



# Abrasion Resistance Certification Report

이천시 대월면 대대리 576물류센터

검수의뢰자 : HEB

검수회사 :

ALLENFACE KOREA

서울시 강남구 봉은사로 326, 9층 985호(역삼동, 남전빌딩)

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<http://blog.naver.com/allenfacekorea>

# **Abrasion Resistance**

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# Information

이천 대대리 물류센터 의 Abrasion Resistance 검수에 대한 자세한 내용은 다음과 같습니다

Client : HEB

Construction Company : 보훈종합건설

Project : 이천 대대리 물류센터

Site : 경기도 이천시 대월면 대대리 576

Area : B2F ,1F ,3F ,4F 각 1 Point

Performance Class : "AR1" – BS 8204 – 2 : 2003 + A2 :2001

Survey Date : 2024.03.05

## Test machine Spec :

- Steel Wheels
  - 최대직경 : 76mm
  - 너 비 : 20mm
  - 경 도 : 735HV
- 회 전 수 : 2,850±10
- 테스트시간 : 약15분
- 총 하 중 : 65±0.5kg
- 치 수 : 360 X 360 X 600mm
- 무 게 : 80kg
- 전 압 : 230V / 50HZ



Abrasion Tester



Depth Gauge

Test measurement standard & method: BS EN 13892-4

# What is Abrasion Resistance?

Abrasion resistance is the ability of a concrete surface to resist wear caused by rubbing, rolling, sliding, cutting and impact forces. Wear, which is the removal of surface material, is a process of displacement and detachment of particles or fragments from the surface. Abrasion mechanisms are complex and combinations of different actions can occur in many environments, for example, from truck tyres, foot traffic, scraping and impact. Excessive and early wear can be caused by the use of under-specified or under-strength concrete or water damage at the construction stage.

Tests are available to measure the abrasion resistance of concrete.

Guidance on performance classes, service conditions and typical applications, together with recommended abrasion resistance test limits, is given in Table 4 of BS 8204-2: 2002. Part of this Table is adapted and reproduced in Figure 1.

The required abrasion resistance should be specified in relation to the service conditions. Differentiating between the service conditions described may be difficult. In practice, many floors will have a combination of uses, particularly when a variety of truck types operate on the floor. It is very common, for example, to find trucks with steel and plastic wheels operating together and also to find rubber-tyred counterbalance trucks operating in certain areas of a floor.

Inadequate abrasion resistance can be improved by surface resin sealers. In more serious cases, mechanical removal of the surface, and the provision of a coating or screed, may be required.

# Abrasion Resistance Specification

Performance classes for abrasion resistance, based on Table 4 of BS 8204-2 : 2003+A2:2011

Performance Class	Service Conditions	Typical Applications	BS8204 test Limits (mm)
<b>Special</b>	Severe Abrasion or Impact from Steel or hard nylon or neoprene wheeled traffic or scoring/scraping by dragging metal objects	Waste Transfer Stations, foundries, heavy engineering and other very aggressive environments	0.05
<b>AR1</b>	Very high Abrasion; steel or hard nylon or neoprene wheeled traffic and impact. Rubber-tyred traffic in areas subject to spillage of abrasive materials.	Production, warehousing and distribution	0.10
<b>AR2</b>	High abrasion; Hard nylon or neoprene wheeled traffic.		0.20
<b>AR4</b>	Moderate abrasion; rubber-tyred traffic	Light duty manufacturing, commercial, sporting and recreational uses	0.40

마모저항도에 대한 일반적인 시방			
BS 8204-2 : 2003 + A2 :2011			
분류	내용	용도	BS 8204 허용치(mm)
Special	매우 극심한 마모 - 철제물건을 바닥에서 끌면서 생기는 마모도 (철, 하드 나일론 또는 네오프렌 바퀴의 주행으로 인한 마모)	폐기물처리장, 주물공장, 중공업 공장외	0.05
AR1	매우 높은 마모 (철, 하드 나일론 또는 네오프렌 바퀴의 주행으로 인한 마모)	일반생산공장, 창고, 물류센터	0.1
AR2	높은 마모 (하드 나일론 또는 네오프렌 바퀴의 주행으로 인한 마모)		0.2
AR4	보통의 마모 (고무타이어 바퀴 주행으로 인한 마모)	경공업공장, 일반 상업시설, 스포츠센터 등	0.4

# Abrasion Resistance Certificate

Client : HEB

Construction Company : 보훈종합건설

Project : 이천 대대리 물류센터

Site : 경기도 이천시 대월면 대대리 576

Area : B2F, 1F, 3F, 4F 각 1 Point

Performance Class : "AR1" – BS 8204 – 2 : 2003 + A2 :2001

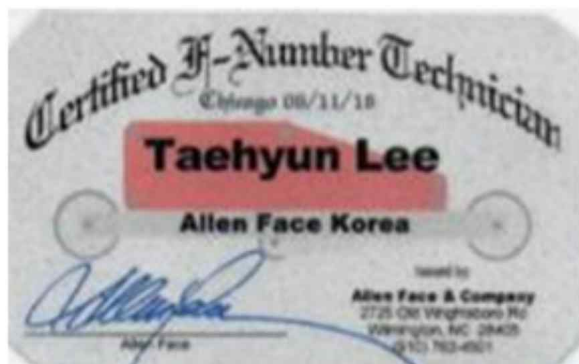
Survey Date : 2024.03.05

## Performance Class

# "AR 1"

Certificate of EN 13892-4 & BS 8204-2 Compliance

ALLENFACE KOREA hereby certifies and pass that 100% conform  
to the **contract floor Abrasion Resistance specification.**



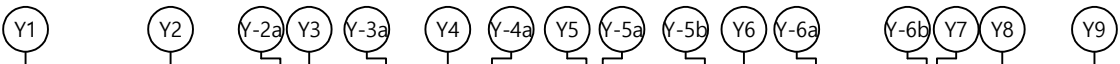
Very truly yours,  
Confirm by  
ALLENFACE KOREA



## Summary of Survey Result

Test Company	Survey Date	Name of Project
AllenFace Korea	2024-03-05	이천시 대월면 대대리 576물류센터

By done - BS 8204-2 : 2003 + A2 : 2011				
Survey result			Permitted Limit AR 1	Remark
SLAB AREA	SLAB ID	Measured	STANDARD	PASS / FAIL
		mm	mm	
B2F	#1	0.055	0.1	PASS
1F	#1	0.091	0.1	PASS
3F	#1	0.181	0.1	PASS
4F	#1	0.055	0.1	PASS
Pass Average		0.096		PASS



## SCALE : 1/300 (A3:1/600)

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NOTE

- | NO | DATE | REVISION DESCRIPTION | 36AMM APP | CHNO |
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T: 02-587-9201  
F: 02-587-6230

ARCHITECT

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(???)

DRAWING NO. A — 200 — 02  
(???)



## Abrasion Testing Record Sheet

JOB AREA :	B2F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현









		Point : 1		
		Before : 0.04		
		After : -0.18		
	Point : 8		Point : 2	
	Before : 0.00		Before : -0.03	
	After : 0.00		After : -0.04	
Point : 7				Point : 3
Before : -0.10				Before : -0.01
After : -0.11				After : 0.00
	Point : 6		Point : 4	
	Before : -0.07		Before : -0.05	
	After : -0.07		After : -0.14	
		Point : 5		
		Before : -0.04		
		After : -0.16		

Point Number	Difference (mm)	Average Difference (mm)	
1	-0.22	$\frac{-0.44}{8} = \underline{0.055} \quad \text{PASS}$	
2	-0.01		
3	0.01		
4	-0.09		
5	-0.12		
6	0.00		
7	-0.01		
8	0.00		



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## Abrasion Testing Record Sheet

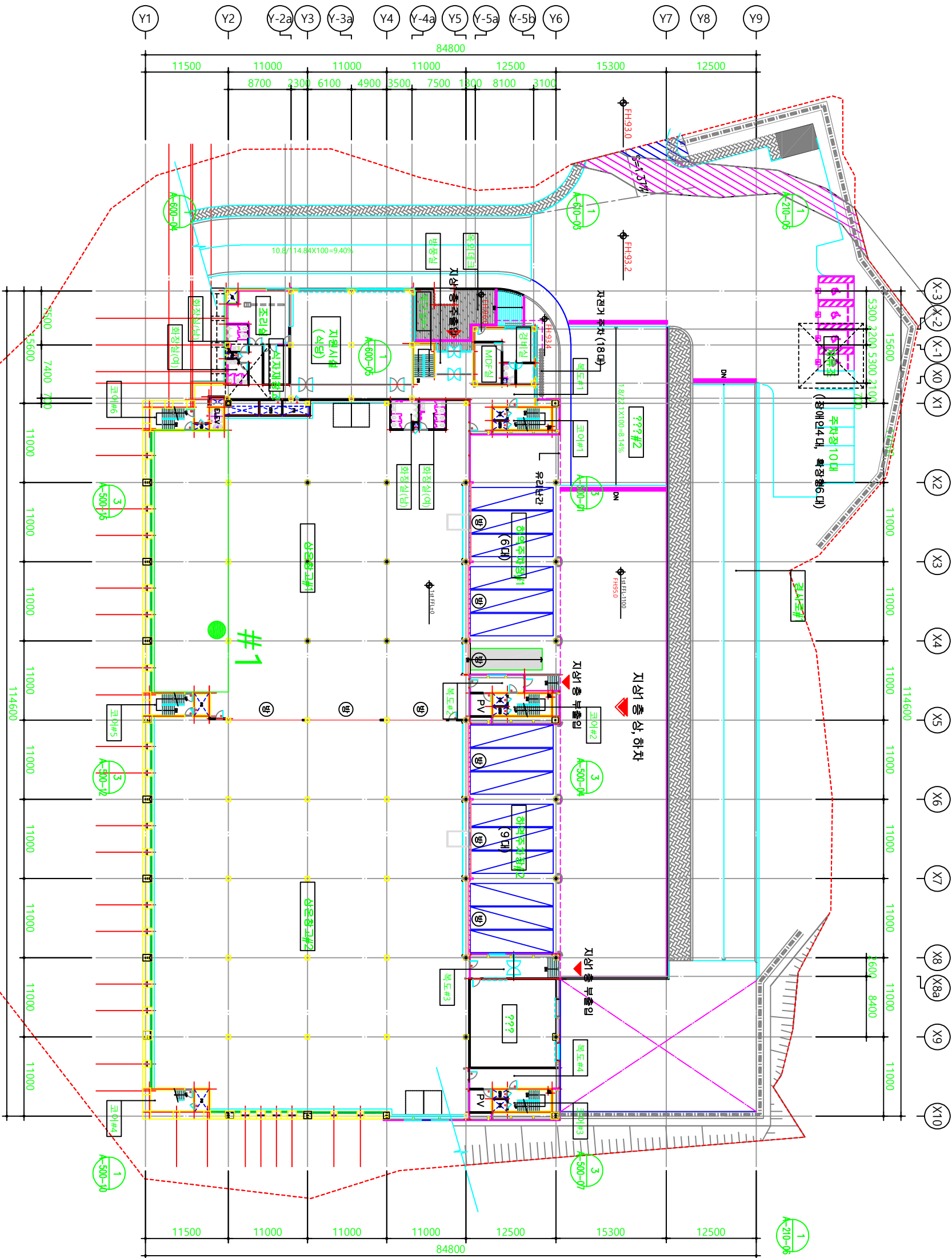
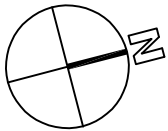
JOB AREA :	B2F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
1 BEFORE	1 AFTER	2 BEFORE	2 AFTER
			
3 BEFORE	3 AFTER	4 BEFORE	4 AFTER
			



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## Abrasion Testing Record Sheet

JOB AREA :	B2F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
5 BEFORE	5 AFTER	6 BEFORE	6 AFTER
			
7 BEFORE	7 AFTER	8 BEFORE	8 AFTER
			



1 지상1층 평면도  
SCALE : 1/300 (A3:1/600)

PROJECT TITLE  
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576???? ????  
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NOTE

1. 2ND FFL = EL+9000  
1ST FFL = EL+0 (FH96.10)  
2ND FFL = EL+4500  
3RD FFL = EL+9000  
4TH FFL = EL+19000  
ROOF SFL = EL+23000  
PH ROOF SFL = EL+33000 (계단탑)  
2. 상온 (4℃ ~)  
냉장 (C급 : 0~4℃)  
냉장&냉동 (C&F급 : -25~0℃)  
냉동 (F급 : -35~-25℃)  
냉동 (SF급 : -55℃ ~)  
3. 감동 방향문  
4. 스크린 방화셔터 (문)  
5. 설비관련 개구부는 설비담당자와 위치 및 크기를 협의하여 공사감독자의 승인을 득한 후 시공할 것  
6. 인테리어 부분 시공시 벽체, 천정, 문, 계단 난간 등의 관계법령 적합성 및 구조안전성을 별도로 확인하여 공사감독자의 승인을 득한 후 시공할 것  
7. 피난 계단 출입구 및 계단실 내에 제1차의 원월한 대피 유도 및 소방대의 인명구조 활동을 위한 피난 정보 표시판(패노그램)을 설치할 것

NO	DATE	REVISION DESCRIPTION	DRAWN	APPROVED
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Architects & Engineers  
T: 02-587-9201  
F: 02-587-6230

APPROVED	DATE
CHECKED	DATE
DRAWN	DATE
SCALE	DATE
A1 1/300	2022.06.
A3 1/600	



## Abrasion Testing Record Sheet

JOB AREA :	1F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현









		Point : 1			
		Before : 0.00			
		After : -0.21			
	Point : 8		Point : 2		
	Before : -0.01		Before : -0.01		
	After : -0.22		After : -0.01		
Point : 7				Point : 3	
Before : -0.07				Before : -0.05	
After : -0.07				After : -0.06	
	Point : 6		Point : 4		
	Before : -0.11		Before : 0.03		
	After : -0.12		After : -0.17		
		Point : 5			
		Before : 0.09			
		After : 0.00			

Point Number	Difference (mm)	Average Difference (mm)	
1	-0.21	$\frac{-0.73}{8} = \underline{0.091} \quad \text{PASS}$	
2	0.00		
3	-0.01		
4	-0.20		
5	-0.09		
6	-0.01		
7	0.00		
8	-0.21		



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## Abrasion Testing Record Sheet

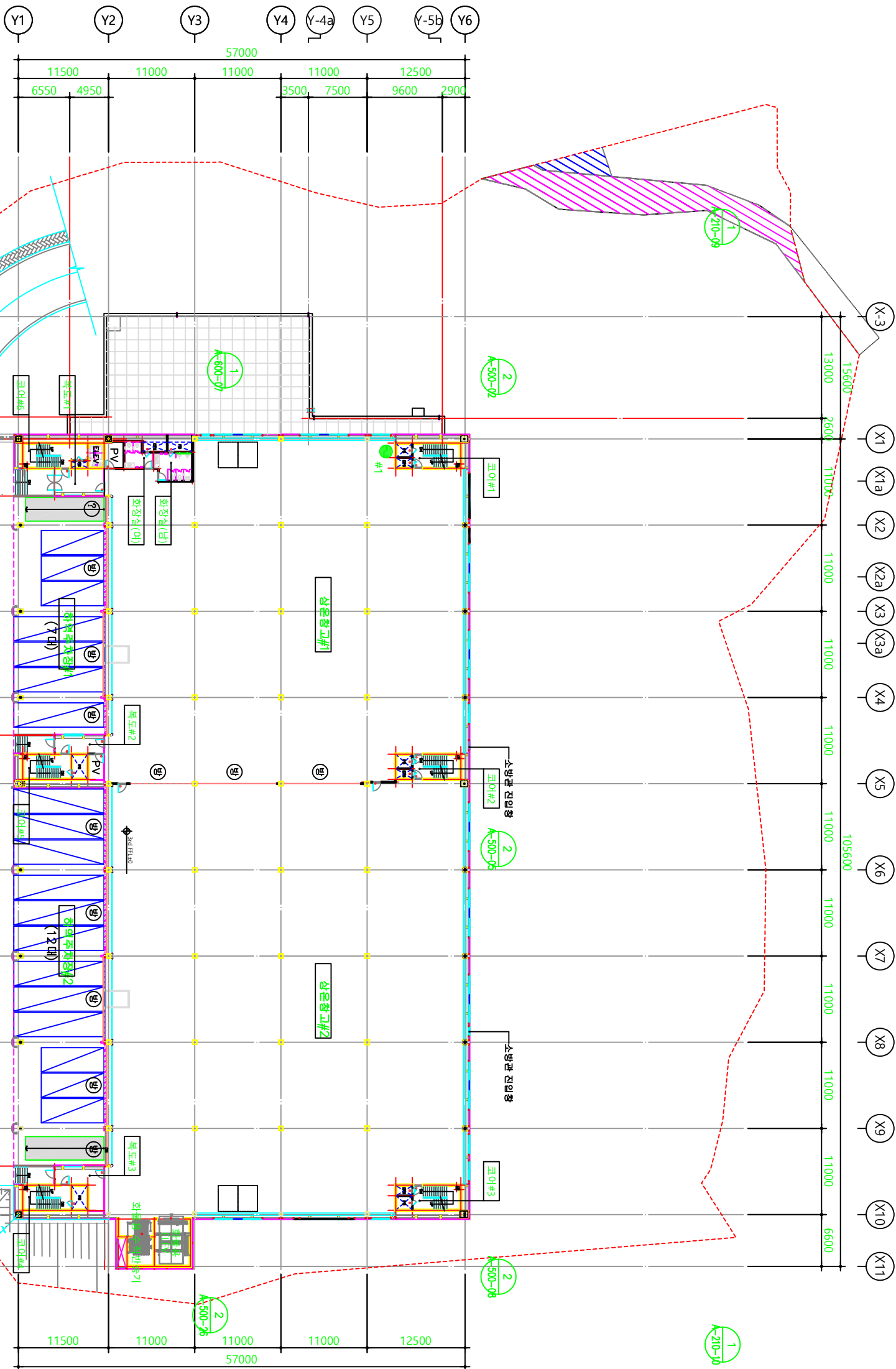
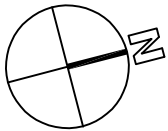
JOB AREA :	1F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
1 BEFORE	1 AFTER	2 BEFORE	2 AFTER
			
3 BEFORE	3 AFTER	4 BEFORE	4 AFTER
			



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## Abrasion Testing Record Sheet

JOB AREA :	1F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
5 BEFORE	5 AFTER	6 BEFORE	6 AFTER
			
7 BEFORE	7 AFTER	8 BEFORE	8 AFTER
			



PROJECT TITLE  
???

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NOTE

1. B2ND FFL = EL+9000  
B1ST FFL = EL+4800  
1ST FFL = EL+0 (FH96.10)  
2ND FFL = EL+4500  
3RD FFL = EL+9000  
4TH FFL = EL+19000  
ROOF SFL = EL+23000  
PH ROOF SFL = EL+33000 (계단탑)
2. 상온 (4℃ ~)  
냉장 (C급 : 0~4℃)  
냉장&냉동 (C&F급 : -25~0℃)  
냉동 (F급 : -35~-25℃)  
냉동 (SF급 : -55℃ ~)
3. 감동 방향문
4. 스크린 방화셔터 (B)
5. 설비관련 개구부는 설비담당자와 위치 및 크기를 협의하여 공사감독자의 승인을 득한 후 시공할 것.
6. 인테리어 부분 시공시 벽체, 천정틀, 문, 계단 난간 등의 관계법령 적합성 및 구조안전성을 별도로 확인하여 공사감독자의 승인을 득한 후 시공할 것.
7. 피난 계단 출입구 및 계단실 내에 제1차의 원활한 대피 유도 및 소방대의 인명구조 활동을 위한 피난 정보 표시판(픽토그램)을 설치할 것.

NO	DATE	REVISION DESCRIPTION	DRAWN	APPROVED
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Architects & Engineers  
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DRAWN

SCALE	DATE
A1 1/ 300 A3 1/ 600	2022.06.

DRAWING TITLE

지상3층 평면도

DRAWING NO. A 200 06

1 지상3층 평면도

SCALE : 1/300 (A3:1/600)











## Abrasion Testing Record Sheet

JOB AREA :	3F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현

		Point : 1		
		Before : -0.01		
		After : -0.03		
	Point : 8		Point : 2	
	Before : -0.03		Before : -0.03	
	After : -0.90		After : -0.08	
Point : 7				Point : 3
Before : -0.02				Before : -0.01
After : -0.21				After : -0.19
	Point : 6		Point : 4	
	Before : -0.03		Before : -0.04	
	After : -0.07		After : -0.11	
		Point : 5		
		Before : -0.02		
		After : -0.05		

Point Number	Difference (mm)	Average Difference (mm)
1	-0.02	$\frac{-1.45}{8} = \underline{0.181} \quad \text{PASS}$
2	-0.05	
3	-0.18	
4	-0.07	
5	-0.03	
6	-0.04	
7	-0.19	
8	-0.87	









# Abrasion Testing Record Sheet

JOB AREA :	3F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
1 BEFORE	1 AFTER	2 BEFORE	2 AFTER
			
3 BEFORE	3 AFTER	4 BEFORE	4 AFTER
			



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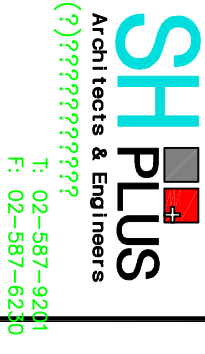
## Abrasion Testing Record Sheet

JOB AREA :	3F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
5 BEFORE	5 AFTER	6 BEFORE	6 AFTER
			
7 BEFORE	7 AFTER	8 BEFORE	8 AFTER
			

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NOTE

1. B2ND FFL = EL+9000  
B1ST FFL = EL+4800
- 1ST FFL = EL+0 (F#96.10)  
2ND FFL = EL+4500  
3RD FFL = EL+9000  
4TH FFL = EL+19000  
ROOF SFL = EL+29000  
PH ROOF SFL = EL+33000 (계단탑)
2. 상온 (4℃~)
- 냉장 (℃): 0~4℃  
냉장보통냉 (℉&℃): -25~0℃  
냉동 (℃): -35~-25℃  
냉동 (℉&℃): -55℃~)
3. 감속 변화율 ●
4. 스크린 명화셔터 (명)
5. 설비관련 계구 부는 설비담당자와 하위 및  
주소를 협의하여 공사감독자의 승인을 득한  
후 시공할 것.
6. 인터리이 부는 시공시 벽체, 천장, 문, 계단  
난간의 관계면적 적합성 및 구조안전을  
확보도 확인하여 공사감독자의 승인을 득한  
후 시공할 것.
7. 피난 계단 출입구 및 계단실 내의 계단사의  
정확한 위치와도 및 소방대의 인명구조  
활동에 위한 피난 정보 표시판(픽트그램)을  
설치할 것.

NO	DATE	REVISION DESCRIPTION	BY	APP	CHECK
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T: 02-587-9201  
F: 02-587-6230

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ARCHITECT

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DATE	2022.06.	
A1	1 / 300	SCALE
A3	1 / 600	

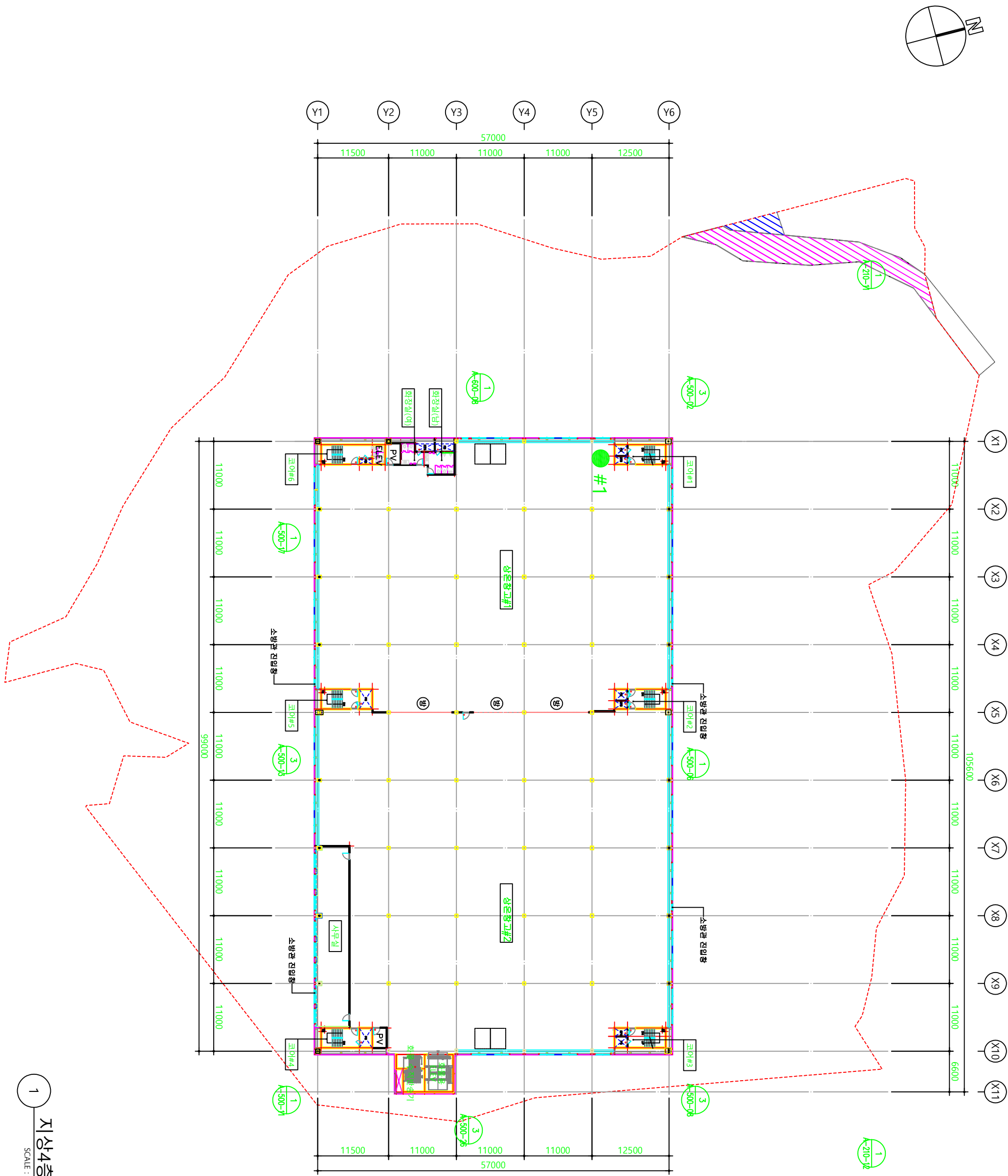
DRAWING TITLE  
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(2)

2014년 4월 4일

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(2)



## Abrasion Testing Record Sheet

JOB AREA :	4F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현

		Point : 1		
		Before : 0.00		
		After : -0.04		
	Point : 8		Point : 2	
	Before : 0.02		Before : -0.01	
	After : 0.00		After : -0.02	
Point : 7				Point : 3
Before : 0.08				Before : 0.00
After : -0.06				After : -0.13
	Point : 6		Point : 4	
	Before : 0.00		Before : 0.02	
	After : -0.01		After : -0.02	
		Point : 5		
		Before : -0.02		
		After : -0.07		









Point Number	Difference (mm)	Average Difference (mm)
1	-0.04	$\frac{-0.44}{8} = \underline{0.055} \quad \text{PASS}$
2	-0.01	
3	-0.13	
4	-0.04	
5	-0.05	
6	-0.01	
7	-0.14	
8	-0.02	









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## Abrasion Testing Record Sheet

JOB AREA :	4F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
1 BEFORE	1 AFTER	2 BEFORE	2 AFTER
			
3 BEFORE	3 AFTER	4 BEFORE	4 AFTER
			

# Abrasion Testing Record Sheet

JOB AREA :	4F #1	Machine Serial Number :	100588
DATE :	2024-03-05	SURVEYOR :	최동현
5 BEFORE	5 AFTER	6 BEFORE	6 AFTER
			
7 BEFORE	7 AFTER	8 BEFORE	8 AFTER
