



**To:** Colby Anderson  
CIR Engineering

**Date:** August 1, 2024

**From:** Shelly Sorensen, PE, PTOE

**Job Number:** 24.5683

**RE:** Project Borealis  
Parking Study



## 1.0 INTRODUCTION

Lōkahi, LLC (Lōkahi) has prepared a Parking Study for the proposed Project Borealis development, located on the northwest corner of Warner Road and Ellsworth Road, in Mesa, Arizona. See **Figure 1** for the vicinity map.

The proposed development will be comprised of 150,198 square feet of office uses, 85,120 square feet of warehouse uses, 39,250 square feet of retail uses, and five (5) data halls; each to include 10,104 square feet of office area and 215,525 square foot of warehouse area.



**Figure 1 - Vicinity Map**

The objective of this Parking Study is to analyze the parking needs for the proposed development and to ensure that the 1,154 provided parking spaces will meet the anticipated parking demand.





## 2.0 PROPOSED DEVELOPMENT

The site is located on approximately 159.17 acres on the northwest corner of Warner Road and Ellsworth Road in Mesa, Arizona. The proposed development will be comprised of 150,198 square feet of office uses, 85,120 square feet of warehouse uses, 39,250 square feet of retail uses, and five (5) data halls; each to include 10,104 square feet of office area and 215,525 square foot of warehouse area.

### 2.1 PROVIDED PARKING

The proposed development will provide a total of 1,154 parking spaces distributed among each use as follows:

Office	405 parking spaces
Warehouse	184 parking spaces
Data Hall 1	87 parking spaces
Data Hall 2	87 parking spaces
Data Hall 3	87 parking spaces
Data Hall 4	87 parking spaces
Data Hall 5	85 parking spaces
Retail	132 parking spaces

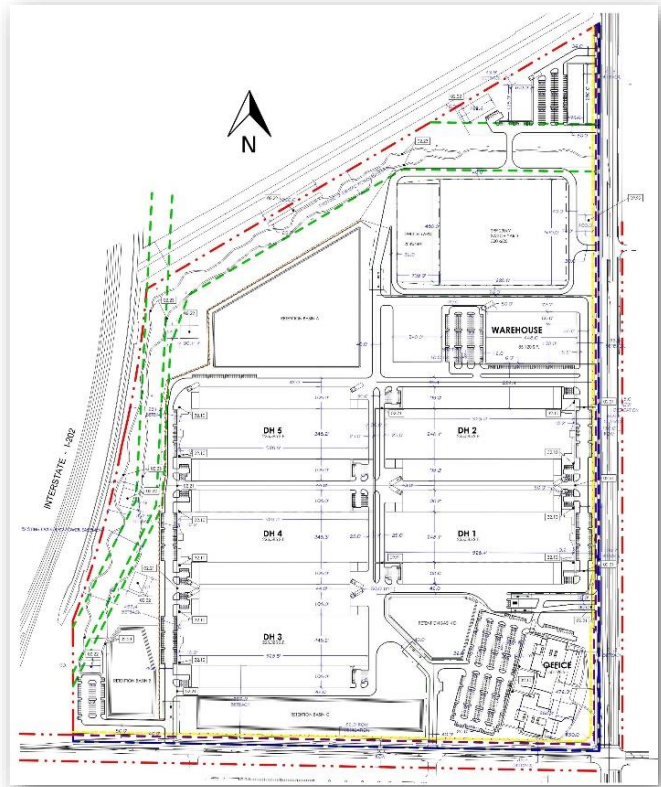


Figure 2 – Site Plan

In addition to the commercial uses, approximately 30 acres of public amenities are proposed along the north and west borders, which will include 70 parking spaces on the southwest corner of the site. Throughout the remainder of the report, only the commercial uses are evaluated.

The anticipated opening year is 2027. See **Figure 2** and **Attachment A** for the site plan.

## 3.0 REQUIRED PARKING BY CODE

The *City of Mesa Code of Ordinances (Code)* provides the minimum standards for parking in *Table 11-32-3A: Required Parking Spaces By Use*.

The proposed development includes five data halls, each of which contains office and warehouse areas. A data hall is not a specified use in the Code. The most similar comparable uses to represent a data hall was considered to be ‘General Offices’ for the office areas and



‘Warehousing and Storage’ for warehouse areas. The required parking spaces by use are shown in **Table 1**.

**Table 1 – Required Parking by Code**

Use		Minimum Standard	Quantity	Unit	Parking Spaces
Office	General offices, retail, and services	1 per 375 sq. ft.	150,198	sq. ft.	401
Warehouse	Warehousing and Storage	1 per 900 sq. ft.	85,120	sq. ft.	95
Data Hall 1	Warehousing and Storage	1 per 900 sq. ft.	215,525	sq. ft.	240
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 2	Warehousing and Storage	1 per 900 sq. ft.	215,525	sq. ft.	240
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 3	Warehousing and Storage	1 per 900 sq. ft.	215,525	sq. ft.	240
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 4	Warehousing and Storage	1 per 900 sq. ft.	215,525	sq. ft.	240
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 5	Warehousing and Storage	1 per 900 sq. ft.	215,525	sq. ft.	240
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Retail	General offices, retail, and services	1 per 375 sq. ft.	39,250	sq. ft.	105
<b>Total Required Parking Spaces By Code</b>					<b>1,936</b>

Based on the Code, 1,936 parking spaces required for the commercial uses. The proposed development provides 1,154 parking spaces, 782 fewer parking spaces than required by Code.

## 4.0 PARKING REDUCTIONS

The Code requires 1,936 parking spaces. Based on the nature of the proposed operation 1,154 parking spaces is anticipated to adequately serve the use. The parking demand generated by the project is not anticipated to exceed the capacity. Estimated parking demand for the use is calculated based on parking generation studies from the Institute for Transportation Engineers (ITE) and proposed site operations.

### 4.1 ITE PARKING GENERATION

The Institute of Transportation Engineers (ITE) publication entitled *Parking Generation, 6<sup>th</sup> Edition* is a professionally recognized source utilized for estimating parking demand based on research and experiences of transportation engineering and planning professionals. Although the ITE



Parking Generation, 6<sup>th</sup> Edition does not provide a specified use for a data hall, the following base parking ratios are considered to better estimate parking demand for the proposed development than the parking ratios required by Code.

The most similar comparable uses to represent a data hall was considered to be ITE Land Use Code (LUC) 710 - General Office Building for the office areas and ITE (LUC) 150 – Warehousing for warehouse areas.

The average weekday ITE peak period of parking demand calculations for General Urban/Suburban locations are shown in **Table 2**.

**Table 2 – ITE Average Weekday Parking Demand**

Use	ITE LUC	Land Use	Average Weekday Rate (parking spaces/unit land use)	Quantity	Unit	Parking Spaces
Office	710	General Office Building	1.95 per 1000 sq. ft. GFA	150,198	sq. ft.	293
Warehouse	150	Warehousing	0.37 per 1000 sq. ft. GFA	85,120	sq. ft.	32
Data Hall 1	150	Warehousing	0.37 per 1000 sq. ft. GFA	215,525	sq. ft.	80
	710	General Office Building	1.95 per 1000 sq. ft. GFA	10,104	sq. ft.	20
Data Hall 2	150	Warehousing	0.37 per 1000 sq. ft. GFA	215,525	sq. ft.	80
	710	General Office Building	1.95 per 1000 sq. ft. GFA	10,104	sq. ft.	20
Data Hall 3	150	Warehousing	0.37 per 1000 sq. ft. GFA	215,525	sq. ft.	80
	710	General Office Building	1.95 per 1000 sq. ft. GFA	10,104	sq. ft.	20
Data Hall 4	150	Warehousing	0.37 per 1000 sq. ft. GFA	215,525	sq. ft.	80
	710	General Office Building	1.95 per 1000 sq. ft. GFA	10,104	sq. ft.	20
Data Hall 5	150	Warehousing	0.37 per 1000 sq. ft. GFA	215,525	sq. ft.	80
	710	General Office Building	1.95 per 1000 sq. ft. GFA	10,104	sq. ft.	20
Retail	822	Strip Retail Plaza (<40k)	2.79 per 1000 sq. ft. GFA	39,250	sq. ft.	110
<b>Total Average Weekday Parking Demand</b>						<b>935</b>

Based on ITE Parking Generation, 6<sup>th</sup> Edition, the average weekday peak parking demand for the proposed development is 935 parking spaces. The proposed development is requesting to provide 1,154 parking spaces, which results in providing 23% or 219 more parking spaces than the average weekday peak parking demand would require.

The number of parking spaces proposed by the development meets and exceeds the anticipated parking demand as determined in accordance with ITE Parking Generation, 6<sup>th</sup> Edition for the analyzed peak period.



**When compared to the ITE parking demand estimations, if 1,936 parking spaces were provided, as required by Code, it is anticipated that 52% or 1,001 parking spaces would be vacant during the peak period of parking demand for the proposed development.**

#### 4.2 NATURE OF THE PROPOSED SITE OPERATION

The proposed development is comprised of office uses, warehouse uses, retail uses, and data halls. The City of Mesa *Code of Ordinances* and the *ITE Parking Generation, 6<sup>th</sup> ed.*, specify uses for all except the data hall use. As mentioned in previous sections, the most similar comparable use for data hall was primarily considered to be warehouse.

Warehouses are used for storing goods and are utilized by manufacturers, importers, exporters, wholesalers, transport businesses, customs, and other logistics and supply chain entities. Warehouses typically require a significantly larger workforce than data halls to manage their operations. Despite the similar exterior appearance and large physical spaces characteristic of these two uses, data halls and warehouses have distinct operational differences.

Data halls house servers, storage systems, and networking equipment, with their primary function being the management, storage, and processing of large amounts of data. The site operations of data halls often involve substantial automation and remote monitoring, minimizing the need for on-site staff. Given the disparity in staffing needs between warehouses and data halls, the warehouse parking ratios provided by the City of Mesa and ITE overestimate the parking demand for data halls.

Therefore, the nature of the proposed site operations specific to data halls were evaluated to more accurately estimate the parking demand to adequately serve the use without providing an overabundance of parking.

As mentioned throughout the report, the proposed data halls consist of office and warehouse/storage areas. Project Borealis' experience with data halls has led to the conclusion that providing 0.20 parking spaces per 1,000 square feet for the warehouse/storage areas sufficiently meets the parking demand of the facility.

The proposed parking demand calculations based on the nature of site operations are shown in **Table 3**.



**Table 3 – Proposed Site Operation Parking Demand**

Use		Minimum Standard	Quantity	Unit	Parking Spaces
Office	General offices, retail, and services	1 per 375 sq. ft.	150,198	sq. ft.	401
Warehouse	Warehousing and Storage	1 per 900 sq. ft.	85,120	sq. ft.	95
Data Hall 1	Warehousing and Storage	0.20 per 1000 sq. ft.	215,525	sq. ft.	44
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 2	Warehousing and Storage	0.20 per 1000 sq. ft.	215,525	sq. ft.	44
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 3	Warehousing and Storage	0.20 per 1000 sq. ft.	215,525	sq. ft.	44
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 4	Warehousing and Storage	0.20 per 1000 sq. ft.	215,525	sq. ft.	44
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Data Hall 5	Warehousing and Storage	0.20 per 1000 sq. ft.	215,525	sq. ft.	44
	General offices, retail, and services	1 per 375 sq. ft.	10,104	sq. ft.	27
Retail	General offices, retail, and services	1 per 375 sq. ft.	39,250	sq. ft.	105
<b>Total Site Operations Parking Demand</b>					<b>956</b>

Based on the nature of the proposed site operations, the parking demand for the proposed development is 956 parking spaces. The proposed development is requesting to provide 1,154 parking spaces, which results in providing 21% or 198 more parking spaces than the site operational parking demand would require.

The number of parking spaces proposed by the development meets and exceeds the anticipated parking demand as anticipated by the site operations.

When compared to the site operational parking demand estimations, if 1,936 parking spaces were provided, as required by Code, it is anticipated that 51% or 980 parking spaces would be vacant during the peak period of parking demand for the proposed development.

## 5.0 SUMMARY

The proposed development provides 1,154 parking spaces. The City of Mesa Code of Ordinances requires 1,936 parking spaces. Estimated parking demand for the use is calculated based on parking generation studies from the Institute for Transportation Engineers (ITE) and proposed site operations.



- Based on *ITE Parking Generation, 6<sup>th</sup> ed.*, the provided parking exceeds the average weekday peak parking demand by 23% or 219 parking spaces. **When compared to the ITE parking demand estimations, if 1,936 parking spaces were provided, as required by Code, it is anticipated that 52% or 1,001 parking spaces would be vacant during the peak period of parking demand for the proposed development.**
- Based on the nature of the proposed site operations, the provided parking exceeds the parking demand by 21% or 198 parking spaces. **When compared to the site operational parking demand estimations, if 1,936 parking spaces were provided, as required by Code, it is anticipated that 51% or 980 parking spaces would be vacant during the peak period of parking demand for the proposed development.**

Based on *ITE Parking Generation, 6<sup>th</sup> ed.* and the nature of the proposed operation, 1,154 parking spaces is anticipated to adequately serve the use. The parking demand generated by the project is not anticipated to exceed the capacity. **Therefore, this parking study demonstrates that the anticipated parking demand of the proposed development can be fully parked on-site with 1,154 parking spaces provided.**

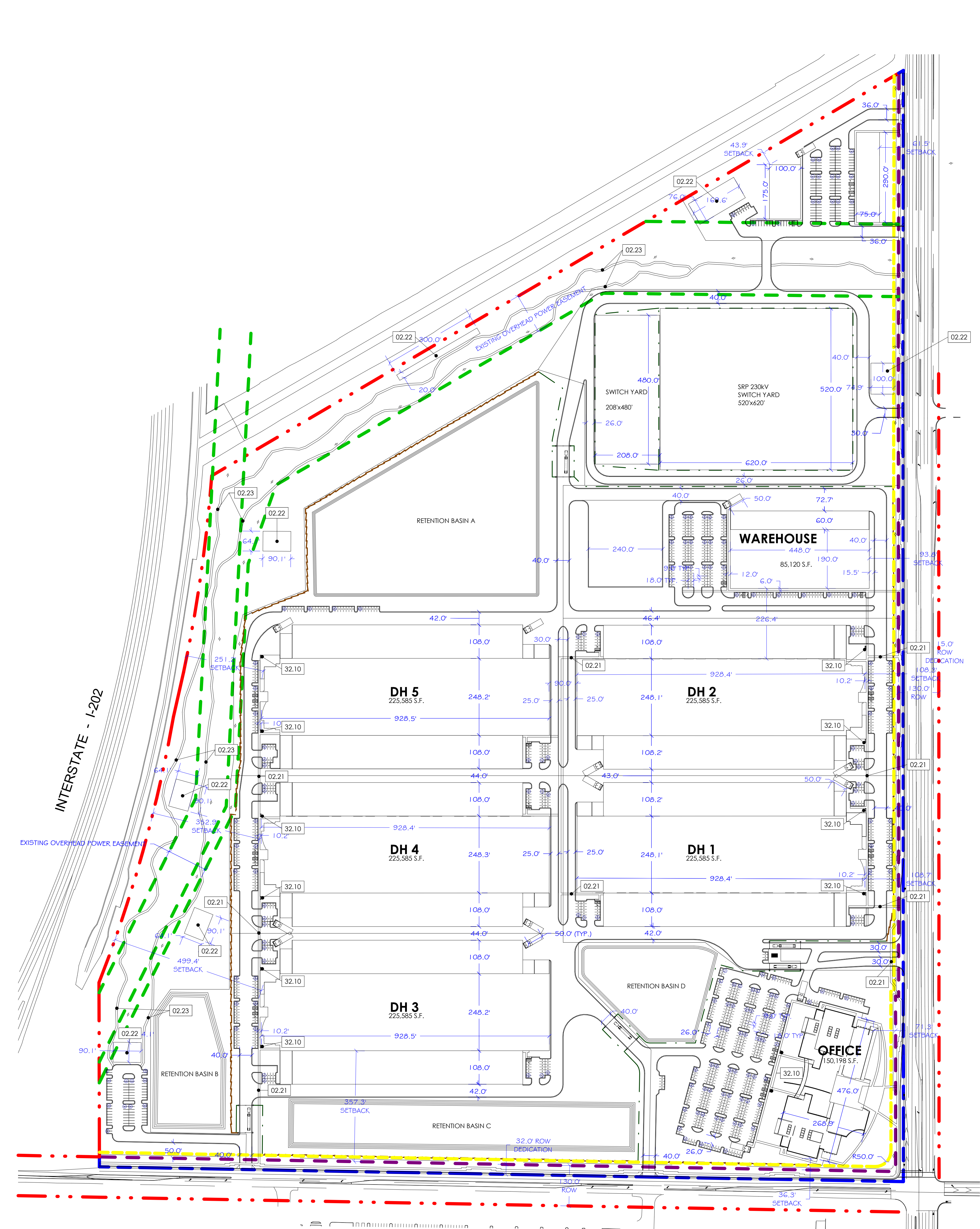
**Table 4 – Parking Summary**

Use	Provided Parking	City of Mesa Code	ITE ParkGen, 6th Ed.	Site Operations
Office	405	401	293	401
Warehouse	184	95	32	95
Data Hall 1	60	240	80	44
	27	27	20	27
Data Hall 2	60	240	80	44
	27	27	20	27
Data Hall 3	60	240	80	44
	27	27	20	27
Data Hall 4	60	240	80	44
	27	27	20	27
Data Hall 5	58	240	80	44
	27	27	20	27
Retail	132	105	110	105
<b>Total Parking Spaces</b>	<b>1,154</b>	<b>1,936</b>	<b>935</b>	<b>956</b>

# ATTACHMENT A – PROPOSED SITE PLAN



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KEYNOTE LEGEND	
02.21	TYPICAL AT ALL PEDESTRIAN CROSSINGS, - GRAY W/ EXPOSED AGG. CONC. FINISH FWD WALKWAY
02.22	PUBLIC AMENITY GATHERING SPACE
02.23	PUBLIC AMENITY BIKE PARK & TRAIL
32.10	BIKE RACK

**PROJECT DATA**

PROPOSED ZONING: LI  
 APN#: 304-31-141

GROSS SITE AREA: 6,933,336 SF (159.17 AC)  
 TOTAL BUILDING AREA: 1,329,026 SF  
 BUILDING COVERAGE: 19.2%  
 LOT COVERAGE: 51.8%  
 (IMPERVIOUS SURFACES)

COMMON OPEN SPACE REQUIRED:

OFFICE	150,198 SF @ 1%: 1,502 SF
WAREHOUSE	85,120 SF @ 1%: 852 SF
DATA HALL 1	225,585 SF @ 1%: 2,256 SF
DATA HALL 2	225,585 SF @ 1%: 2,256 SF
DATA HALL 3	225,585 SF @ 1%: 2,256 SF
DATA HALL 4	225,585 SF @ 1%: 2,256 SF
DATA HALL 5	225,585 SF @ 1%: 2,256 SF
RETAIL	39,250 SF @ 1%: 218 SF

TOTAL COMMON OPEN SPACE REQUIRED: 13,852 SF  
 TOTAL COMMON OPEN SPACE PROVIDED: 40,332 SF

**OFFICE**

BUILDING AREA: LEVEL 1 76,731 SF  
 LEVEL 2 73,467 SF  
 TOTAL: (150,198 SF) @ 1/375 SF: 401 SPACES

**PARKING REQUIRED**

TOTAL PARKING REQUIRED: 401  
 PROVIDED: 405  
 ACCESSIBLE PARKING REQUIRED: 9  
 PROVIDED: 9

**WAREHOUSE**

BUILDING AREA: (85,120 SF) @ 1/900 SF: 227 SPACES

**PARKING REQUIRED**

CODE REQUIRED: 227 PARKING STUDY REQ'D: 10  
 PROVIDED: 184  
 ACCESSIBLE PARKING REQUIRED: 6  
 PROVIDED: 6

**DATA HALL 1**

OFFICE AREA: (110,104 SF) @ 1/375 SF: 27 SPACES  
 WAREHOUSE: (215,525 SF) @ 1/900 SF: 240 SPACES  
 TOTAL BUILDING AREA: 225,585 SF

**PARKING REQUIRED**

CODE REQUIRED: 267 PARKING STUDY REQ'D: 55  
 PROVIDED: 87  
 ACCESSIBLE PARKING REQUIRED: 4  
 PROVIDED: 4

**DATA HALL 2**

OFFICE AREA: (110,104 SF) @ 1/375 SF: 27 SPACES  
 WAREHOUSE: (215,525 SF) @ 1/900 SF: 240 SPACES  
 TOTAL BUILDING AREA: 225,585 SF

**PARKING REQUIRED**

CODE REQUIRED: 267 PARKING STUDY REQ'D: 55  
 PROVIDED: 87  
 ACCESSIBLE PARKING REQUIRED: 4  
 PROVIDED: 4

**DATA HALL 3**

OFFICE AREA: (110,104 SF) @ 1/375 SF: 27 SPACES  
 WAREHOUSE: (215,525 SF) @ 1/900 SF: 240 SPACES  
 TOTAL BUILDING AREA: 225,585 SF

**PARKING REQUIRED**

CODE REQUIRED: 267 PARKING STUDY REQ'D: 55  
 PROVIDED: 87  
 ACCESSIBLE PARKING REQUIRED: 4  
 PROVIDED: 4

**DATA HALL 4**

OFFICE AREA: (110,104 SF) @ 1/375 SF: 27 SPACES  
 WAREHOUSE: (215,525 SF) @ 1/900 SF: 240 SPACES  
 TOTAL BUILDING AREA: 225,585 SF

**PARKING REQUIRED**

CODE REQUIRED: 267 PARKING STUDY REQ'D: 55  
 PROVIDED: 87  
 ACCESSIBLE PARKING REQUIRED: 4  
 PROVIDED: 4

**DATA HALL 5**

OFFICE AREA: (110,104 SF) @ 1/375 SF: 27 SPACES  
 WAREHOUSE: (215,525 SF) @ 1/900 SF: 240 SPACES  
 TOTAL BUILDING AREA: 225,585 SF

**PARKING REQUIRED**

CODE REQUIRED: 267 PARKING STUDY REQ'D: 55  
 PROVIDED: 85  
 ACCESSIBLE PARKING REQUIRED: 4  
 PROVIDED: 4

**RETAIL**

BUILDING AREA (RETAIL 1) 21,750 SF + (RETAIL 2) 17,500 SF  
 TOTAL: 39,250 @ 1/375 SF: 105 SPACES

**PARKING REQUIRED**

TOTAL PARKING REQUIRED: 105  
 PROVIDED: 132  
 ACCESSIBLE PARKING REQUIRED: 5  
 PROVIDED: 6

**SITE LEGEND**

- - - - - PROPERTY LINE
- - - - - PROPERTY LINE - RIGHT-OF-WAY ADJUSTED
- - - - - SETBACK
- - - - - RIGHT-OF-WAY
- - - - - ELECTRICAL EASEMENT

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 CONSTRUCTION**  
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**CONFIDENTIAL**  
 NOVVA Holdings, LLC  
 MESA, ARIZONA

MARK	DESCRIPTION	Revision Date

**AE2023.073**  
**SITE PLAN - OVERALL**  
 DATE: 06.04.2024  
 SHEET #:  
**PRO01**  
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FORMAL DESIGN REVIEW