SLS Consulting, Inc.
260 Palermo Avenue
Coral Gables, Florida 33134
(305) 461-9852
www.slsfire.com

ENGINEERED LIFE SAFETY SYSTEM VALIDATION REPORT PLAZA DEL PRADO CONDOMINIUM AVENTURA, FLORIDA

Prepared For:

Plaza Del Prado Condominium
Attn: **Lourdes Dupeiron**
18071 Biscayne Blvd.
Aventura, Fl. 33160

February 20, 2018
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ELSS #118

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INTRODUCTION

SLS Consulting, Inc. (SLS) has prepared this *Engineered Life Safety System* validation report for Plaza Del Prado Condominium which is an existing high-rise building consisting of two towers located at 18011 – 18041 and 18051 - 18081 Biscayne Blvd, Aventura, FL 33160. An *Engineered Life Safety System* is an engineering analysis of an existing building which recommends implementation of additional safety features and fire protection systems to provide a level of safety acceptable to the authority having jurisdiction(AHJ) in lieu of a particular requirement. In this project, the particular requirement is the installation of an automatic sprinkler system that provides 100% protection of the building. The authority having jurisdiction will determine the acceptable level of safety and must approve the *Engineered Life Safety System* before it can be implemented.

The Florida Fire Prevention Code (FFPC) states that an automatic sprinkler system is required for an existing high-rise building as follows:" The *entire building shall be required to be protected by an approved automatic sprinkler system by December 31, 2019 or comply with the requirement of FFPC, NFPA 101, Chapter 31. All high-rise buildings, other than those meeting 31.3.5.11.2 or 31.3.5.11.3, shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 31.3.5.2 not later than December 31, 2019."*

It is the professional opinion of SLS Consulting, Inc. that the requirement above is the best protection for life safety and property protection. However, the FFPC allows for an alternate method of protection for existing high-rise buildings as stated below. An *Engineered Life Safety System* can be developed and implemented in lieu of the installation of an automatic sprinkler system in existing high-rise buildings.

FFPC, NFPA 101, Section 31.3.5.11.3 states the following:

> *An automatic sprinkler system shall not be required in buildings having an approved, engineered life safety system.*

Therefore, this *Engineered Life Safety System* has been designed as permitted by code sections above.

APPLICABLE CODES

The major applicable codes for the project include, but are not limited to, the currently adopted editions of the following:

- **Fire Prevention/Life Safety Code**
  - FFPC *Florida Fire Prevention Code*
    NFPA 1 *Fire Code*
    NFPA 101 *Life Safety Code*
- **NFPA Standards**
  - NFPA 10 *Standard for Portable Fire Extinguishers*
  - NFPA 13 *Standard for the Installation of Sprinkler Systems*
  - NFPA 14 *Standard for the Installation of Standpipe and Hose Systems*

- NFPA 20 *Standard for Installation of Stationary Fire Pumps for Fire Protection*
- NFPA 70 *National Electrical Code*
- NFPA 72® *National Fire Alarm and Signaling Code*
- NFPA 80 *Standard for Fire Doors and Other Opening Protectives*
- NFPA 90A *Standard for the Installation of Air-Conditioning and Ventilating Systems.*
- NFPA 92 *Standard for Smoke Control Systems*
- NFPA 105 *Standard for Smoke Door Assemblies and Other Opening Protectives*
- NFPA 110 *Standard for Emergency and Standby Power Systems*

- **State Fire Marshal Standards**
  - FS 633 *Florida Statute - Fire Prevention and Control.*
  - FAC 69A *Florida Administrative Rules – State Fire Marshal*

PROJECT DESCRIPTION

Plaza Del Prado Condominium is composed of two existing 20-Story identical high-rises (there are no 13th floors). The buildings are located at 18011-18041 and 18051 - 18081 Biscayne Blvd, Aventura, FL 33160. The occupancy of this building is Apartment Occupancy with other uses described below. The two buildings each contain four cores with 2-hour separation between each core. The outer cores have five dwelling units per floor, while the inner cores have four units. Each core is provided with two stairwells and an elevator. Parking is provided by a two-story attached, open parking garage located at grade and one floor above. Part of the upper level of the parking garage contains a pool deck, tennis courts and an entry pavilion. There is no parking under the footprint of either tower.

Two items are covered in this report (1) A life safety survey and a professional analysis on the life safety conditions on the building and (2) a set of recommendations called the “Engineered Life Safety System” which upon approval by Miami/Dade Fire Department, become the required modifications and upgrades to be implemented.

Figure 1: Plaza Del Prado Condominium –South View

BUILDING SURVEY

Inspection(s) were conducted in order to assess the current conditions of the building. The inspection or survey conducted was not intended to be a line-by-line compliance inspection.

Table 1: General Classifications

General	Construction Type	Occupancy Classification	Hazard Classification
Classification	Type I	R-2, A-3	Ordinary

Means of Egress

Systems Analysis	Notes		
Number of Exits	**Does the minimum number of exits required comply with NFPA 101 Section 31.2.4?**	**Compliant**	**Non-Compliant**
Stairs	How many exit stairs are serving all floors?	8 Per Building / 2 Per Core	
Stairs	Are these exit stairs enclosed or open?	Enclosed	
Ground Floor	How many exits are provided on ground floor?	8	
Additional Notes			
Arrangements of Exits	**Does the overall arrangement of exits comply with the requirements by NFPA 101 Section 31.2.5?**	**Compliant**	**Non-Compliant**
Dwelling Units	Every dwelling unit shall have access to at least two separate & remotely located exits?	Compliant	Non-Compliant
Corridors	Dead end corridors shall not exceed 50 feet?	Compliant	Non-Compliant
Common Path	Common path of travel must be less than 50 feet for corridors with sprinklers and 35 feet for corridors without. Does this requirement appear to be in compliance?	Compliant	Non-Compliant
Travel Distance	The travel distance to the nearest exit from the dwelling unit door shall not exceed 150 feet?	Compliant	Non-Compliant
Travel Distance	The travel distance within the dwelling unit to corridor door shall not exceed 75 feet?	Compliant	Non-Compliant
Additional Notes	There is a south and a west stairwell, these two stairwells are located on opposite ends of the corridor. Exit signs were provided throughout the corridor.		

Exit Discharge	**Does the exit discharges of the building comply with the requirements by NFPA 101 Sections 7.7?**		**Compliant**	**Non-Compliant**	
Interior Exit Discharge	Yes / No	If yes does the level of discharge appear to be protected by an automatic sprinkler system or separated from non-sprinkled portion by fire barriers with 2-hr fire resistance ratings?	Yes	No	N/A
Additional Notes					
Residential Exit Access Corridors	**Does the corridor within the building appear to be provided with the required prescriptive fire resistance rating?**		**Yes**	**No**	
Air Transfer Openings	Are there any existing air transfer openings between the units and corridor?		Yes	No	
Additional Notes	Each unit is provided with an air transfer opening that has fusible links. These air transfer openings shall be sealed or provided with fire/smoke dampers which are to shut upon detection of smoke or fire.				
Additional Notes					
Doors and Hardware	**Are the doors in the means of egress in good condition, containing the proper hardware?**		**Yes**	**No**	
	Do residential doors appear to have a 20-min fire resistance rating?		Yes	No	
	Do stair doors appear to have a 90-min fire resistance rating?		Yes	No	
Exit Access Doors	Do corridor doors meet the requirements of section 31.3.6.2.3 which requires that doors opening onto exit access corridors shall be self-closing and self-latching?		Yes	No	
Additional Notes	SLS Consulting, Inc. did not complete a holistic study of doors for compliance with NFPA 80. All fire doors shall be inspected and tagged as compliant or replaced.				
Additional Notes	Based on site survey, the doors to ground floor sauna room and some stair doors do not appear to be self-latching. It is recommended to repair/replace door hardware so all doors within corridors are self-closing and self-latching.				
Delayed Egress/ Access Control	**Are there delayed egress or access-controlled locking mechanisms on any means of egress doors in the building? If yes do, they appear to be in compliance with code? If not in compliance, please specify why below.**			**Yes**	**No**
Additional Notes	There is card access on the door in lobby, however free egress is provided when exiting.				
Horizontal Exits	**Are there any horizontal exits within the building?**			**Yes**	**No**
Additional Notes					
Exit Passageway	**Are there any exit passageways within the building?**			**Yes**	**No**
Additional Notes					
Smoke-proof Enclosures	**Does the existing facility appear to contain smokeproof enclosures in accordance with sections 7.2.3?**			**Yes**	**No**
Additional Notes	Stair pressurization shall be provided in all exit stair enclosures that are not accessed by smokeproof enclosures.				

Fire Protection/ Life Safety Systems

Systems Analysis	Notes

Vertical Openings	**Do all vertical shafts and penetrations appear to conform to the requirements of section 8.6?**	**Yes**	**No**
Atriums	Are there any atriums within the building?	Yes	No
Additional Notes	The trash chute service access panels located in the stair enclosure are 2-hour fire rated.		
Hazard Rooms	**Do all hazard rooms appear to be enclosed in rated construction consistent with the requirements of Table 31.3.2.1.1 if the Florida Fire Prevention Code (FFPC)?**	**Yes**	**No**
Additional Notes	There are a number of hazardous rooms (i.e. laundry rooms, trash collection rooms, storage rooms, etc.) all of which appear to be enclosed in rated construction consistent with the requirements. As stated previously within this report an NFPA 80 study/survey of all doors within the building should be completed as required by the Florida Fire Prevention Code (FFPC).		
Smoke Compartmentation	**Does it appear the requirements specified in section 31.3.7 of NFPA 101 being met?**	**Yes**	**No**
Additional Notes	Smoke partitions are not required because the exits are not more than 50 ft apart.		
Fire Alarm System	**Does the existing fire alarm system appear to be in good operating condition and meet the requirements of 31.3.4.?**	**Yes**	**No**
Notification Type	**What is the type of audible notification provided for the fire alarm system?**	Voice	Horn
Additional Notes	The corridors are provided with complete smoke detection on the residential floors.		
Additional Notes	A system smoke detector will be provided inside each dwelling unit which will initiate a positive alarm sequence on the fire alarm system in accordance with ***NFPA 72 23.8.1.3 Positive Alarm Sequence.***		
Smoke Alarms	**Does it appear that each dwelling unit is provided with smoke alarms in compliance with 31.3.4.5?**	**Yes**	**No**

Locations	**Within Bedrooms**	**Outside Bedrooms**	**Living Rooms**	**Kitchen**	
Additional Notes	Based on several units surveyed there are smoke detectors located outside each bedroom. All existing sleeping rooms shall be provided with smoke alarms in compliance with FFPC NFPA 101 31.3.4.5 as modified by 31.3.4.5.4, which allows smoke alarms with 10-year lithium ion batteries.				
Sprinklers	**Is there an existing sprinkler system within the building?**			Yes	No

What Locations	Laundry Rooms	Mechanical Rooms	Storage Areas	Common Areas	Trash Chute	Trash Room	Dwelling Units
Additional Notes							

Standpipe System	Are there standpipes located within the building?	Yes	Where are they located within the building?	Within South & West Walls		
		No	Type of systems?	Wet	Dry	(Other):_____
Fire Hose Cabinets	Are there fire hose	Yes	How many per floor?	Two per floor		
		No				

	cabinets?						
Additional Notes	There is a standpipe system consisting of 2 standpipes per core with 6" in diameter, there are eight standpipes throughout the building. All hoses are to be removed as part of the ELSS.						
Public Safety Communication	**Does the building appear meet section 11.10 of the Florida Fire Prevention Code (FFPC) requiring that all buildings be provided with emergency responder radio coverage?**					**Yes**	**No**
Additional Notes	It is suggested that a public safety radio enhancement system be considered, but not required, in conjunction with the ELSS.						
Fire Pump	**Is there an existing fire pump?**	Yes	Type of Pump?	Details Patterson 500 GPM pump driven by a 50-horse power motor.	Floor(s) Located?	Ground	
		No	Electric		Pump Condition?	Good	
Smoke Control System	**What type of smoke control system is within the building?**				Active	Passive	None
Additional Notes							
Emergency Generator	**Is there an existing generator?**	Yes	Type	Does the emergency generator appear to be properly maintained, inspected, and tagged?	Yes	No	
		No	Natural Gas				
			Diesel				
Additional Notes	Each building has one emergency generator, they are located on the roof of each building and provide 187.5KVA with 150 KW of power.						
Elevators	Do the elevators appear to be in good operating condition with emergency power provided?	Yes	Are phase 1 and 2 capabilities provided?		Yes		
		No			No		
Additional Notes	Elevator shaft pressurization or elevator lobbies shall be provided to restrict the migration of smoke from floor to floor.						

Apartment Building Fire Safety Evaluations

While not required, SLS has provided a post remediation evaluation utilizing NFPA 101A as a benchmark to describe the condition in the facility as a residential occupancy.

Fire Safety Evaluation Worksheet for an Apartment Building
(Modified from NFPA 101A *Residential Board and Care FSES* for apartment buildings by SLS Consulting, Inc. – Provided for reference and validation purposes only).

Building Identification: Opal Towers West Condominium
Fire Protection Engineer: Michael Sheehan, P.E.

SAFETY PARAMETER VALUES – APARTMENT BUILDING (MODIFIED)

Safety Parameters	Parameter Values	
1. Construction		

Building Height / High Rise	Type V (000)	Type V (111)	Type III (200)	Type III (211)	Type IV (2HH)	Type III (200)	Type II (111)	Type II (222) & Type I
	-10	-4	-10	-2(0)[k]	-4(0)[k]	-8	0	2

2. Hazardous Areas	Double Deficiency	Single Deficiency	None or No Deficiency	
	-4(-7)[b,g]	0(-4)[g]	0	
3. Manual Fire Alarm	None or Incomplete	Manual Alarm		
		W/O F.D. Notification	W/ F.D. Notification	
	(2)[i]	2	3	
4. Smoke Detection & Alarm	None or Incomplete	Interconnected Systems		Total Building
		Corrs. & Common Spaces	Corrs. & Common Spaces, & Living Units	
	-4(0)[j]	3(0)[e]	4	6
5. Automatic Sprinklers	None or Incomplete	Corrs. & Public Spaces	Residential Units Only	Corrs., Hab., & Public Spaces	Total Building
	0	2(0)[c]	4(0)[c]	6	8

6. Separation of Residential Units and Exit Route from Other Spaces	None or Incomplete	Walls <30min		Walls ≥ 30min to < 1hr		Walls ≥ 1 hr.	
		Doors < 20 Min W/O Closer	Doors ≥ 20 Min W/O Closer	Doors < 20 Min W/ Closer	Doors ≥ 20 Min W/ Closer	Doors < 20 Min W/ Closer	Doors ≥ 20 Min W/ Closer
	-6	-2	0(-2)[b]	1(-2)[b]	2(-2)[b]	1(-2)[b]	4(-2)[b]
7. Exit System	None or Incomplete	Multiple Routes				Direct Exit
		Deficient	W/O Horiz. Exit	W/ Horiz. Exit	Smokeproof Enclosure	
	-6	-2	0	2	2	4

8. Exit Access (Serving Residential Units)	Max Dead End Is		No Dead End > 50ft and Travel				
	>100ft	>50 ft. or corridor common path >35 ft.	>200ft	>150 ft. to ≤ 200ft	>100 ft. to ≤ 150ft	>50 ft. to ≤ 100ft	≤ 50ft
	-6(0)[d]	-4(0)[d]	-2	-1	0	1	2
9. Interior Finish (Exit Access Corridors – Residential Floors	Flame-Spread Ratings						
	> 75 to ≤200		> 25 to ≤75		≤25		
	-3		-1		0		

10. Vertical Openings	Open or Incomplete Enclosure			Enclosed[h]	
	Thru 5 or More Floors	3-4 Floors	2 Floors	<1hr[f]	≥1hr[f]
	-10	-7	-2	0	1(0)[b]
11. Smoke Control (serving floors having board & care home units)	None	Smoke Barriers	Mechanically Assisted Systems		
			By Zone	By Unit	By Corridor
	0(2)[1]	2	3	3	4

[a] Use (-1 x height in stories) if building is fully sheathed with plaster, gypsum board, or similar materials but not <-2 if Parameter 5 is 8
[b] Use () if Parameter 1 is based on Type V (000), Type III (200), or
[f] ≥30 min in existing building
[g] Use () if hazardous area is on exit route or in refuge area serving group home unit.

Type II (000), if Note [a] does not apply, and if Parameter 5 is building is ≤ 4
[c] Use () if Parameter 1 is based on Type V (000), Type III (200), or Type II (000).
[d] Use () if Parameter 7 is -6
[e] Use () if Parameter 6 is based on "None or Incomplete", or "Walls or Doors" are ½-hr walls/20-min doors and Parameter 5 is building is ≤ 4
[h] Use () if Parameter 5 is ≥ 6
[i] Use () if Parameter 5 is 8
[j] Use () where exemptions of 31.3.7.1 through 31.3.7.5 (NFPA 101) apply

For SI units: 1ft = 0.3048

Individual Safety Evaluation – Apartment Buildings				
Safety Parameters	**Fire Control** (S_1)	**Egress Provided** (S_2)	**Refuge Provided** (S_3)	**General Fire Safety Provided** (S_4)
1. Construction	2		2	2
2. Hazardous Area	0	0 ÷ 2 = 0	0	0
3. Manual Fire Alarm	3 ÷ 2=1.5	3		3
4. Smoke Detection and Alarm	4 ÷ 2 = 2	4		4
5. Automatic Sprinklers	2	2 ÷ 2 = 1	2 ÷ 2 = 1	2
6. Separation of Living Units	4	4 ÷ 2 = 2	4	4
7. Exit System		2	2 ÷ 2 = 1	2
8. Exit Access		2		2
9. Interior Finish		0		0
10. Vertical Opening	1 ÷ 2 = .5	1	1	1
11. Smoke Control		0	0	0
Total	**S_1 = 12**	**S_2 = 15**	**S_3 = 9**	**S_4 = 20**

MANDATORY SAFETY REQUIREMENTS – EXISTING APARTMENT BUILDINGS					
Building Height	Evacuation Capability	Control Requirement (S_a)	Egress Requirement (S_b)	Refuge Requirement (S_c)	General Fire Safety Requirements (S_d)
1. High Rise	Prompt/Slow	10.5	3.5	6	8

EQUIVELENCY EVALUATION		Yes	No
Controls Provided (S_1) minus Required Controls (S_a) ≥ 0	(S_1) (S_a) 12 - 10.5 = 1.5	X	
Egress Provided (S_2) minus Required Egress (S_b) ≥ 0	(S_2) (S_b) 15 - 3.5 = 11.5	X	

Refuge Provided (S_1) minus Required Refuge (S_c) ≥ 0	(S_3) (S_c) 9 - 6 = 3	X	
General Fire Safety (S_1) minus Required Refuge (S_d) ≥ 0	(S_4) (S_d) 20 - 8 = 12	X	

CONCLUSIONS	
X	All of the checks in worksheet are in the "Yes" column. The level of fire safety is at least equivalent to that prescribed by NFPA 101, Life Safety Code, for apartments occupancy.
	One or more of the checks in worksheet are in the "No" column. The level of fire safety is not shown by this system to be equivalency to that prescribed by NFPA 101 for apartments occupancy.

ENGINEERED LIFE SAFETY SYSTEM APPROACH

An *Engineered Life Safety System* will include various fire safety enhancements to the building that will include passive protection and active fire protection system(s) that will work as a system to achieve a desired level of safety for the existing building.

FFPC, NFPA 101, Section 31.3.5.11.4 states the following requirements:

An engineered life safety system shall …include any or all of the following:
(1) Partial automatic sprinkler protection
(2) Smoke detection systems
(3) Smoke control systems
(4) Compartmentation
(5) Other approved systems

The design intent of this *Engineered Life Safety System* is to control the fire to the room of origin and prevent the spread of fire and smoke throughout the building. The goal is to protect the occupants and reduce property damage.

ELSS REQUIREMENTS

The following recommendations in each category shall, upon acceptance by the AJH, be implemented as the Engineered Life Safety Plan for this building. No modifications of these requirements will be made without the written approval of SLS Consulting, Inc. and the local AHJ.

Sprinkler System

It is recommended to provide a partial sprinkler system with full coverage in the common areas (i.e. lobbies, corridors, MEP spaces, common storage rooms, laundry rooms, parking garage, etc..) of the building and provide coverage in dwelling units by installing a sprinkler head over each operable door into the dwelling unit. Each dwelling unit owner should have the option to expand the sprinkler heads into all rooms and spaces of the dwelling unit for complete protection. The system will still be considered a partial system. However, the sprinkler heads protecting the dwelling and code-compliant fire barriers would control the fire to the unit of origin. The sprinkler protection will also reduce fire and smoke damage into the corridor and other units.

Standpipe System

All hoses will be removed from the hose cabinets permanently as part of this ELSS. This standpipe classification will go from Class III system to a Class I system with 2 ½" hose connections.

Stairwells

Based on survey, not all exit stair enclosures are accessed by smokeproof enclosures. as the stair doors open directly into residential corridor. Stair pressurization shall be provided in all exit stair enclosures that are not accessed by smokeproof enclosures (4 enclosures per building).

Elevator Pressurization or Lobbies

Each elevator shafts shall be equipped with a pressurization system or each residential floor will be provided with an elevator lobby.

Fire Alarm System

The current fire alarm system consists of smoke detection in the corridor and common area spaces. A system smoke detector shall be installed inside each dwelling unit programmed to initiate a fire alarm signal via a positive alarm sequence in accordance with ***NFPA 72 23.8.1.3 Positive Alarm Sequence.***

This will automatically initiate an evacuation signal if not acknowledged within 15 seconds and automatically after a 90 second investigation period unless the system is reset by authorized personnel. This allows the system to qualify as an interconnected system with detection in corridors, common spaces, and living units as delineated in *NFPA 101A 7.6.4.4.2.2*.

Minimal fire alarm modifications will be required for control functions based upon installed systems.

Smoke Alarm Upgrade

There are smoke alarms located outside the bedrooms of all dwelling units. All existing single station smoke alarms over 10 years old shall be replaced.

All existing sleeping rooms shall be provided with smoke alarms in compliance with *FFPC NFPA 101 31.3.4.5* as modified by *31.3.4.5.4*, which allows smoke alarms with 10-year lithium ion batteries.

Fire Department Radio Communication

In all existing buildings, minimum radio signal strength for fire department communications shall be maintained at a level determined by the AHJ as required by FFPC, NFPA 1, Section 11.10. Where required by the AHJ, two-way communication enhancement systems shall comply with NFPA 72.

Florida Statute 633.202(18) states as follows:

> The AHJ shall determine the minimum radio signal strength for fire department communications in all new high-rise and existing high-rise buildings. Existing apartment buildings are not required to comply with minimum radio strength for fire department communications and two-way radio system enhancement communications as required by FFPC until January 1, 2025. However, existing buildings are required to apply for the appropriate permit for the required communications installation by December 31, 2022.

Therefore, the condominium association should test the signal strength throughout the residential units and pending the results consider the installation of radio communications enhancement system as part of this *Engineered Life Safety System.* This is not a required recommendation of the ELSS.

Subdivision of Building Spaces - Smoke Partitions

No requirements. Smoke partitions are not required because the exits are not more than 50 ft apart.

Primary and Secondary Means of Escape

Some units do not meet the provisions of NFPA 101 24.2.2.1.1. No recommendation is being made for this condition in light of the provisions of Florida Statute 633.208(5); *"With regard to existing buildings, the Legislature recognizes that it is not always practical to apply any or all of the provisions of the Florida Fire Prevention Code and that physical limitations may require disproportionate effort or expense with little increase in fire or life safety. Before applying the minimum firesafety code to an existing building, the local fire official shall determine whether a threat to lifesafety or property exists. If a threat to lifesafety or property exists, the fire official shall apply the applicable firesafety code for existing buildings to the extent practical to ensure a reasonable degree of lifesafety and safety of property or shall fashion a reasonable alternative that affords an equivalent degree of lifesafety and safety of property."*

Doors

There is evidence of fire doors which do not close completely, and latch as required by NFPA 101 31.3.6.2.3. All fire doors shall be inspected by a qualified fire door inspection company and labeled compliant or repaired or replaced as needed. Doors that open onto exit access corridors shall be self-closing and self-latching.

Fire Barriers

The building survey revealed evidence of improper, or missing fire stop systems and devices such as cables, cable trays, conduits, pipes, tubes, combustion vents and exhaust vents, wires, and similar penetrations. All fire barriers shall be inspected for compliance with NFPA 101 8.3.5 and be repaired as required for the barrier.

The air transfer vents in the exit access corridors shall be sealed or protected with fire/smoke dampers connected to the fire alarm system and activated by the corridor smoke detectors.

Separation of Hazards

No recommendations. See Fire Barriers above.

SUMMARY AND CONCLUSION

In conclusion, *the Engineered Life Safety System* described in this report incorporates all the elements of FFPC, NFPA 101, Section 31.3.5.11.4. The *Engineered Life Safety System* is permitted by FFPC to provide an alternate method of protection in lieu of a complete (100% coverage) automatic sprinkler system.

This *Engineered Life Safety System* report must be approved by the Miami/Dade Fire Marshal before it can be implemented. The Miami/Dade Fire Marshal may have comments and may require additional safety features before the *Engineered Life Safety System* is approved.

According to FFPC, the deadline for installation of a 100% coverage sprinkler system or the implementation of the *Engineered Life Safety System* is December 31, 2019.

It should be noted that in addition to the recommendations within this report the condominium associations should maintain proper records on below required services.

Annual Smoke Testing – The below chart originates these codes – the Florida Building Code, NFPA 80 (Section 19.4), and NFPA 105 (Section 6.5). These standards have details on what to test or inspect, periodic requirements, and replacement information. These codes provide the smoke control system requirements directly – 909.20.4 for dedicated systems and 909.20.5 for non-dedicated systems.

Chapter 7 "Containment Dampers"	
Commissioning	
End of first year	
Every 4 years except in hospitals every 6 years	
Chapter 9 "Smoke Control Systems & Dampers"	
Dedicated	**Non-dedicated**
Commissioning	Commissioning
Semi-annually	Annually

Yearly Door Inspections - NFPA 80 5.2.1* Fire door assemblies shall be inspected and tested not less than annually, and a written record of the inspection shall be signed and kept for inspection by the AHJ.

Smoke Alarm - Smoke alarms are found in NFPA Code 72, and those for carbon monoxide alarms are found in NFPA Code 720. Both codes require the annual testing of alarm units according to the manufacturer's recommended procedure.

Submitted by:

SLS Consulting, Inc.
Michael Sheehan, P.E.
Principal/Fire Protection Engineer

ENGINEERED LIFE SAFETY SYSTEM VALIDATION REPORT
Plaza del Prado
18011-18041 Biscayne Blvd, Aventura FL 33160
18051-18081 Biscayne Blvd, Aventura FL 33160

Accepted by: (Building representative)

Rose Joseph
(Signature)

3/12/18
Date

Rose Joseph
(Print Name)

President
(Print Title)

Approved by: (Fire Marshal)

(Signature)

Date

(Print Name)

(Print Title)

Note: Pictures are provided in Addendum A to this report.

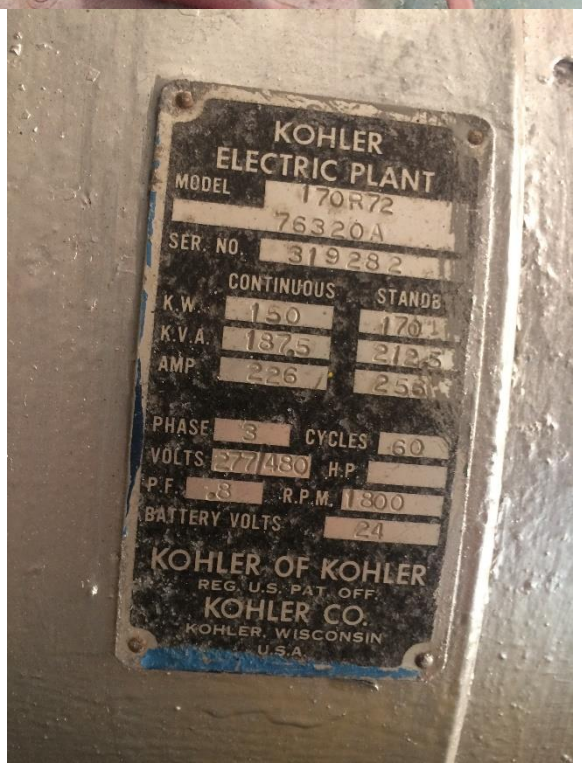
SLS Consulting, Inc.
260 Palermo Avenue
Coral Gables, Florida 3313

ENGINEERED LIFE SAFETY SYSTEM VALIDATION REPORT PLAZA DEL PRADO CONDOMINIUM AVENTURA, FLORIDA

ADDENDUM A

May 23rd, 2017

ELSS #118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AMP 226 256
PHASE 3 CYCLES 60
VOLTS 277/480 H.P.
P.F. .8 R.P.M. 1800
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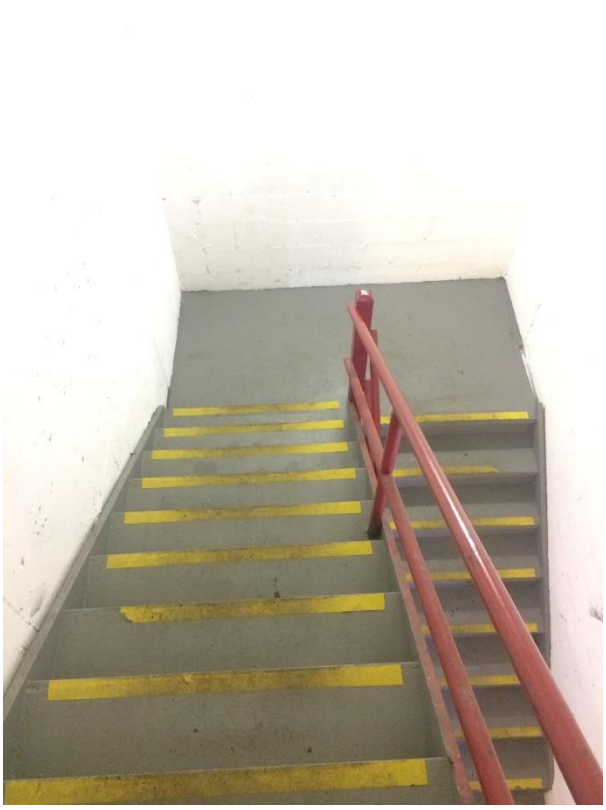
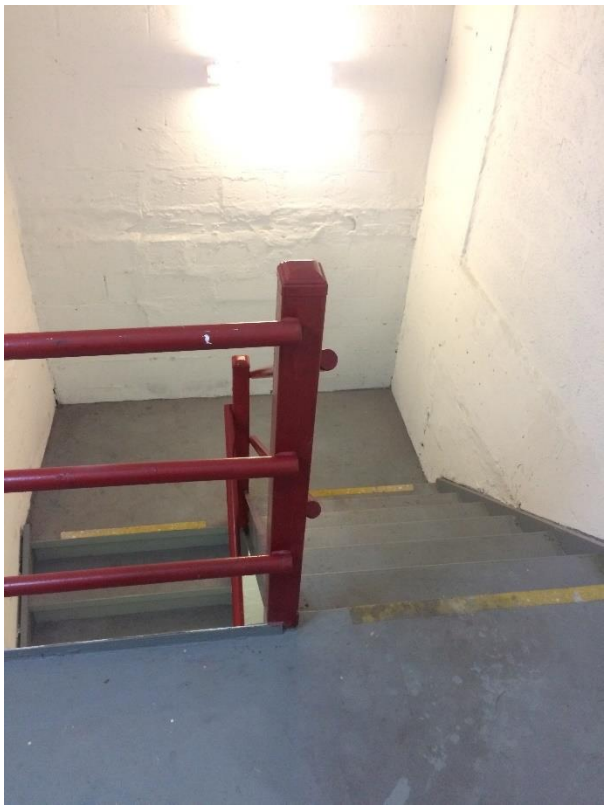
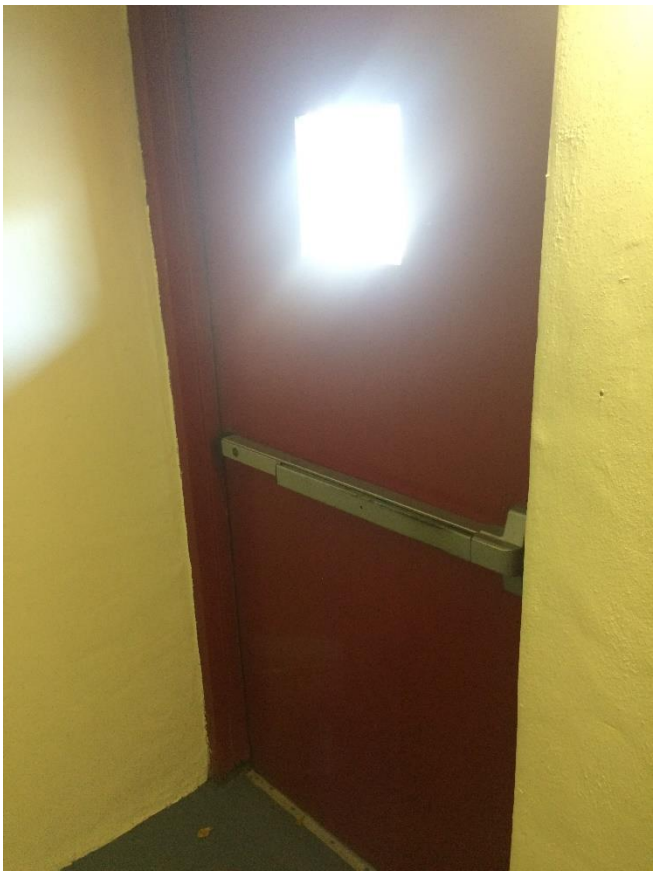
KOHLER CO.
KOHLER, WISCONSIN
U.S.A.

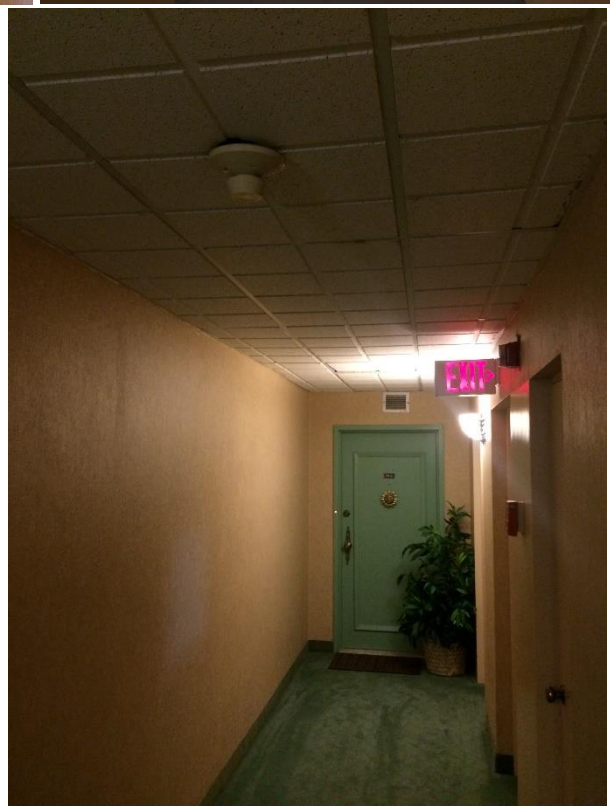







FIRE HOSE


Stair Door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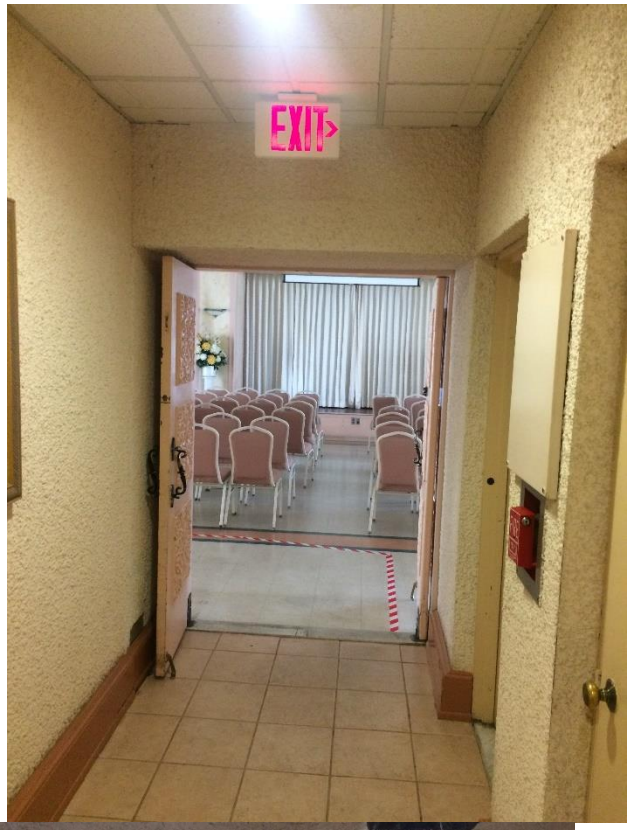
Stair Discharge


EXIT

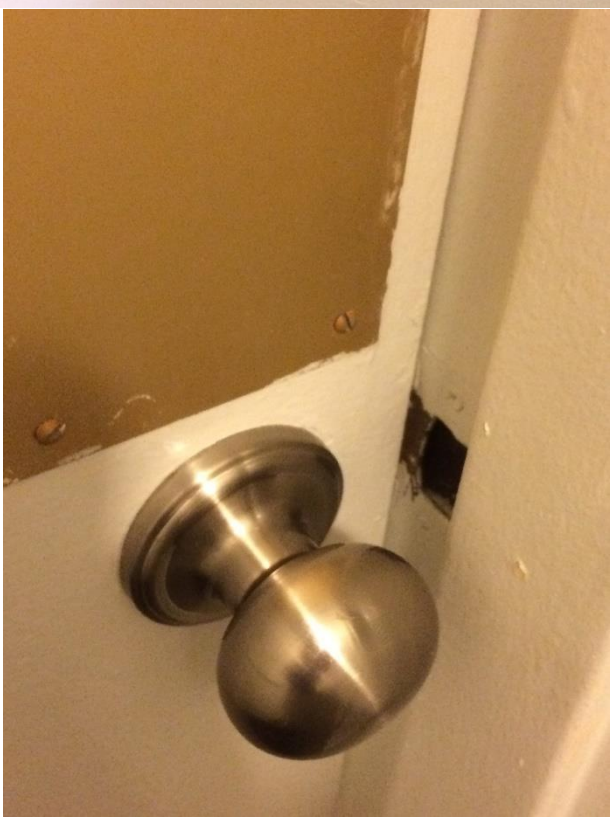

MAXIMUM
OCCUPANCY
138


Sprinkler Head

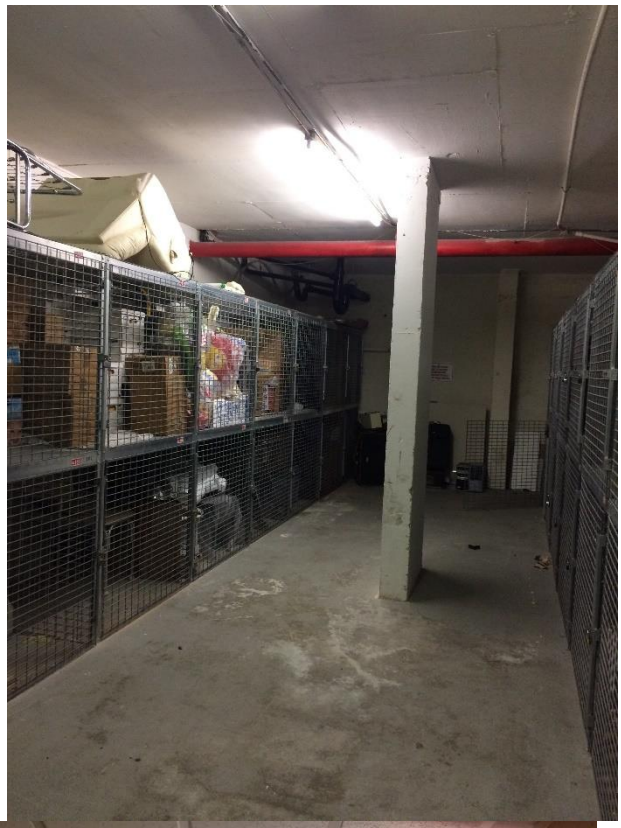

GROUP IND
IND SERVICE
OFF ON
CAR TOP INSP
FAN
OFF ON
LIGHT
CALL
CANCEL
FIREFIGHTERS' OPERATION


TRASH SHUTE
Current:
Trash Chute Service Access Panel


Air Transfer Openning/Grille




DIGITAL VOICE COMMAND
RED HAWK
NOTIFIER

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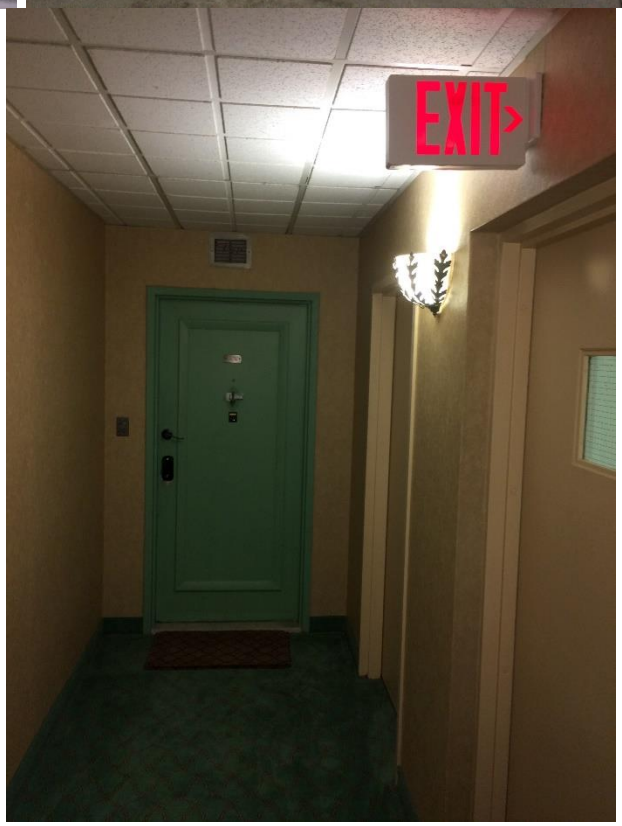
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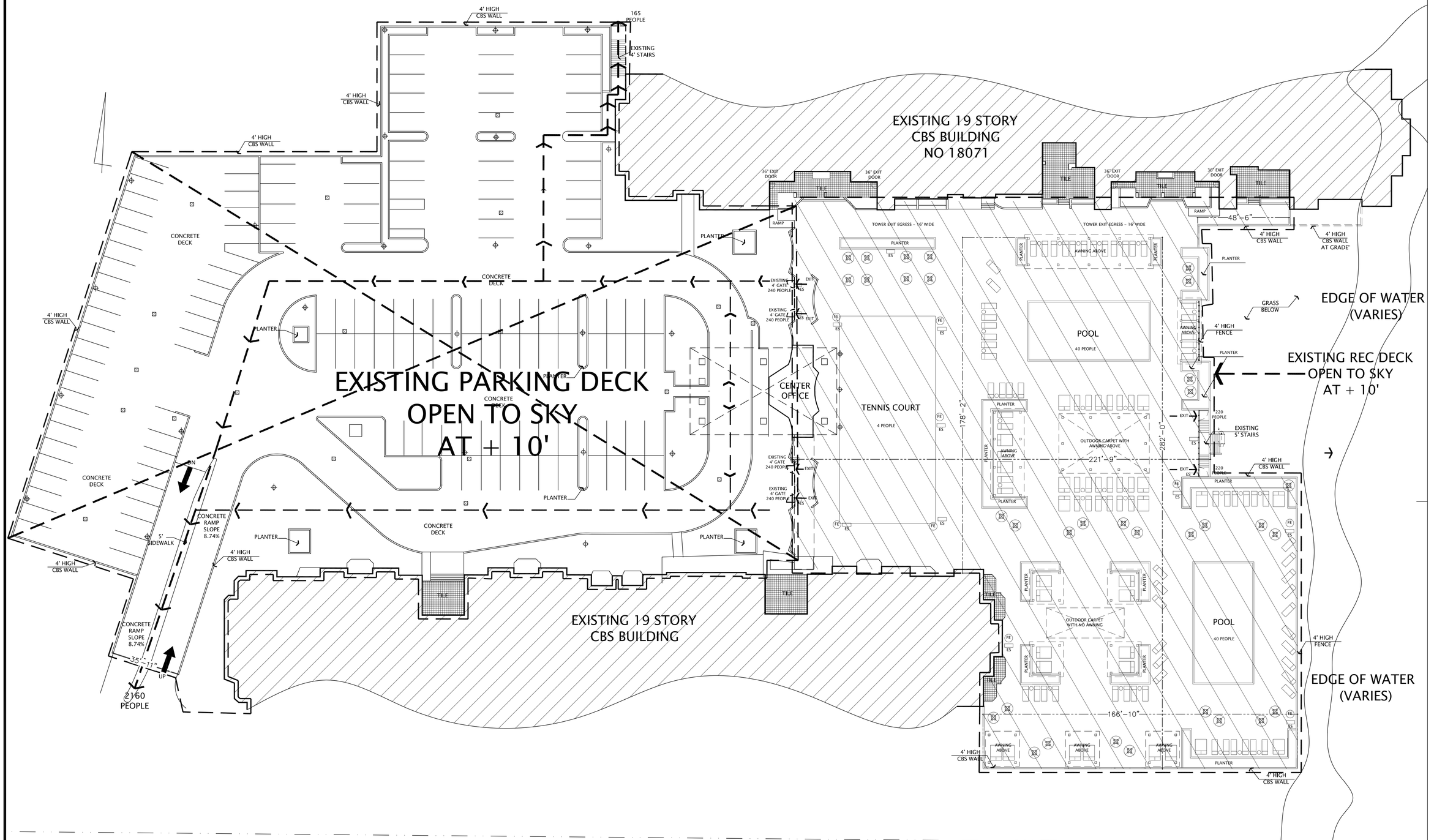

PLAZA DEL PRADO EXISTING PARKING DECK AND POOL DECK

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ARCHITECT:
Stanley Stanczyk
Planning
Architect/CGC
Design/Build

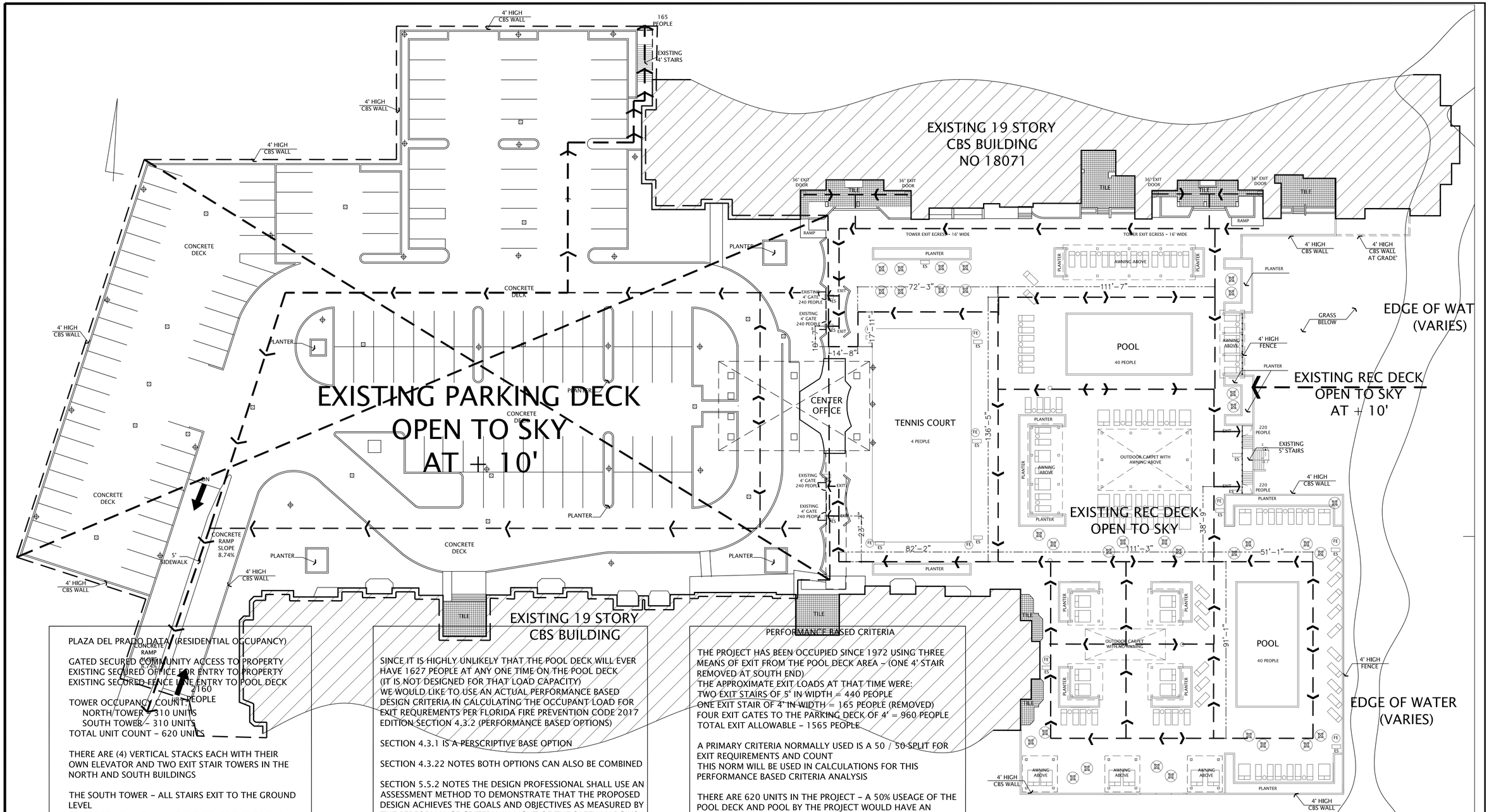
8800 SW 181 Terrace
Miami Florida 33157
786 202-8911

State of Florida Registration
AR8990
ARCHITECT # 8990

ARCHITECT # 8990

PROJECT # 18-01301
PROJECT NAME: POOL DECK
OCCUPANCY: Assembly A-2
BUILDING: Type 1 Fully Sprinklered

SHEET
POOL DECK -1



PLAZA DEL PRADO DATA (RESIDENTIAL OCCUPANCY)

GATED SECURED COMMUNITY ACCESS TO PROPERTY
EXISTING SECURED OFFICE FOR ENTRY TO PROPERTY
EXISTING SECURED FENCE LINE ENTRY TO POOL DECK

TOWER OCCUPANCY COUNT PEOPLE
NORTH/TOWER - 310 UNITS
SOUTH TOWER - 310 UNITS
TOTAL UNIT COUNT - 620 UNITS

THERE ARE (4) VERTICAL STACKS EACH WITH THEIR OWN ELEVATOR AND TWO EXIT STAIR TOWERS IN THE NORTH AND SOUTH BUILDINGS

THE SOUTH TOWER - ALL STAIRS EXIT TO THE GROUND LEVEL
THE NORTH TOWER - HALF THE STAIRS EXIT TO THE GROUND LEVEL - THE OTHE HALF EXIT TO THE SECOND LEVEL POOL DECK (310 X .5 = 155 UNITS)

EXISTING POOL DECK SF - 54,735 SF
MINUS FIXED ELEMENTS
TENNIS COURT - 5610 SF
MINUS (2) POOLS - 4000 SF
MINUS PLANTERS - 3484 SF
OPEN POOL DECK AREA - 41,641 SF

MAX ALLOWABLE PERSONS ON DECK (1-30 SF)
DECK AREA - 41641 / 30 = 1388 PEOPLE
(2) POOLS AT (1 - 50 SF) = 80 PEOPLE
(1) TENNIS COURT = 4 PEOPLE

TOTAL POOL DECK COUNT - 1472 PEOPLE

NORTH TOWER UNIT EXIT TO DECK - 155

TOTAL PEOPLE ON DECK - 1627 PEOPLE

EXISTING 19 STORY CBS BUILDING

SINCE IT IS HIGHLY UNLIKELY THAT THE POOL DECK WILL EVER HAVE 1627 PEOPLE AT ANY ONE TIME ON THE POOL DECK (IT IS NOT DESIGNED FOR THAT LOAD CAPACITY)
WE WOULD LIKE TO USE AN ACTUAL PERFORMANCE BASED DESIGN CRITERIA IN CALCULATING THE OCCUPANT LOAD FOR EXIT REQUREMENTS PER FLORIDA FIRE PREVENTION CODE 2017 EDITION SECTION 4.3.2 (PERFORMANCE BASED OPTIONS)

SECTION 4.3.1 IS A PERSCRIPTIVE BASE OPTION

SECTION 4.3.22 NOTES BOTH OPTIONS CAN ALSO BE COMBINED

SECTION 5.5.2 NOTES THE DESIGN PROFESSIONAL SHALL USE AN ASSESSMENT METHOD TO DEMONSTRATE THAT THE PROPOSED DESIGN ACHIEVES THE GOALS AND OBJECTIVES AS MEASURED BY THE PERFORMANCE CRITERIA IN LIGHT OF THE SAFEY MARGINS AND UNCERTAINITY ANALYSIS FOR EACH SCENARIO GIVEN THE ASSUMPTIONS

SECTION 6.1.14.1.2 NOTES WHERE EXIT ACCESS FROM AN OCCUPANCY TRANSVERSES ANOTHER OCCUPANCY THE MULTI OCCUPANCY SHALL BE TREATED AS A MIXED OCCUPANCY

SECTION 14.8.3.2 ALLOWS AN INCREASE IN EXIT CAPACITY - ALLOWABLE EXIT INCREASE:
146.7 + (Wn - 44) / .218
FOR 5' STAIRS
146.7 + (60-44) / .218 = 220 PEOPLE
ALL STAIRS ARE LARGER THAN 44"

EXIT UNITS (EU) PER STAIR(S) IS .3 PER WIDTH (60" /.3= 200)
EXIT UNITS PER DOOR/GATE IS .2 PER WIDTH (36" /.2 = 180)
(48" /.2 = 240)
RAMPS ARE THE SAME AS DOORS .2 (WIDTH / .2)

PERFORMANCE BASED CRITERIA

THE PROJECT HAS BEEN OCCUPIED SINCE 1972 USING THREE MEANS OF EXIT FROM THE POOL DECK AREA - (ONE 4' STAIR REMOVED AT SOUTH END)
THE APPROXIMATE EXIT LOADS AT THAT TIME WERE:
TWO EXIT STAIRS OF 5' IN WIDTH = 440 PEOPLE
ONE EXIT STAIR OF 4' IN WIDTH = 165 PEOPLE (REMOVED)
FOUR EXIT GATES TO THE PARKING DECK OF 4' = 960 PEOPLE
TOTAL EXIT ALLOWABLE - 1565 PEOPLE

A PRIMARY CRITERIA NORMALLY USED IS A 50 / 50 SPLIT FOR EXIT REQUIREMENTS AND COUNT
THIS NORM WILL BE USED IN CALCULATIONS FOR THIS PERFORMANCE BASED CRITERIA ANALYSIS

THERE ARE 620 UNITS IN THE PROJECT - A 50% USEAGE OF THE POOL DECK AND POOL BY THE PROJECT WOULD HAVE AN OCCUPANT LOAD OF 310 UNITS
USING AN OCCUPANCY INCREASE FACTOR OF .25 PER UNIT (310 X1.25 = 388 PEOPLE) AT ANY ONE TIME

IF 50% OF THE PROJECT HAD VISITORS AT THE SAME TIME 310 PEOPLE WOULD BE VISITING
MAYBE 50% OF THE VISITORS WOULD USE THE POOL AND POOL DECK (310 X .5 = 155) PEOPLE
THEREFORE A REASONABLE POOL DECK LOAD OF 543 PEOPLE WOULD BE ON THE DECK AT ANY ONE TIME
USING A SAFETY FACTOR OF 5% (543 X 5% = 570) PEOPLE WOULD BE ON THE DECK AT ANY ONE TIME

BASED UPON 3 MEANS OF EGRESS FROM THE DECK

THERE ARE TWO (2) EXISTING 5' STAIRS (440 PEOPLE) AND (4) EXISTING 4' GATES (960 PEOPLE) - FOUR NEW GATES WOULD ADD ANOTHER 960 PEOPLE

THE COMBINED EXIT CAPACITY WITH OUT THE NEW GATES IS 1400 PEOPLE - WHICH EXCEEDS THE 570 OCCUPANT LOAD PERFORMANCE CRITERIA (2.45% OVER THE NUMBER OF PEOPLE)

PERFORMANCE BASED CRITERIA RESULTS

BASED UPON THE ACTUAL PERFORMANCE BASED CRITERIA WE WOULD LIKE TO REQUEST

THAT THE POOL DECK BE ALLOWED TO BE FULLY OCCUPIED BASED UPON 570 PEOPLE AT ANY ONE TIME ALLOWED ON THE DECK

THAT EXISTING EXIT POINTS SATISFY THE EXIT REQUIREMENTS TO EXIT THE DECK

SIGNAGE NOTING THE DECK PEOPLE LOAD RESTRICTION WIL BE POSTED THROUGHOUT THE DECK AND BUILDINGS.

FULL TIME PROJECT MANAGEMENT PERSONNEL WILL ENFORCE THE DECK USAGE RESTRICTION

EXISTING POOL DECK EXITS

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Architect/CGC
Design/Build

8800 SW 181 Terrace
Miami Florida 33157
786 202-8911

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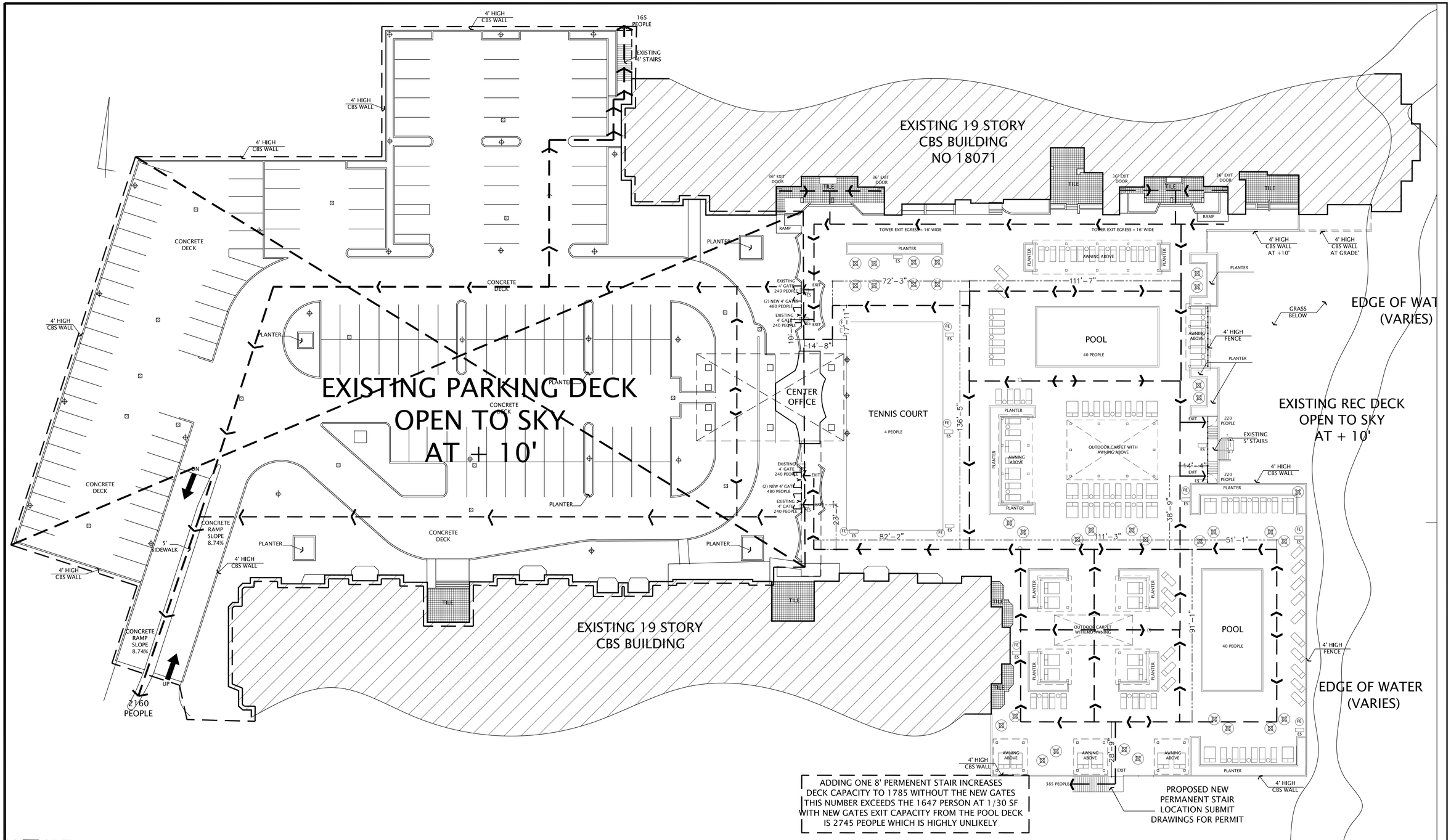
PROJECT NAME:	POOL DECK
OCCUPANCY:	Assembly A-2
BUILDING:	Type 1 Fully Sprinklered

SHEET

POOL DECK -2



EXISTING PARKING DECK AND POOL DECK
ADDING SOUTH STAIR / 4 NEW GATES

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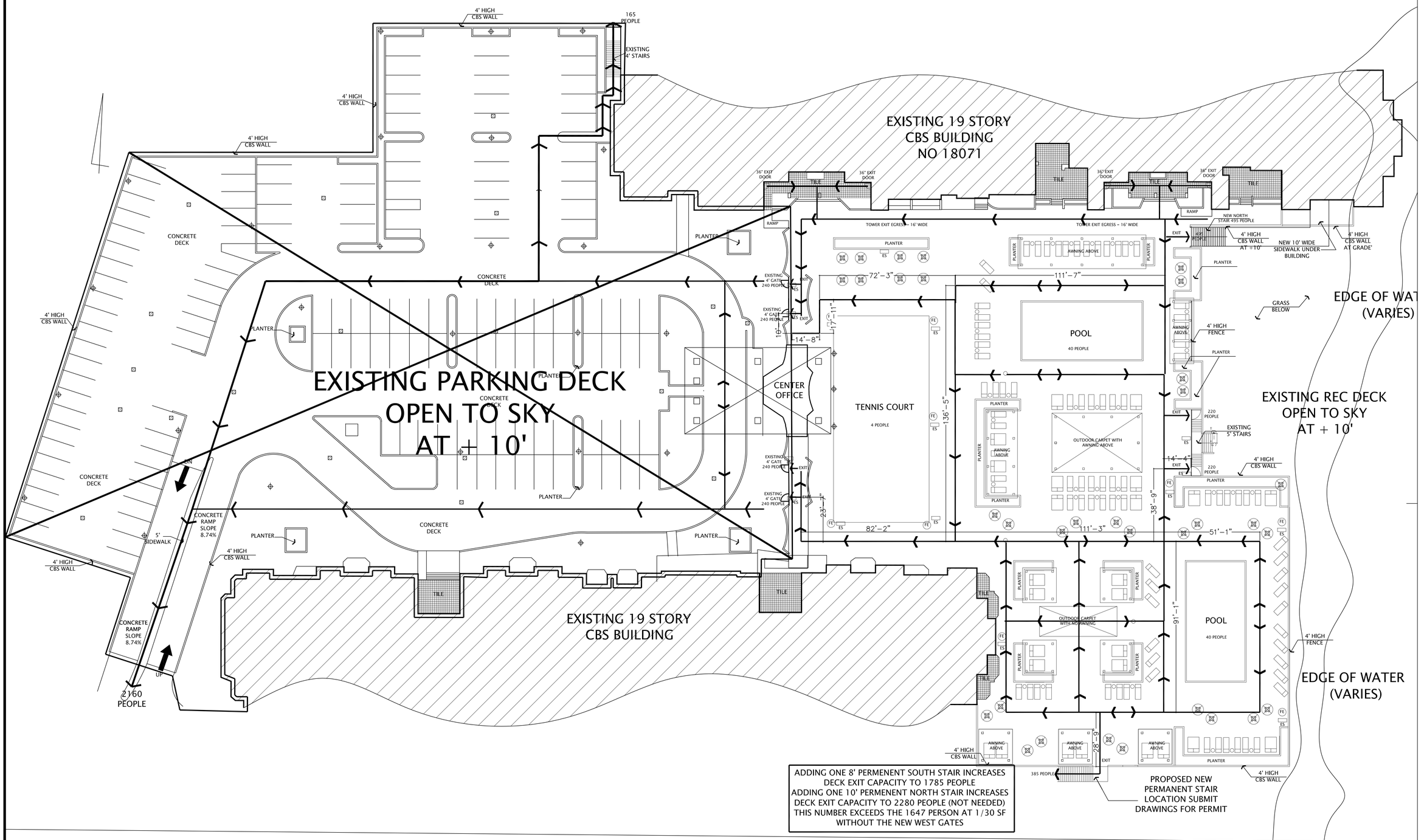
BUILDING: Type 1 Fully Sprinklered

SHEET
POOL DECK -3



ADDING ONE 8' PERMENENT SOUTH STAIR INCREASES DECK EXIT CAPACITY TO 1785 PEOPLE
ADDING ONE 10' PERMENENT NORTH STAIR INCREASES DECK EXIT CAPACITY TO 2280 PEOPLE (NOT NEEDED)
THIS NUMBER EXCEEDS THE 1647 PERSON AT 1/30 SF WITHOUT THE NEW WEST GATES

EXISTING PARKING DECK AND POOL DECK
ADDING SOUTH / NORTH STAIRS
NO NEW GATES

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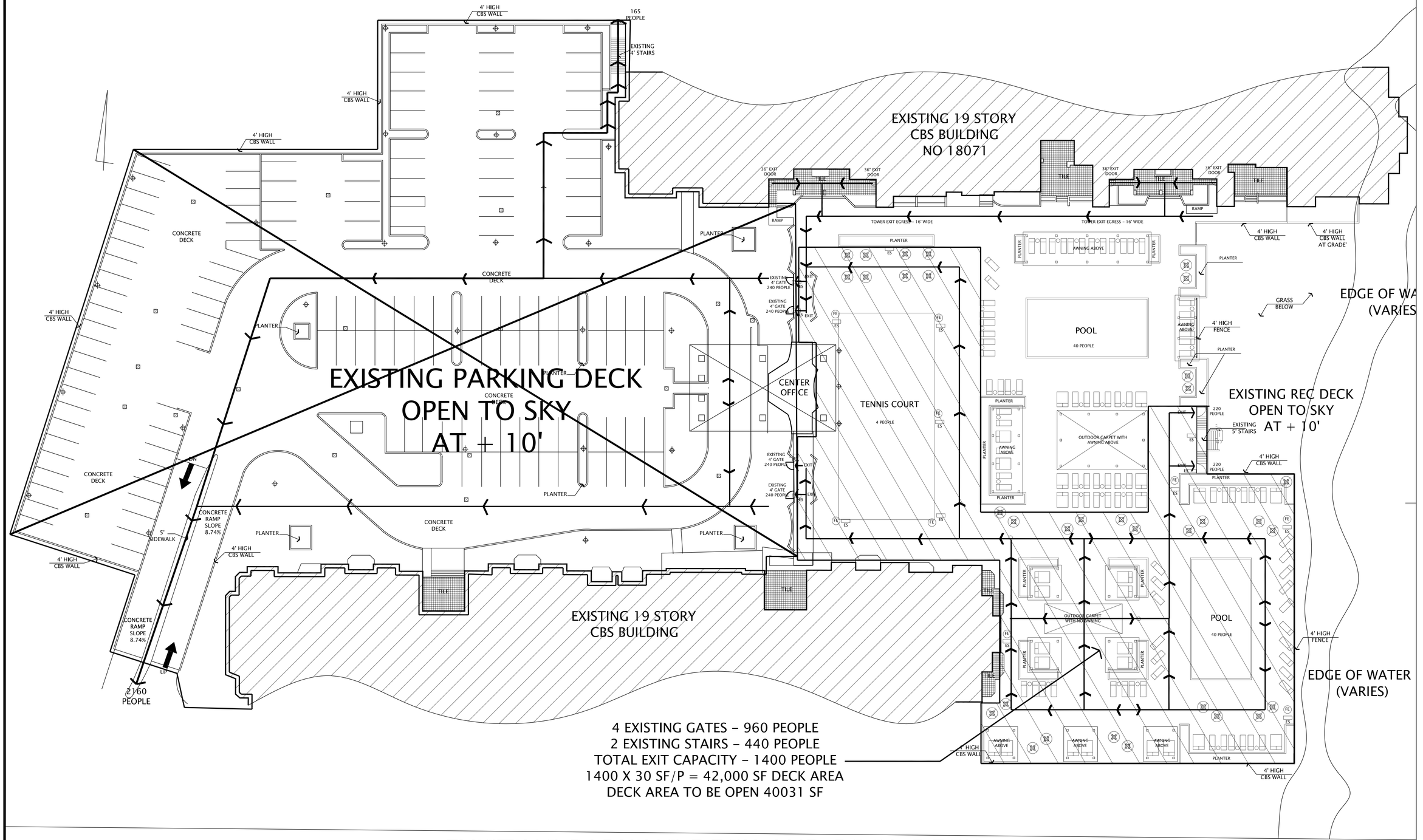
SHEET

POOL DECK -4



4 EXISTING GATES – 960 PEOPLE
2 EXISTING STAIRS – 440 PEOPLE
TOTAL EXIT CAPACITY – 1400 PEOPLE
1400 X 30 SF/P = 42,000 SF DECK AREA
DECK AREA TO BE OPEN 40031 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 4 GATES FOR TCO USING SOUTH POOL

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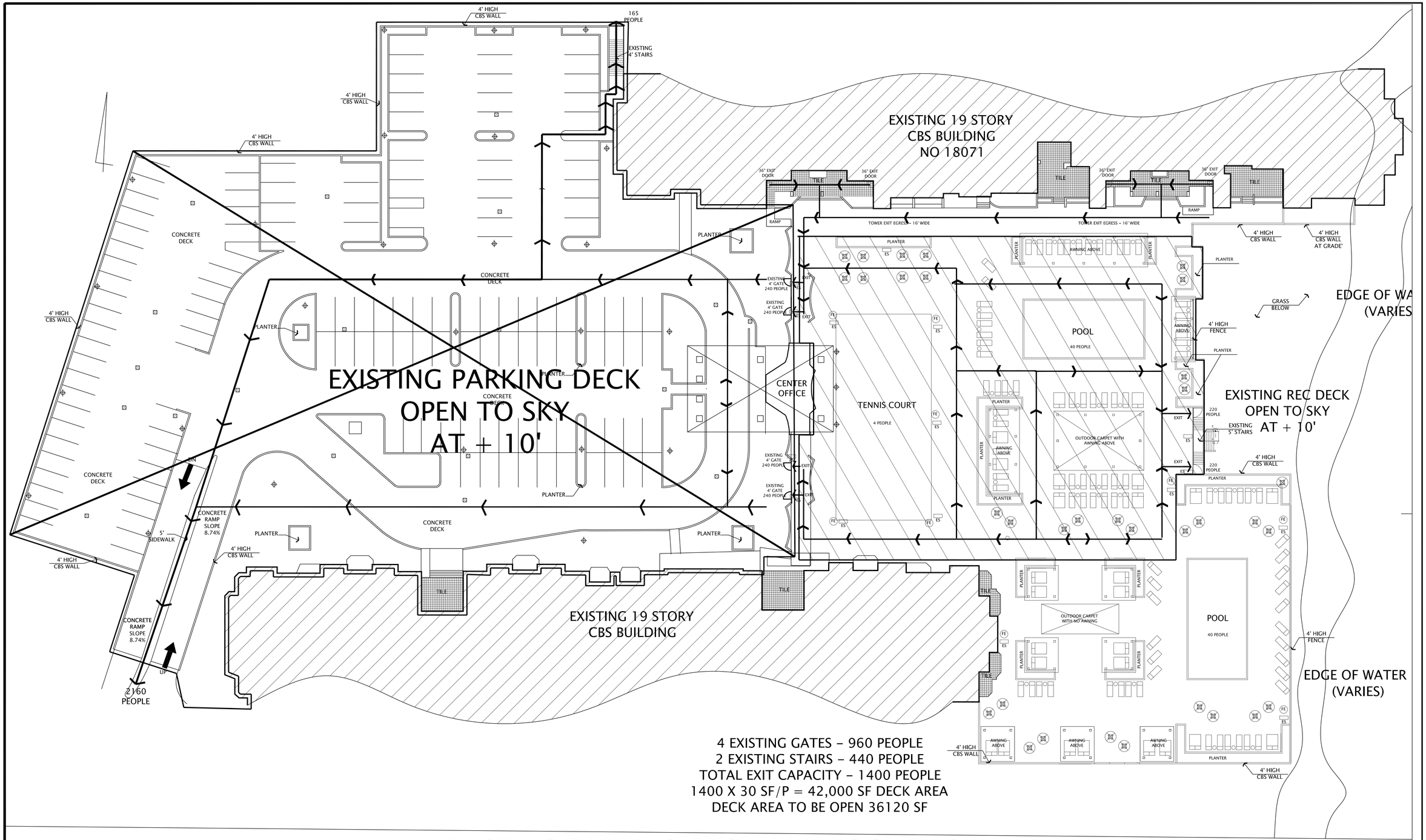
PROJECT NAME: POOL DECK
OCCUPANCY: Assembly A-2
BUILDING: Type 1 Fully Sprinklered

SHEET
POOL DECK -5



4 EXISTING GATES – 960 PEOPLE
2 EXISTING STAIRS – 440 PEOPLE
TOTAL EXIT CAPACITY – 1400 PEOPLE
1400 X 30 SF/P = 42,000 SF DECK AREA
DECK AREA TO BE OPEN 36120 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 4 GATES FOR TCO USING NORTH POOL

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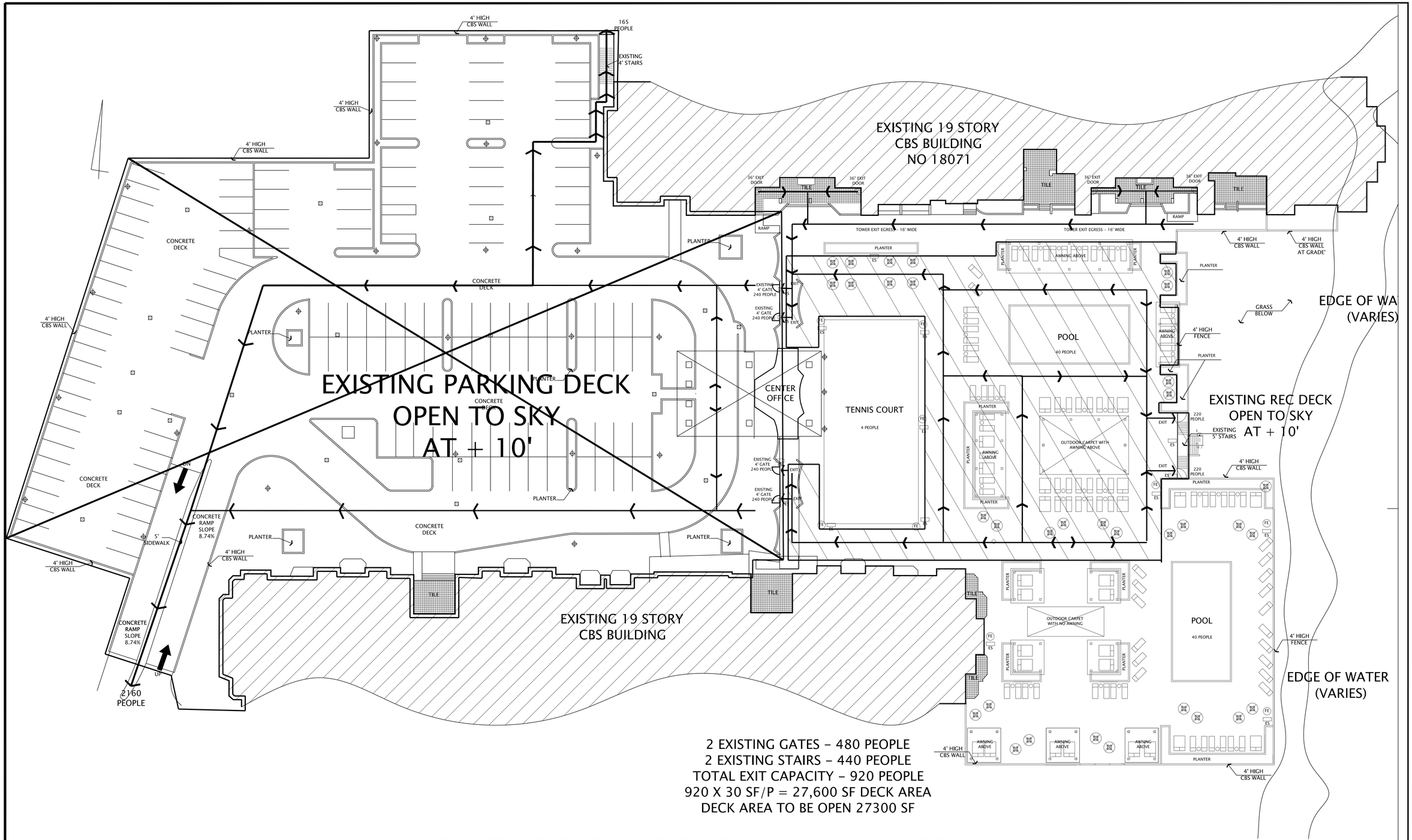
OCCUPANCY:	Assembly A-2
BUILDING:	Type 1 Fully Sprinklered

SHEET

POOL DECK -6



2 EXISTING GATES - 480 PEOPLE
2 EXISTING STAIRS - 440 PEOPLE
TOTAL EXIT CAPACITY - 920 PEOPLE
920 X 30 SF/P = 27,600 SF DECK AREA
DECK AREA TO BE OPEN 27300 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 2 GATES FOR TCO USING NORTH POOL

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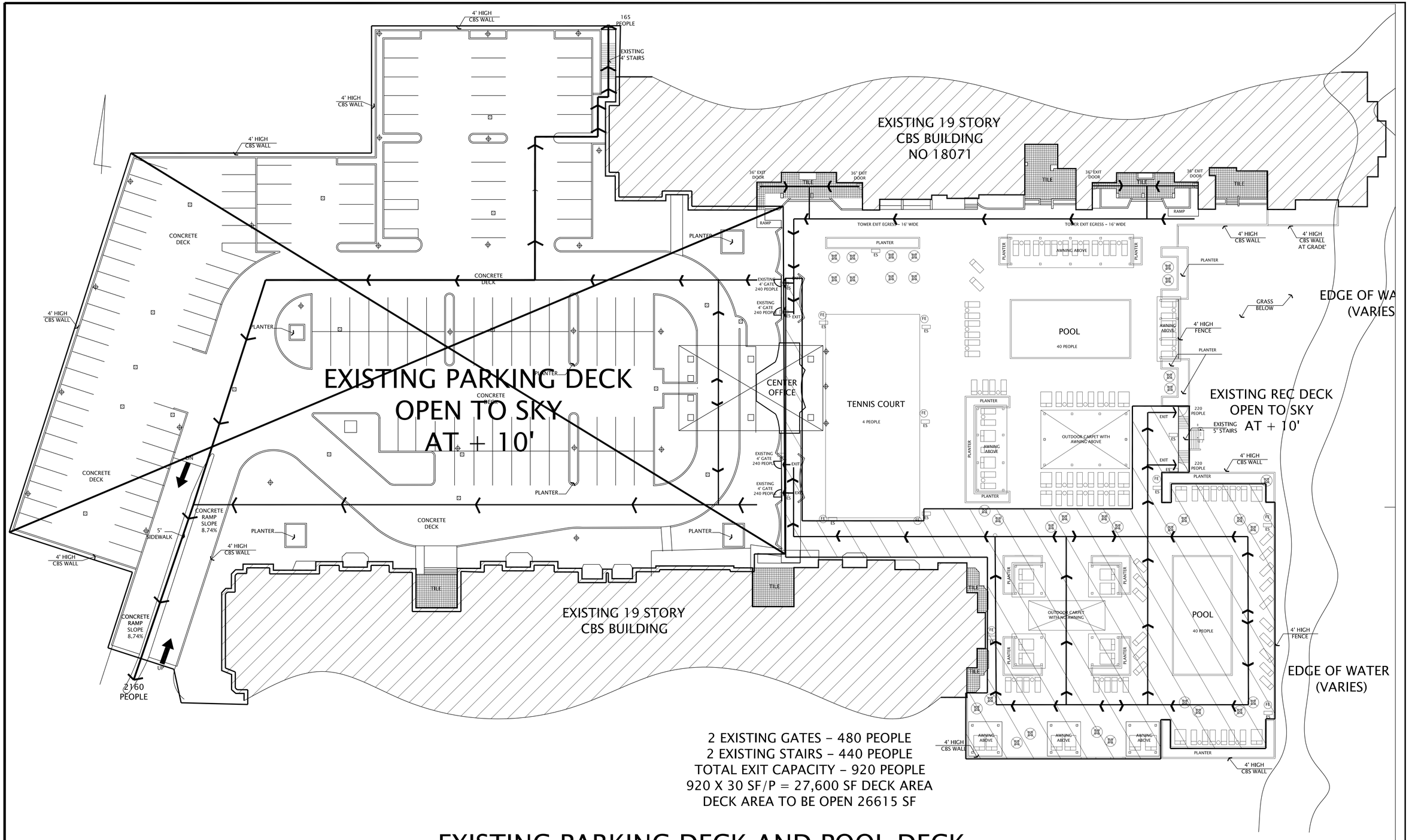
BUILDING	Type 1 Fully Sprinklered

SHEET

POOL DECK -7



2 EXISTING GATES – 480 PEOPLE
2 EXISTING STAIRS – 440 PEOPLE
TOTAL EXIT CAPACITY – 920 PEOPLE
920 X 30 SF/P = 27,600 SF DECK AREA
DECK AREA TO BE OPEN 26615 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 2 GATES USING SOUTH POOL

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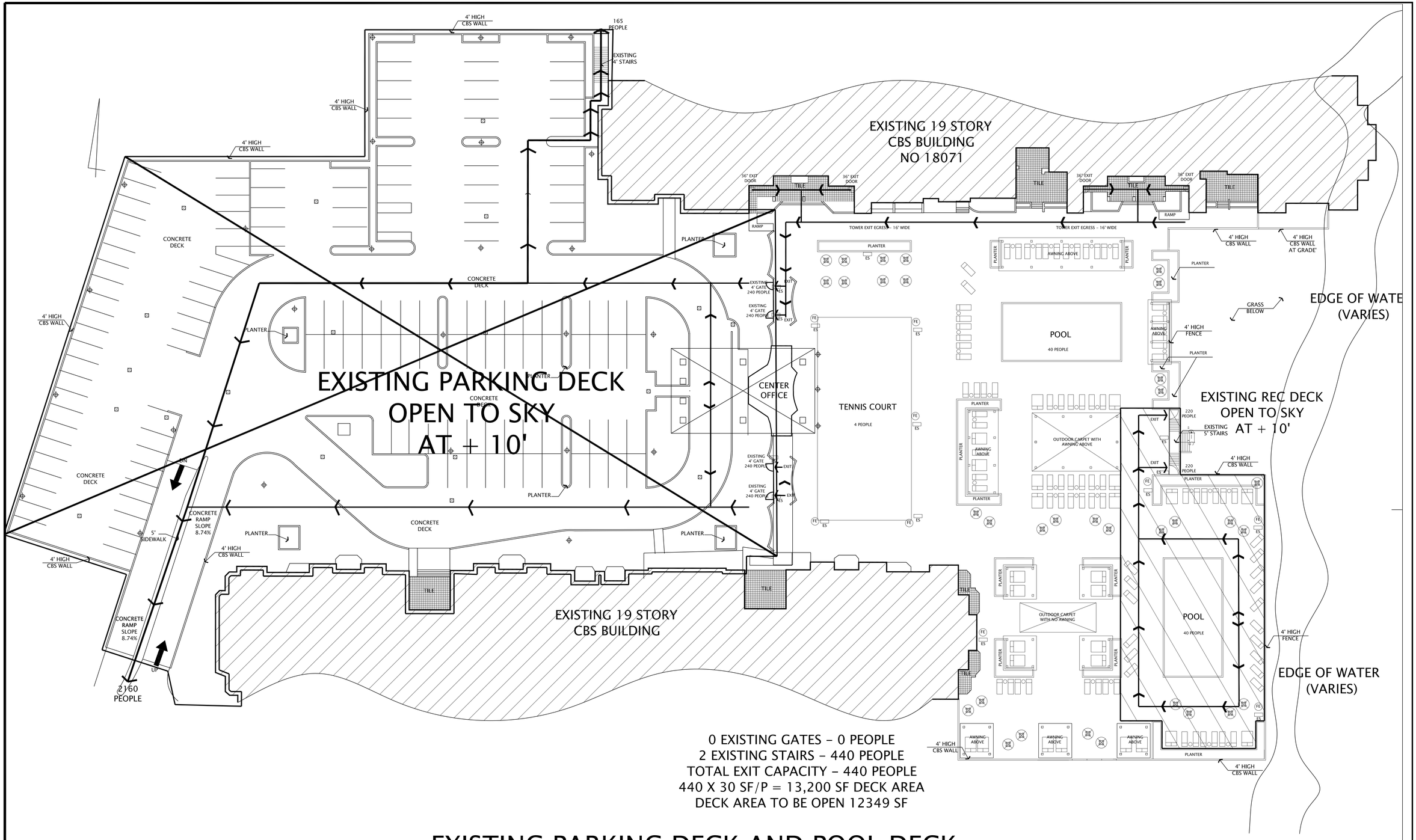
SHEET
POOL DECK -8



0 EXISTING GATES - 0 PEOPLE
2 EXISTING STAIRS - 440 PEOPLE
TOTAL EXIT CAPACITY - 440 PEOPLE
440 X 30 SF/P = 13,200 SF DECK AREA
DECK AREA TO BE OPEN 12349 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 0 GATES USING SOUTH POOL

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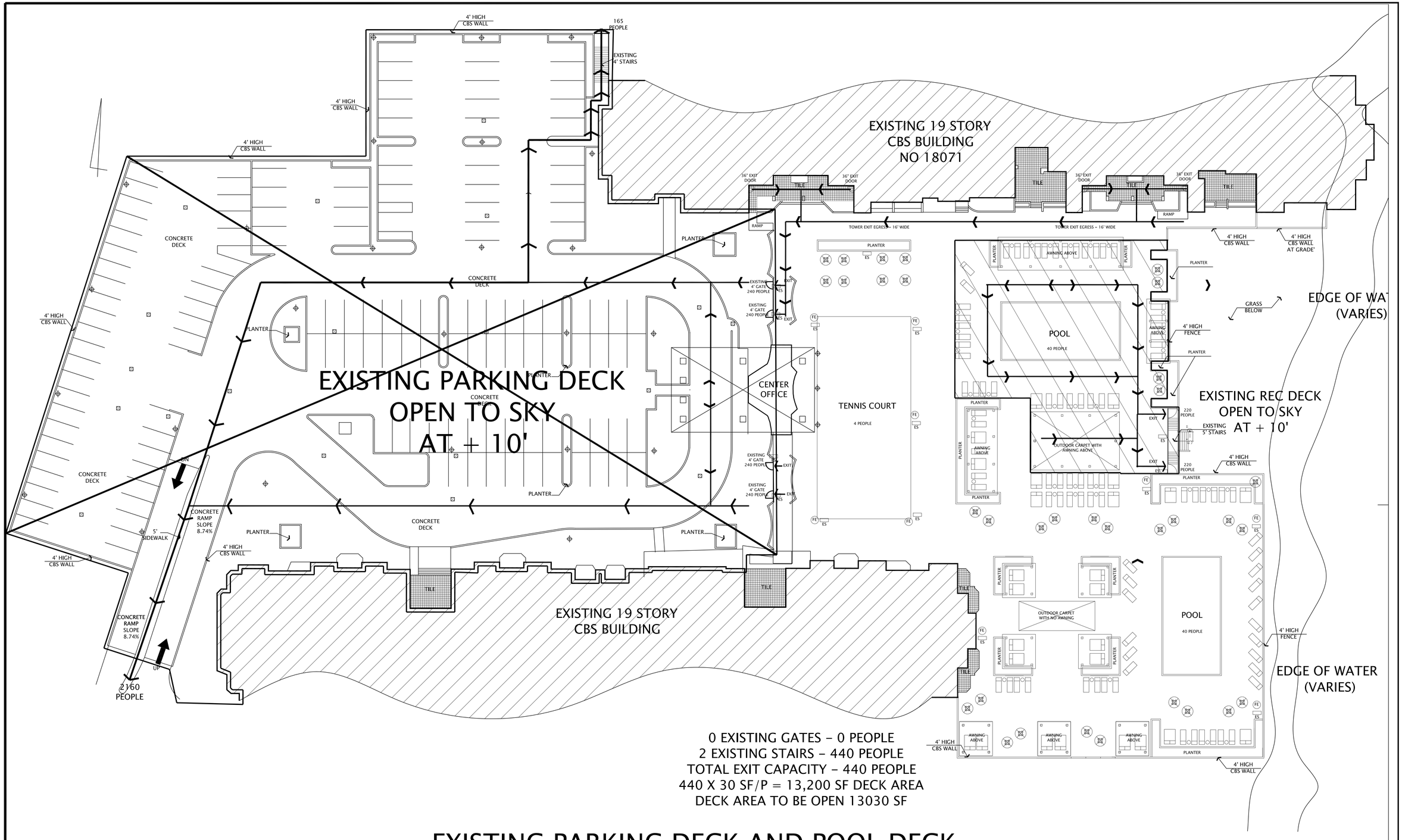
SHEET
POOL DECK -9



0 EXISTING GATES - 0 PEOPLE
2 EXISTING STAIRS - 440 PEOPLE
TOTAL EXIT CAPACITY - 440 PEOPLE
440 X 30 SF/P = 13,200 SF DECK AREA
DECK AREA TO BE OPEN 13030 SF

EXISTING PARKING DECK AND POOL DECK USING EXISTING STAIRS AND 0 GATES USING NORTH POOL

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SHEET

POOL DECK -10