, storage, etc.).

Repurposed Parking Area

CASE STUDY: COST OF DESIGNING FOR ADAPTIVE REUSE

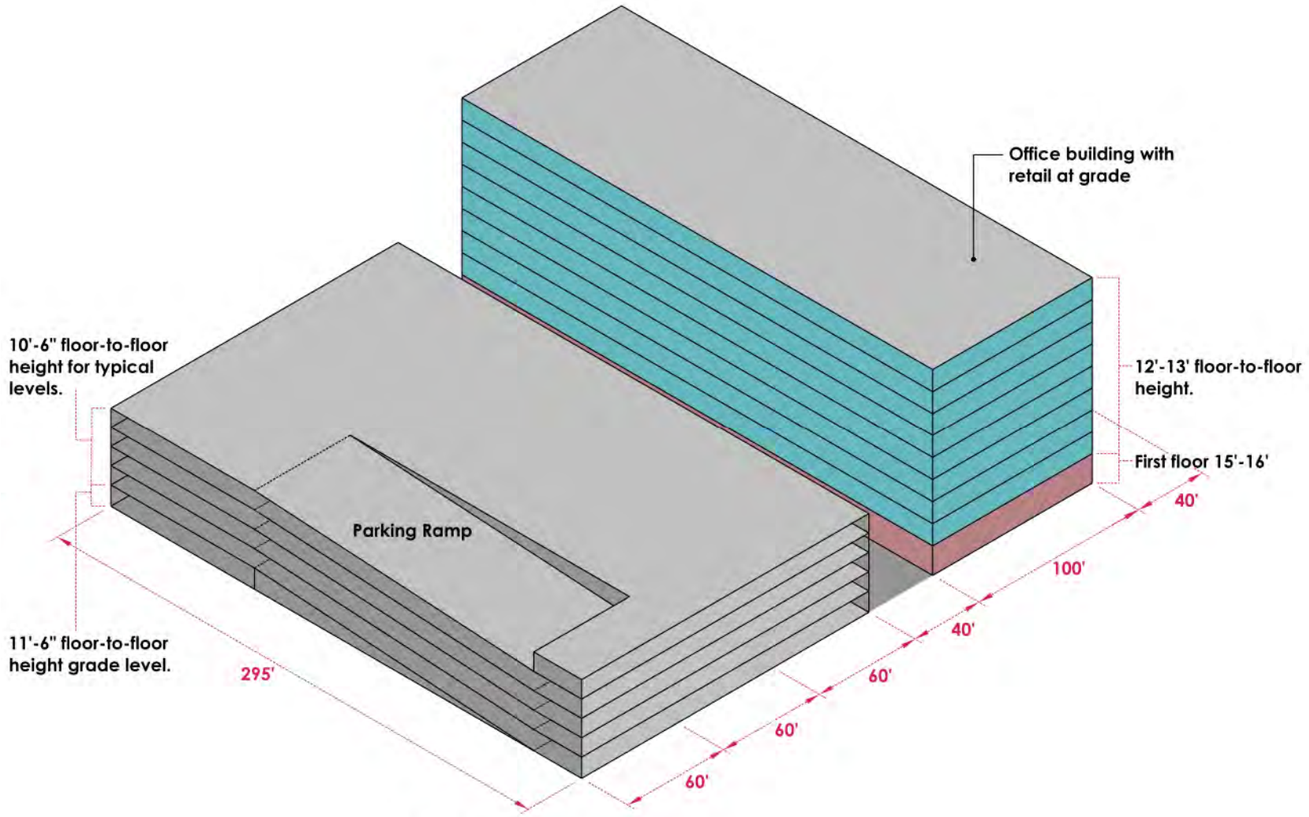


Walker has completed several detailed studies of the cost of future conversion for specific clients. The Case Study to the left was for an office building in Ohio; the prices shown are 2016 dollars. After the initial discussion, it was decided to plan for conversion of one-half of the structure to office. In the half designed to remain parking, the only incremental cost was for additional floor-to-floor height. In the other half, however, the costs included the following:

- Increased load capacity for office and stiffness of the structural frame to reduce the sway of the building in the wind, and the "bounciness" of long-span construction. This alone accounts for about $12/sq ft, a 28% incremental initial cost.
- Increased floor drains to reduce the future cost of leveling floors designed for adequate parking area drainage.
- Design of a removable façade that allows for future façade installation.
- Design of one parking bay to be removeable so that the depth of office space from windows is acceptable to future tenants.

The cost for future conversion included the demolition, the new façade, leveling the floor, removing and replacing the slab on grade and other elements required to achieve a "cold dark box" without any utilities, vertical cores and tenant improvements. The developer's opinion than was that he would never want to spend this total cost of over $90 per square foot to achieve a cold dark box that is still not likely to be ideal space for office tenants.

Instead it was decided to simply provide an expansion joint to allow half of the parking structure to be easily torn down, and future construction “built-to suit” the market at some unknown point in the future.



Future Adaptive Reuse

REFERENCES

1. http://www.mckinsey.com/industries/high-tech/our-insights/disruptive-trends-that-will-transform-the-auto-industry
2. http://news.ihsmarkit.com/press-release/automotive/vehicles-getting-older-average-age-light-cars-and-trucks-us-rises-again-201

ABOUT THE AUTHOR

Walker Consultants is the global leader in providing parking consulting and parking design services. Founded in 1965, we pioneered the field of parking consulting. Today the firm has over 300 employees delivering a wide range of parking planning, design, engineering, and restoration services.

The firm is based in the U.S. with 17 domestic offices and 1 in the United Arab Emirates, is ranked #240 in Engineering News Record’s Top 500 Design Firms and #13 in Building Design + Construction’s Giants 300 Engineering/Architecture Firms.

We serve a broad spectrum of markets including healthcare, education, government, aviation, residential, retail and commercial development, entertainment, hospitality and athletic venues. This diversity allows our staff the luxury of collaborating with a large cross section of client types and developing best practices for their specific development needs, helping them unlock the potential of their projects.

WALKER CONSULTANTS