

October 30, 2023

Ms. Gabriela Marks
Marks Architects
2643 4th Ave.
San Diego, CA 92103

Subject: Jack in the Box Carson Drive-Thru Queuing Analysis (JN 0037-0049)

Dear Ms. Marks

Trames Solutions, Inc. is pleased to provide the following drive-thru lane assessment for the proposed Jack in the Box restaurant. The project consists of constructing a 1,885 sf Jack in the Box restaurant with a drive-thru. The site is located on the corner of E. Radbard St. and Central Ave. in the City of Carson.

INTRODUCTION

Attachment "A" contains the site plan for proposed 1,885 sf Jack in the Box restaurant. As indicated on the site plan, the drive-thru lane can accommodate approximately 10 vehicles. The intent of this analysis is to determine if the proposed drive-thru capacity can accommodate the anticipated drive-thru queues during the peak periods.

EMPIRICAL DATA COLLECTION

In order to determine the potential queuing distance of the proposed drive-thru lane, a similar Jack-in-the-Box restaurant has been surveyed to determine the maximum queues during the peak hours (6-8 AM, 11:30-1:30 PM, and 5-7 PM). Attachment "B" contains the drive-thru survey worksheets. The following location was evaluated:

Jack in the Box – 1,260 sf
23813 Avalon Blvd.
Carson, CA

Based on the observed queues, 6 vehicles were the maximum amount within the drive-thru lane at 12:10 PM. It should be noted that this represents the maximum queue observed at the survey site and the observation only occurred once during the survey period.

DRIVE-THRU ANALYSIS / RECOMMENDATIONS

A drive-thru factor was determined by correlating the square footage for the surveyed restaurant with the maximum observed queues as shown below:

<u>Location</u>	<u>Maximum Queue</u>	<u>Square Footage</u>	<u>Drive-Thru Factor</u>
Jack in the Box	6 Vehicles	1.260 tsf	4.76 veh/tsf

By applying the drive-thru factor to the proposed project, a theoretical maximum queue of 9 vehicles has been determined ($1.885 \text{ tsf} * 4.76 \text{ veh/tsf} = 9 \text{ vehicles}$). The proposed project would have enough stacking for approximately 10 vehicles within the drive-thru lane. Therefore, during the occasional peak periods, the drive-thru lane is anticipated to not only accommodate the peak queues but have room for up to one additional vehicle.

CONCLUSION

The drive-thru analysis indicates that the site plan can accommodate the drive-thru needs of the restaurant and is not anticipated to impede the flow of the adjacent drive aisle. It should be noted that the analysis presented above represents a conservative assessment of the operations at the drive-thru for the following reasons:

1. The analysis is based on the maximum queues surveyed at the existing locations. These maximums occur infrequently. On average, the observed queues were considerably less.
2. The analysis periods represent the busiest time for the restaurant. At other times of the day, the queues are not anticipated to be as long.

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If you have any questions, please do not hesitate to call me at (949) 244-2436.

Trames Solutions, Inc.



Scott Sato, P.E.
Vice President

Attachment A – Site Plan

Attachment B – Empirical Drive-thru Survey Worksheets

ATTACHMENT A

SITE PLAN

SITE LEGEND

	PROPERTY BOUNDARY LINE		PROPOSED SITE LIGHTING
	EXISTING EASEMENT		BUILDING ENTRANCE
	PROPOSED EASEMENT		WHEEL STOP
	PROPOSED ASPHALT PAVING		ACCESSIBLE PARKING SPACES
	PROPOSED CONCRETE PAVING		BIKE RACK
	EXISTING SIDEWALK		PROPOSED TRANSFORMER LOCATION
	PROPOSED SIDEWALK		PROPOSED WATER METER LOCATION
	EXISTING CURB AND GUTTER		PROPOSED GREASE INTERCEPTOR LOCATION
	PROPOSED CURB AND GUTTER		NUMBER OF PARKING STALLS
	CURB RAMP		
	EXISTING STREET LIGHT		

GENERAL CONDITIONS
 GENERAL CONTRACTOR SHALL NOTE THAT ALL WORK TO BE DONE SUCH AS EXCAVATIONS, TRENCHES, CAISSONS, WALLS, ETC., AS INDICATED ON DRAWINGS, IS SHOWN WITHOUT KNOWLEDGE OF UNDERGROUND UTILITIES ON THIS PARTICULAR SITE. THE ARCHITECT AND OWNER ASSUME NO RESPONSIBILITY FOR DETERMINING THEIR LOCATION, SIZE, DEPTH, OR HAZARD.

- GENERAL NOTES**
- REFER TO THE ACCESSIBILITY AND DIMENSIONING PLAN, SHEET SD1.1, FOR HORIZONTAL CONTROL INFORMATION AND JOINT DETAILING.
 - GENERAL CONTRACTOR SHALL PROVIDE, AS REQUESTED BY CONSTRUCTION MANAGER, 'COMING SOON' SIGNAGE
 - ALL SITE CONCRETE PAVING SHALL BE SPRAYED WITH A CURING COMPOUND AS SOON AS CONCRETE IS SET UP.
 - GENERAL CONTRACTOR SHALL PROVIDE 12"x12" LANDSCAPE PAVERS AT WINDOWS WHEN LANDSCAPE IS PROVIDED AROUND WINDOW AREAS.
 - GENERAL CONTRACTOR SHALL PROVIDE ALL ADA SIGNS AND SIGNAGE POLES. SIGNS FOR ONLINE ORDER PICKUP AND DRIVE-THRU WAITING SIGNS SHALL BE OWNER FURNISHED. ALL SIGNAGE SHALL BE INSTALLED BY THE GENERAL CONTRACTOR.

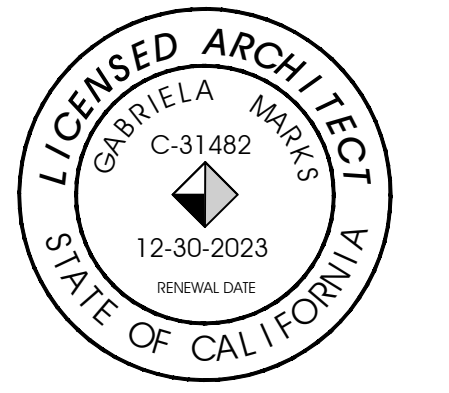
PAVING SECTION THICKNESS			
PAVEMENT AREA	THICKNESS OF ASPHALT PAVING	THICKNESS OF CLASS II AGGREGATE BASE	THICKNESS OF CONCRETE PAVING
VEHICLE PARKING			
MAIN AISLES			
DRIVE-THRU LANE			SEE NOTE

NOTE:
 1. CONCRETE PAVING TO BE REINFORCED W/ 6# - W1.4M1.4 W.W.M. AT MID DEPTH, TYPICAL UNLESS OTHERWISE NOTED.
 2. SEE SOILS REPORT UNDER SEPARATE COVER FOR ADDITIONAL INFORMATION.

- KEY NOTES**
- INSTALL ASPHALT PAVING. REFER TO THE PAVING SECTION THICKNESS TABLE THIS SHEET AND GEOTECHNICAL RECOMMENDATIONS UNDER SEPARATE COVER.
 - INSTALL CONCRETE PAVING. REFER TO THE PAVING SECTION THICKNESS TABLE THIS SHEET AND GEOTECHNICAL RECOMMENDATIONS UNDER SEPARATE COVER.
 - PROVIDE THICKENED CONCRETE EDGE AT PAVING INTERFACE
 - CONSTRUCT CONCRETE CURB AT ASPHALT PAVING
 - CONSTRUCT CONCRETE CURB AT CONCRETE PAVING
 - CONSTRUCT MONOLITHIC CONCRETE CURB AND SIDEWALK
 - NOT USED.
 - CONSTRUCT CONCRETE CURB AT BUILDING SIDE OF DRIVE-THRU LANE
 - PROPOSED DRIVE-THRU WAITING SIGN
 - PROPOSED ONLINE ORDER PICKUP SIGN
 - PROPOSED DRIVE-THRU WASTE CHUTE
 - INSTALL 4-INCH (MIN) THICK CONCRETE SIDEWALK WITH LIGHT BROOM FINISH.
 - INSTALL U-BAR BIKE RACK(S)
 - CONSTRUCT FLARE SIDED CURB RAMP
 - CONSTRUCT IN-LINE CURB RAMP
 - PROVIDE RAMP AND LANDINGS AT HANDICAP ACCESSIBLE PARKING SPACES. SEE
 - CONSTRUCT DELIVERY RAMP
 - PROVIDE PUBLIC RIGHT-OF-WAY ACCESS PER THE MUNICIPALITY STANDARDS.
 - INSTALL LIGHT POLE BASE POLE AND FIXTURE REQUIREMENTS.
 - INSTALL CONCRETE WHEEL STOP TYPICAL AT HANDICAP SPACES AND STANDARD SPACES FRONTING 6-FOOT OR LESSER WIDTH SIDEWALKS
 - INSTALL BARRIER POSTS AT PREVIEW BOARD, MENU BOARD, AND PERIPHERAL TO BUILDING CORNERS
 - INSTALL DETECTOR LOOP FOR ORDER BOARD
 - INSTALL DETECTOR LOOP AT PICK UP WINDOW
 - NOT USED.
 - INSTALL PREVIEW BOARD
 - INSTALL ORDER BOARD AND WEATHER PROTECTION CANOPY
 - CONSTRUCT MASONRY BLOCK TRASH ENCLOSURE; SEE DETAIL 1/SD2.0
 - SITE DRIVE-THRU SIGN UNDER SEPARATE COVER.
 - SITE THANK YOU/DO NOT ENTER SIGN UNDER SEPARATE COVER.
 - PROPOSED GAS METER LOCATION. CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER. BOLLARDS INSTALLED PER PROVIDER STANDARDS.
 - INSTALL ACCESSIBLE PARKING SIGN WITH VAN PLACARD.
 - PROPOSED SWITCH GEAR LOCATION. CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER.
 - APPLY INTERNATIONAL SYMBOL OF ACCESSIBILITY DECAL ON DOOR.
 - NOT USED.
 - PAINT ACCESSIBLE PARKING SYMBOLS, TEXT, AND DIAGONALS
 - PAINT TRAFFIC DIRECTIONAL ARROWS, SOLID WHITE AND TYPICAL AS SHOWN.
 - EXISTING TRANSFORMER LOCATION.
 - PROPOSED GREASE INTERCEPTOR. CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITY PROVIDER.
 - EXISTING WATER METER LOCATION.
 - MONUMENT SIGN PROPOSED.

architecture
 interior design
 retail
 restaurants
 space planning
 master planning
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 casp

2643 fourth ave.
 san diego ca 92103
 619-702-9448



emarks architects 2023
 ALL REPORTS, PLANS AND DOCUMENTS PREPARED BY MARKS ARCHITECTS SHALL REMAIN THE PROPERTY OF MARKS ARCHITECTS AND IS INTENDED FOR USE FOR THIS SPECIFIC PROJECT ONLY.

SITE PLAN REVIEW	06.21.23

MK TYPE: 11A
 JIB #: J5502
 ADDRESS: 17625 CENTRAL AVE.
 CARSON, CA. 90746

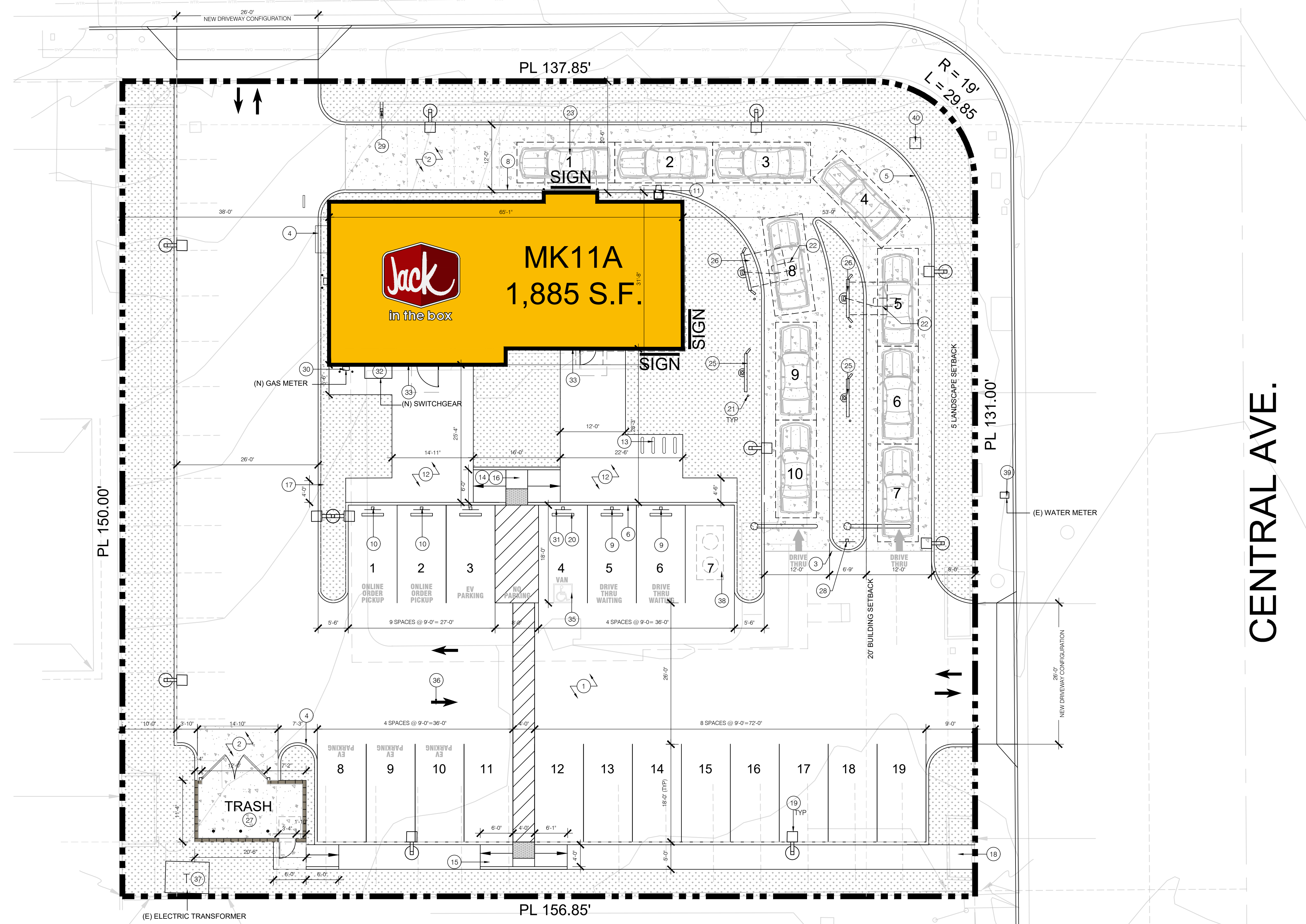


SITE PLAN

SD1.0

E. RADBARD ST.

CENTRAL AVE.



PARKING REQUIREMENTS
 PARKING RATIO FOR CITY OF CARSON FOLLOWS:

COMMERCIAL:
 1 SPACE PER 200 S.F. OF GROSS FLOOR AREA = 1,885 S.F. / 200
 TOTAL PARKING REQUIRED: 9.42 SPACES
 ACCESSIBLE PARKING REQUIRED: 1 SPACE
 EV CAPABLE PARKING SPACES REQUIRED: 4 SPACE

ACCESSIBLE PARKING PROVIDED: 1 SPACES
 EV CAPABLE PARKING PROVIDED: 4 SPACES
 STANDARD PARKING SPACES PROVIDED: 14 SPACES
 TOTAL PARKING PROVIDED: 19 SPACES

1" = 10' SITE PLAN

ATTACHMENT B

DRIVE-THRU SURVEY WORKSHEETS

Site Plan Notes

- ① SELECTION DISPLAY.
- ② INTERCOM STATION.
- ③ STANDARD POLE SIGN.
- ④ PLANTER W/2" x 4" REDWOOD HEADER.
- ⑤ REFUSE CONTAINER, SEE DETAIL. (A-A)
- ⑥ LANDSCAPE LIGHTS. (SYMBOL □)
- ⑦ CONCRETE DRIVE AND CONCRETE CURB.
- ⑧ PLANTER WITH 6" CONCRETE CURB.
- ⑨ EXISTING CONCRETE APPROACH TO REMAIN.
- ⑩ EXISTING CONCRETE APPROACH TO BE REMOVED.
- ⑪ CONCRETE SIDEWALK.
- ⑫ EXISTING CONCRETE SIDEWALK.
- ⑬ 4" CONCRETE SIDEWALK.
- ⑭ STERILIZE SOIL WITH WEED KILLER. SUB-BASE COMPACTED TO 4" MIN. ASPHALT PAVING COMPACTED TO 2" MIN. LIGHT FOG SEAL.
- ⑮ CENTERLINE OF 4" WIDE WHITE PAINTED LINES.
- ⑯ CENTERLINE OF 10" WIDE WHITE PAINTED LINES.
- ⑰ PAINTED ARROWS @ 30' O.C.-WHITE.
- ⑱ ALL CONCRETE WORK ON PUBLIC PROPERTY TO COMPLY WITH ALL LOCAL STANDARDS.

General Conditions

GENERAL CONTRACTORS SHALL NOTE THAT ALL WORK TO BE DONE SUCH AS EXCAVATIONS, TRENCHES, CAISSONS, WALLS, ETC. AS INDICATED ON DRAWINGS IS SHOWN WITHOUT KNOWLEDGE OF UNDERGROUND UTILITIES ON THIS PARTICULAR SITE. THE ARCHITECT AND OWNER ASSUME NO RESPONSIBILITY FOR DETERMINING THEIR LOCATION, SIZE, DEPTH OR HAZARD.

CONST TYPE: WOOD FRAME

PROP. ZONE: C-1

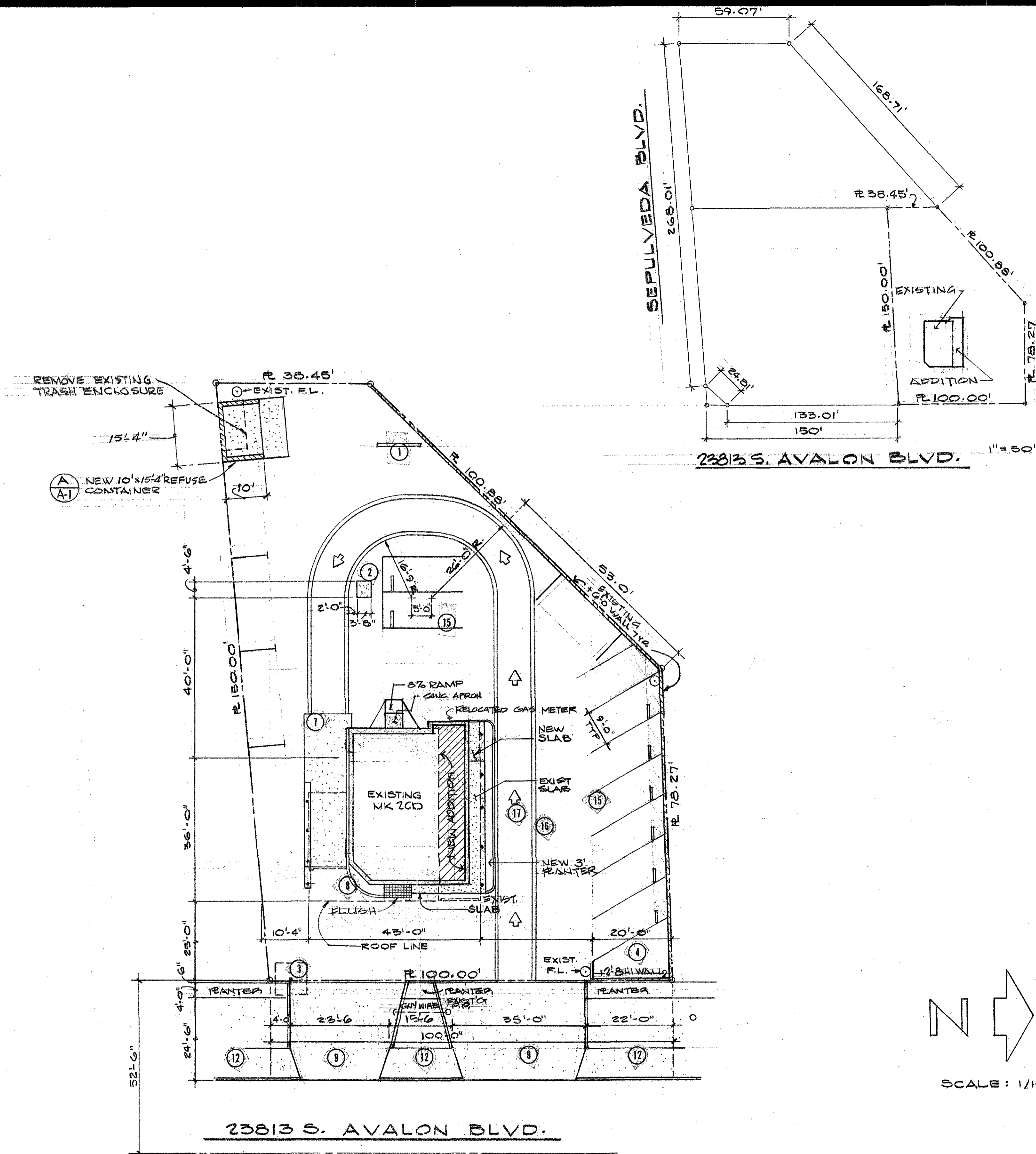
FIRE ZONE: _____

Legal

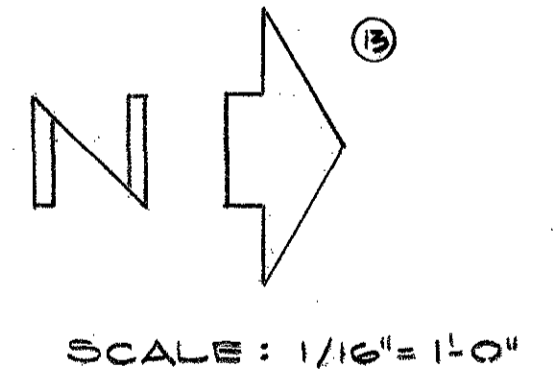
PORTION OF
LOT NO. 230, TRACK 11468, BOOK
254, PAGES 1 TO 4, COUNTY OF
LOS ANGELES, CALIF.

Revisions

REDRAWN & CHGD TO ZCD 8-23-72 RE
ADDED ENTRY & REAR RAMP AHP 10-17-72
CHANGED TO ZC 30 & 8-15-75 AJP
NEW TRASH ENCLOSURE AHP 9-18-75



NOTE:
NO STRUCTURE SHALL
BE ERRECTED OR PLACED
WITHIN 20FT OF THE
EAST PROP. LINE ...



UNLESS LABELED
'NEW' ALL WORK
SHOWN IS EXISTING

NOTE !! THIS SITE PLAN IS FOR REFERENCE ONLY !! NO SITE WORK IS BEING DONE !!

ORIGINAL DATE: 10-28-65 LAST REVISION: 8-15-75
 LOCATION: 05-02-0273 SAVALON & SEPULVEDA GUSTAVESON PARKER LOS ANGELES
1 Foodmaker, Inc.
 P.O. BOX 783, SAN DIEGO, CALIF. 92112
Jack-in-the-Box
 DONALD B. GRASER, ARCHITECT

DRIVE THRU SURVEY

LOCATION: Jack In The Box, 23813 Avalon Blvd
 CITY: Carson, CA

DATE: 10/24/2023
 DAY: Tuesday

TIME	PickUp Window To Order Board	Order Board to DT Entrance	DT Entrance into Parking Lot	TOTAL
6:00	0	0	0	0
6:05	0	0	0	0
6:10	0	0	0	0
6:15	0	0	0	0
6:20	0	0	0	0
6:25	0	0	0	0
6:30	0	0	0	0
6:35	0	0	0	0
6:40	0	1	0	1
6:45	0	0	0	0
6:50	0	1	0	1
6:55	2	0	0	2
7:00	3	0	0	3
7:05	1	0	0	1
7:10	1	0	0	1
7:15	0	0	0	0
7:20	1	0	0	1
7:25	1	0	0	1
7:30	0	0	0	0
7:35	0	0	0	0
7:40	1	1	0	2
7:45	0	1	0	1
7:50	1	0	0	1
7:55	0	0	0	0
8:00	1	0	0	1

Max

3

DRIVE THRU SURVEY

LOCATION: Jack In The Box, 23813 Avalon Blvd
 CITY: Carson, CA

DATE: 10/24/2023
 DAY: Tuesday

TIME	PickUp Window To Order Board	Order Board to DT Entrance	DT Entrance into Parking Lot	TOTAL
11:30	0	1	0	1
11:35	1	0	0	1
11:40	3	1	0	4
11:45	2	0	0	2
11:50	0	1	0	1
11:55	2	1	0	3
12:00	2	1	1	4
12:05	3	0	0	3
12:10	2	1	3	6
12:15	2	0	0	2
12:20	2	0	0	2
12:25	1	0	0	1
12:30	0	0	0	0
12:35	0	0	0	0
12:40	3	0	0	3
12:45	3	0	0	3
12:50	0	0	0	0
12:55	1	1	1	3
13:00	2	1	0	3
13:05	3	0	0	3
13:10	1	1	0	2
13:15	0	0	0	0
13:20	1	0	0	1
13:25	1	0	0	1
13:30	2	0	0	2

Max

6

DRIVE THRU SURVEY

LOCATION: Jack In The Box, 23813 Avalon Blvd
 CITY: Carson, CA

DATE: 10/24/2023
 DAY: Tuesday

TIME	PickUp Window To Order Board	Order Board to DT Entrance	DT Entrance into Parking Lot	TOTAL
17:00	1	0	0	1
17:05	0	0	0	0
17:10	1	0	0	1
17:15	2	0	0	2
17:20	2	0	0	2
17:25	2	1	0	3
17:30	1	1	0	2
17:35	0	1	0	1
17:40	1	0	0	1
17:45	0	1	0	1
17:50	0	1	0	1
17:55	0	0	0	0
18:00	0	0	0	0
18:05	1	1	0	2
18:10	2	0	0	2
18:15	0	0	0	0
18:20	1	0	0	1
18:25	2	0	0	2
18:30	2	0	0	2
18:35	2	0	0	2
18:40	2	1	1	4
18:45	3	1	0	4
18:50	2	0	0	2
18:55	0	1	0	1
19:00	0	1	0	1

Max

4