

ABBREVIATIONS			
ACD	AUTOMATIC CONTROL DAMPER	HGRH	HOT GAS REHEAT
ACD	ACCESS DOOR	HP	HORSEPOWER
AFF	ABOVE FINISHED FLOOR	HPS	HIGH PRESSURE STEAM
AHU	AIR HANDLING UNIT	HRC	HEAT RECOVERY COIL
AP	ACCESS PANEL	HWR	HOT WATER RETURN
APD	AIR PRESSURE DROP	HWS	HOT WATER SUPPLY
AS	AIR SEPARATOR	HX	HEAT EXCHANGER
B	BOILER	HZ	
BAS	BUILDING AUTOMATION SYSTEM	IPLV	INTEGRATED PART LOAD VALUE
BASC BFV	BUILDING AUTOMATION SYSTEM CONTRACTOR BUTTERFLY VALVE	KG KH	
BFW	BOILER FEED WATER	LAT	KITCHEN HOOD LEAVING AIR TEMPERATURE
BHP	BRAKE HORSEPOWER	LPS	LOW PRESSURE STEAM
BOD	BOTTOM OF DUCT	LWT	LEAVING WATER TEMPERATURE
BOI	BOTTOM OF INSULATION	MAU	MAKE-UP AIR UNIT
BOP	BOTTOM OF PIPE	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BT	BUFFER TANK	MC	MECHANICAL CONTRACTOR
BTU	BRITISH THERMAL UNIT	MCA	
BTUH	BRITISH THERMAL UNIT PER HOUR	MOCP	MAXIMUM OVER-CURRENT PROTECTION
BV C	BALL VALVE COMMON	MU NC	MAKE-UP WATER NORMALLY CLOSED
CBV		NIC	NOT IN CONTRACT
CC	COOLING COIL	NK	NECK
CFH	CUBIC FEET PER HOUR	NO	NORMALLY OPEN
CFM	CUBIC FEET PER MINUTE	NPLV	NONSTANDARD PART LOAD VALUE
CHWR	CHILLED WATER RETURN	NPSH	NET POSITIVE SUCTION HEAD
CHWS	CHILLED WATER SUPPLY	NTS	NOT TO SCALE
CO	CLEANOUT	OA	
		OAD	
CONV COP	CONVECTOR COEFFICIENT OF PERFORMANCE	OSD OS&Y	OPEN SITE DRAIN OUTSIDE STEM AND YOKE
COP CO2	COEFFICIENT OF PERFORMANCE CARBON DIOXIDE	P	PUMP
CR	CONDENSATE RETURN	PCC	PRE-COOL COIL
CT	COOLING TOWER	PD	PRESSURE DROP
CU	CONDENSING UNIT	PG	PROPYLENE GLYCOL
CV	CONTROL VALVE	PHC	PREHEAT COIL
CW	COLD (OR CITY) WATER	PRD	PRESSURE RELIEF DOOR
CWR	CONDENSER WATER RETURN	PRV	PRESSURE REDUCING (OR REGULATING) VALVE
CWS	CONDENSER WATER SUPPLY	PS	
D DB	DRAIN DRY BULB	PSI -R	POUNDS PER SQUARE INCH RETURN
DHW	DOMESTIC HOT WATER	RA	RETURN AIR
DHWR	DOMESTIC HOT WATER RETURN	RAD	RADIANT PANEL
DN	DOWN	RF	RETURN FAN
DOAS	DEDICATED OUTDOOR AIR SYSTEM	RH	REHEAT
DPT	DIFFERENTIAL PRESSURE TRANSDUCER	RHC	REHEAT COIL
DS	DUCT SLEEVE	RL	REFRIGERANT LIQUID
DTR	DUAL TEMPERATURE WATER RETURN	RPM	REVOLUTIONS PER MINUTE
DTS -E	DUAL TEMPERATURE WATER SUPPLY	RS RTU	REFRIGERANT SUCTION ROOFTOP UNIT
EA	EXHAUST EXHAUST AIR	RV	RELIEF VALVE
EAD	EXHAUST AIR DAMPER	-S	SUPPLY
EAT	ENTERING AIR TEMPERATURE	SA	SUPPLY AIR
EBB	ELECTRIC BASEBOARD	SAN	SANITARY
EC	ELECTRICAL CONTRACTOR	SD	SMOKE DAMPER
ECM	ELECTRONICALLY COMMUTATED MOTOR	SEER	SEASONAL ENERGY EFFICIENCY RATIO
EDH	ELECTRIC DUCT HEATER	SF	SUPPLY FAN
EER	ENERGY EFFICIENCY RATIO	SP SS	STATIC PRESSURE
EF EG	EXHAUST FAN ETHYLENE GLYCOL	SS	STAINLESS STEEL SATURATED SUCTION TEMPERATURE
EG	EXPANSION JOINT	ST	STORM
ERV	ENERGY RECOVERY VENTILATOR	STM	STEAM
ESP	EXTERNAL STATIC PRESSURE	STR	STRAINER
ET	EXPANSION TANK	SUH	SUSPENDED UNIT HEATER
EWT	ENTERING WATER TEMPERATURE	T	THERMOSTAT
F		-T	
FC FD	FLEXIBLE CONNECTOR (OR CONNECTION) FLOOR DRAIN	TDH TDV	TOTAL DYNAMIC HEAD TRIPLE DUTY VALVE
FD FCU	FLOOR DRAIN FAN COIL UNIT	TYP	TYPICAL
FID	FIRE DAMPER	TFA	TO FLOOR ABOVE
FSD	FIRE/SMOKE DAMPER	TFB	TO FLOOR BELOW
FFA	FROM FLOOR ABOVE	TSP	TOTAL STATIC PRESSURE
FFB	FROM FLOOR BELOW	UC	UNDERCUT DOOR
FLA	FULL LOAD AMPS	UH	
FOB FOT	FLAT ON BOTTOM FLAT ON TOP	V VAV	VENT VARIABLE AIR VOLUME
FOI	FIAT ON TOP FINS PER INCH	VAV VD	VOLUME DAMPER
FPI	FEET PER MINUTE	VFD	VARIABLE FREQUENCY DRIVE
FS	FILL SYSTEM	VTR	VENT THROUGH ROOF
FTR	FINNED TUBE RADIATION	WB	WET BULB
FV	FACE VELOCITY	WC	WATER COLUMN
G	GAS	WG	WATER GAUGE
GA	GAUGE	WL	WALL LOUVER
GPM	GALLONS PER MINUTE	WPD	WATER PRESSURE DROP
HC HG	HEATING COIL HOT GAS		

- CHICAGO BUILDING CODE REQUIREMENTS.
- 2. ALL EQUIPMENT FURNISHED AND INSTALLED SHALL BE IN FULL COMPLIANCE WITH THE CURRENT STANDARDS SET BY THE CITY OF CHICAGO DEPARTMENT OF INSPECTIONAL SERVICES.
- 3. ALL NEW DUCTWORK INSTALLED SHALL BE OF GALVANIZED METAL. ALL SHEETMETAL INSTALLATION SHALL COMPLY WITH THE LATEST STANDARDS OF SMACNA AND ASHRAE.
- 4. ALL NEW EQUIPMENT PROVIDED SHALL BE U.L. LISTED AND SHALL BEAR THE U.L. LABEL.

ISFA - GUARANTEED RATE STADIUM - HVAC/AHU RENOVATION PHASE XI 333 W 35TH STREET CHICAGO, ILLINOIS 60616

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ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS LISTED ABOVE MAY BE USED OR APPEAR IN THESE DRAWINGS.

E 34th St E 34th St 35th-Bronzeville-lit Lowe Ave St McClelan Elementary School W 35th St W 35th St W 35th St 0 E 36th St Guaranteed Rate Field Abbot Elementary School Raymond Elementary School 37th St W 37th St Bridgeport Catholic South Elementary School W 37th PI W 38th St

1) LOCATION MAP

Sheet List Table		
Sheet Number	Sheet Title	
MECHANICAL		
M0.01	MECHANICAL TITLE SHEET	
MD1.01	MECHANICAL DEMOLITION PLAN - CONCOURSE OVERALL	
MD1.02	MECHANICAL DEMOLITION PLAN - CONCOURSE ENLARGED PLANS	
MD1.03	MECHANICAL DEMOLITION PLAN - LEVEL 100 OVERALL	
MD1.04	MECHANICAL DEMOLITION PLAN - LEVEL 100 ENLARGED PLANS	
MD1.05	MECHANICAL DEMOLITION PLANS - LEVEL 200 OVERALL	
MD1.06	MECHANICAL DEMOLITION PLANS - LEVEL 200 ENLARGED PLANS	
MD1.07	MECHANICAL DEMOLITION PLANS - LEVEL 300 OVERALL	
MD1.08	MECHANICAL DEMOLITION PLANS - LEVEL 300 ENLARGED PLANS	
MD1.09	MECHANICAL DEMOLITION PLANS - LEVEL 400 OVERALL	
MD1.10	MECHANICAL DEMOLTION PLAN - LEVEL 400 ENLARGED PLANS	
MD1.11	MECHANICAL DEMOLITION PLAN - LEVEL 500 OVERALL	
MD1.12	MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS	
M1.01	MECHANICAL NEW WORK PLAN - CONCOURSE OVERALL	
M1.02	MECHANICAL NEW WORK PLAN - CONCOURSE ENLARGED PLANS	
M1.03	MECHANICAL NEW WORK PLAN - LEVEL 100 OVERALL	
M1.04	MECHANICAL NEW WORK PLAN - LEVEL 100 ENLARGED PLANS	
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M1.06	MECHANICAL NEW WORK PLANS - LEVEL 200 ENLARGED PLANS	
M1.07	MECHANICAL NEW WORK PLANS - LEVEL 300 OVERALL	
M1.08	MECHANICAL NEW WORK PLANS - LEVEL 300 ENLARGEDD PLANS	
M1.09	MECHANICAL NEW WORK PLANS - LEVEL 400 OVERALL	
M1.10	MECANICAL NEW WORK PLANS - LEVEL 400 ENLARGED PLANS	
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M2.01	MECHANICAL SCHEMATICS	
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M3.02	MECHANICAL DETAILS	
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M5.01	MECHANICAL SPECIFICATIONS	
M5.02	MECHANICAL SPECIFICATIONS	

CITY OF CHICAGO NOTES

- . ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF 5. ALL OUTSIDE AIR INTAKES SHALL BE A MINIMUM OF 15'-0" FROM ANY EXHAUST LOUVERS, PLUMBING VENTS OR ANY OTHER POSSIBLE CONTAMINANTS AND SHALL BE A MINIMUM OF 10'-0" ABOVE GRADE.
 - 6. IF FLEXIBLE DUCTS ARE USED, DO NOT EXCEED 5'-0" IN LENGTH. ALL FLEXIBLE DUCTWORK TO BE CITY OF CHICAGO APPROVED.
 - 7. NOISE FROM ALL MECHANICAL EQUIPMENT INSTALLED SHALL NOT EXCEED 55 DB AT THE PROPERTY LINE.

PROJECT SCOPE OF WORK

- TRASH CHUTE EXHAUST: 1.1. REPLACE ROOF MOUNTED EXHAUST FAN SERVING RIGHT FIELD TRASH CHUTE EXHAUST. 1.2. BALANCE EXHAUST GRILLES SERVING LOWER LEVELS. 2. COMMAND CENTER COOLING:
- 2.1. DEMOLISH TWO EXISTING CHILLED WATER FAN COILS. REMOVE UNITS, DIFFUSERS, CHILLED WATER PIPING, AND CONDENSATE DRAINAGE. 2.2. INSTALL NEW FAN COIL UNIT IN NEW LOCATION ADJACENT TO SPACE SERVED. CONNECT TO EXISTING REMAINING CONDENSATE DRAIN AND INSTALL NEW CHILLED WATER PIPING FROM SERVICE CORRIDOR TO NEW UNIT LOCATION.
- IT ROOM COOLING: 3.1. DEMOLISH NON-FUNCTIONING WALL MOUNTED CASSETTE COOLING UNIT, ASSOCIATED CONDENSATE PUMP, AND CORRIDOR CONDENSING UNIT. 3.2. DEMOLISH ABANDONED IN PLACE CONDENSING UNIT AND ASSOCIATED PIPING. 3.3. INSTALL NEW WALL MOUNTED DX CASSETTE UNIT WITH INTEGRAL CONDENSATE PUMP AND ASSOCIATED CONDENSING UNIT MOUNTED SUSPENDED IN THE SERVICE CORRIDOR.
- 4. ICE CREAM VENDOR COOLING: 4.1. INSTALL NEW WALL MOUNTED DX CASSETTE UNIT WITH INTEGRAL CONDENSATE PUMP AND ASSOCIATED ROOF MOUNTED CONDENSING UNIT.
- 5. CONCESSION VENDOR COOLER EXHAUST: 5.1. REPLACE EXISTING EXHAUST FAN IN COOLER ROOM OF CONCESSION VENDOR IN SECTION 154. 6. HYDROTHERAPY PUMP ROOM COOLING:
- STADIUM CLUB AHU REPLACEMENT:
- 7.1. REPLACE THREE (3) AIR HANDLERS SERVING THE STADIUM CLUB AND SUPPORT SPACES. 8. DISHWASHER EXHAUST REPAIR & DRAIN:
- 8.1. REMOVE SECTION OF DISHWASHER EXHAUST DUCTWORK CORRODED OR WATER DAMAGED. 8.2. INSTALL NEW SECTION OF STAINLESS STEEL DUCTWORK AND PROVIDE DRAIN ROUTED TO NEARBY OPEN SITE DRAIN.
- 9. KITCHEN EXHAUST MODIFICATION: 10. BARDS ROOM LOBBY FAN COIL:



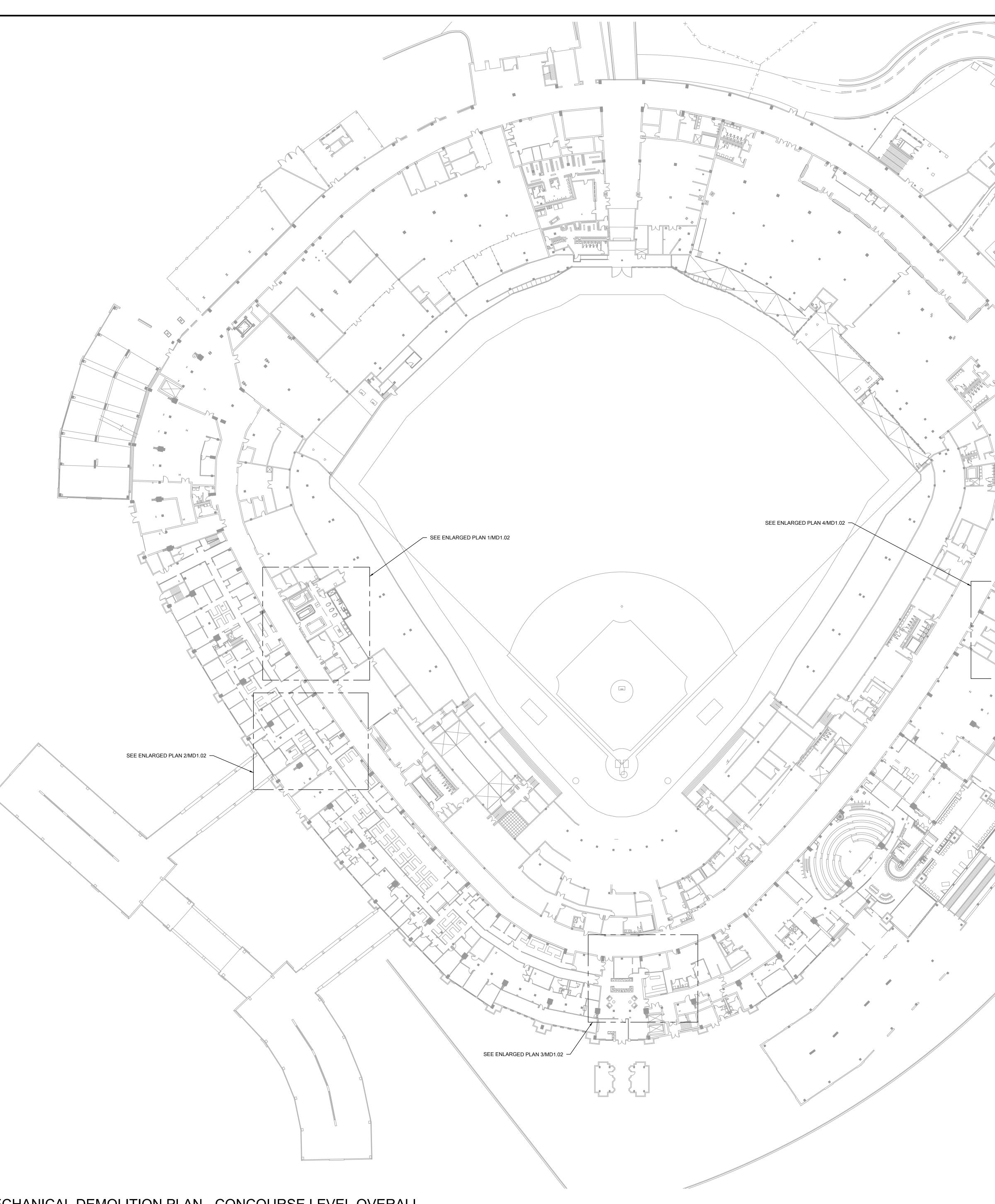
	MECHANIC	AL SYMBOLS	
PIPING		$-\!\!-\!$	PUMP
	NEW PIPING		
	EXISTING PIPING TO REMAIN	[T]	STEAM TRAP
	EXISTING PIPING TO BE DEMOLISHED	 5 	STRAINER
Z	ANGLE VALVE	<u>۲</u>	SUCTION DIFFUSER
Ħ	AQUASTAT	<u>ـــــ</u>	TEST PLUG
——	BACKFLOW PREVENTER	₽°F	THERMOMETER
ю	BALL VALVE	tgi	THERMOSTATIC MIXING VALVE
	BUTTERFLY VALVE		THREE-WAY, MODULATING AUTOMATIC CONTROL VALVE
<u>V</u>	CHECK VALVE		THREE-WAY, TWO-POSITION AUTOMATIC CONTROV
—₩— —⊗—	CIRCUIT SETTER BALANCING VALVE		TRIPLE DUTY VALVE
4	DIRECTION OF FLOW		TWO-WAY, MODULATING AUTOMATIC CONTROL \
	DIRECTION OF PIPE PITCH, DOWN	Ŗ	TWO-WAY, TWO-POSITION AUTOMATIC CONTROL
ю́II	DRAIN VALVE WITH 3/4" THREADED HOSE ADAPTOR	<u> </u>	Y-STRAINER CHECK VALVE
<u> </u>	ECCENTRIC PIPE REDUCER	DUCTWORK	
	FLEXIBLE PIPE CONNECTOR (OR CONNECTION)		NEW DUCTWORK
д	FLOW SWITCH		EXISTING DUCTWORK TO REMAIN
T			
	GAS COCK		EXISTING DUCTWORK TO BE DEMOLISHED
X	GATE VALVE	AD	ACCESS DOOR
	GLOBE VALVE		AUTOMATIC CONTROL (OR MOTOR OPERATED) D
& ^A	MANUAL AIR VENT		
	MANUAL THREE-WAY, TWO-POSITION VALVE		DIRECTION OF AIRFLOW
i ki	NEEDLE VALVE		DUCTWORK BREAK LINE (OR CONTINUATION)
	NEW PIPE CONNECTION	FID	FIRE DAMPER
	ORIFICE PIPE UNION	FC	FLEXIBLE DUCTWORK CONNECTION
	PIPE ALIGNMENT GUIDE		
——————————————————————————————————————	PIPE ANCHOR		
s	PIPE BREAK	A <u>6x6 NK</u> 100-S	GRILLE/REGISTER/DIFFUSER TAG
	PIPE CAP	CFM J L SERVICE	
	PIPE DROP/RISE		MANUAL VOLUME (OR BALANCING) DAMPER
+~~	PIPE ELBOW, 45° HORIZONTAL	11	WANDAL VOLUME (OR BALANCING) DAWF ER
t <u>-</u>	PIPE ELBOW, 90° HORIZONTAL		RECTANGULAR EXHAUST/RETURN DUCTWORK D
+5 	PIPE ELBOW, DOWN AND 90° HORIZONTAL		RECTANGULAR EXHAUST/RETURN DUCTWORK U
iə	PIPE ELBOW, TURNED DOWN	×	RECTANGULAR SUPPLY DUCTWORK DOWN
	PIPE ELBOW, TURNED UP	\bowtie	RECTANGULAR SUPPLY DUCTWORK UP
EJ	PIPE EXPANSION JOINT	\bigcirc	ROUND DUCTWORK DOWN
	PIPE REDUCER/INCREASER	\bigcirc	ROUND DUCTWORK UP
Ĩ	PIPE REDUCER/INCREASER TEE	GENERAL	
ŧ	PIPE SLEEVE	(T)	DDC OR STANDALONE PROGRAMMABLE THERMO
ſ	PIPE TEE, BOTTOM CONNECTION, 45° OR 90° ELBOW	<u> </u>	
	PIPE TEE, DOWN	P TYPE	EQUIPMENT TAG
;÷;			
i ', r	PIPE TEE, FOUR-WAY, HORIZONTAL	Î	
t+ م			
tōt	PIPE TEE, TOP CONNECTION, 45° OR 90° ELBOW		POINT OF CONNECTION OF NEW TO EXISTING WO
	PIPE TEE, UP	\mathbf{X}	POINT OF DEMOLITION TO EXISTING WORK
	PIPE UNION	<u>CO</u> 2	CARBON DIOXIDE DETECTOR/SENSOR
	PIPE WELL	OPT	DIFFERENTIAL PRESSURE TRANSDUCER
Ø PSI	PRESSURE GAUGE		
⋫	PRESSURE REDUCING/REGULATING VALVE	VFD	VARIABLE FREQUENCY DRIVE
λα−-5 [PRESSURE/SAFETY RELIEF VALVE		

NOTE: NOT ALL SYMBOLS LISTED ABOVE MAY BE USED OR APPEAR IN THESE DRAWINGS.

11/05/2 PR

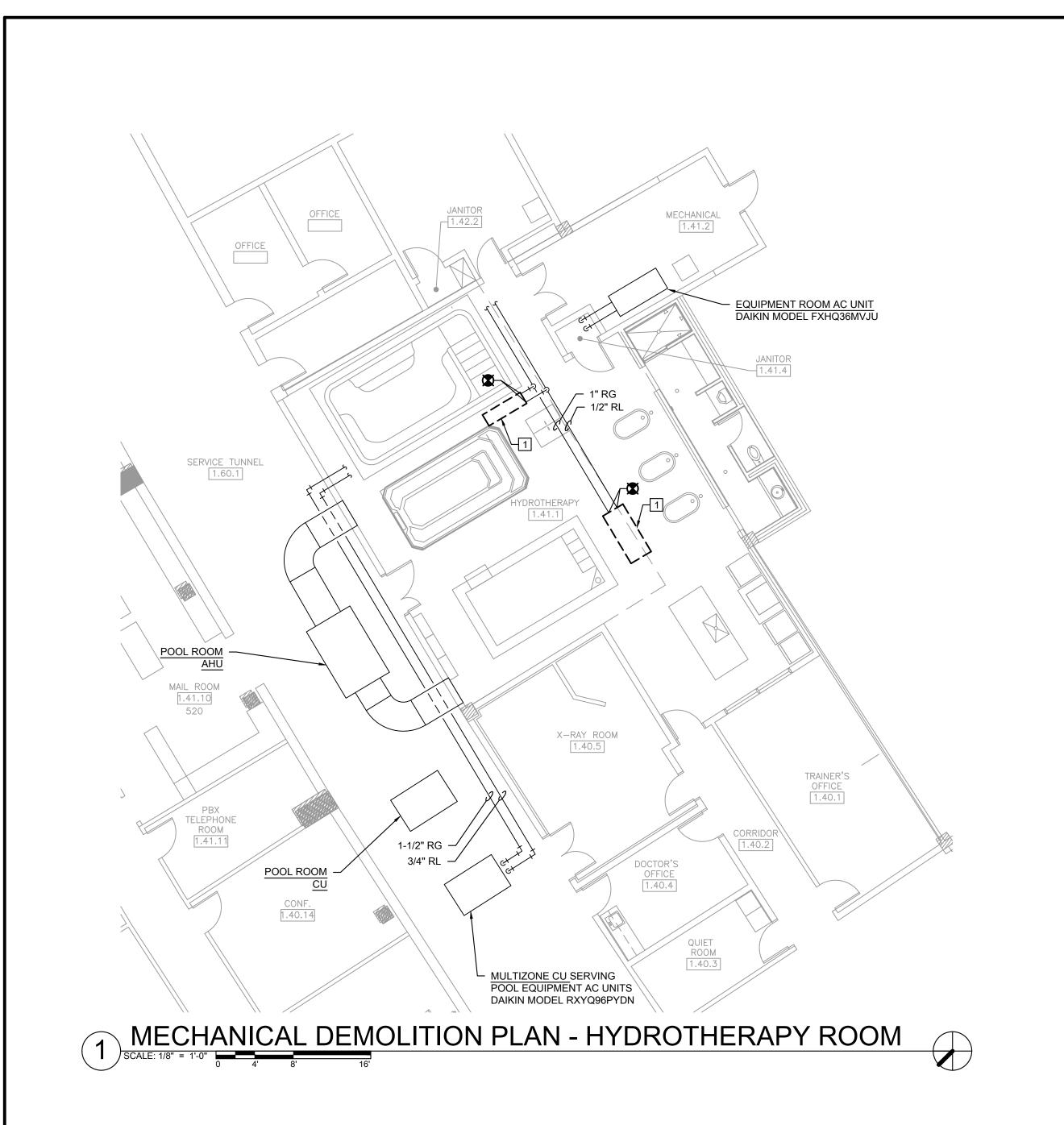
	ELÂRA
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	(708) 236-0300 (708) 236-0330 FAX
OL	
ROL	
_ VALVE	ILLINOIS SPORTS
DL VALVE	FAGILITIES AUTIDORITY
DAMPER	
DOWN	
UP	
IOSTAT	
VORK	
	KEY PLAN
	ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: MECHANICAL TITLE SHEET
	 .
	DESIGNED BY: DA
	CHECKED BY: MS
	PROJECT NO: 21276 SCALE: NO SCALE
2024	SHEET NO.
ELIMINARY - NOT FOR CONSTRUCTION	M0.01

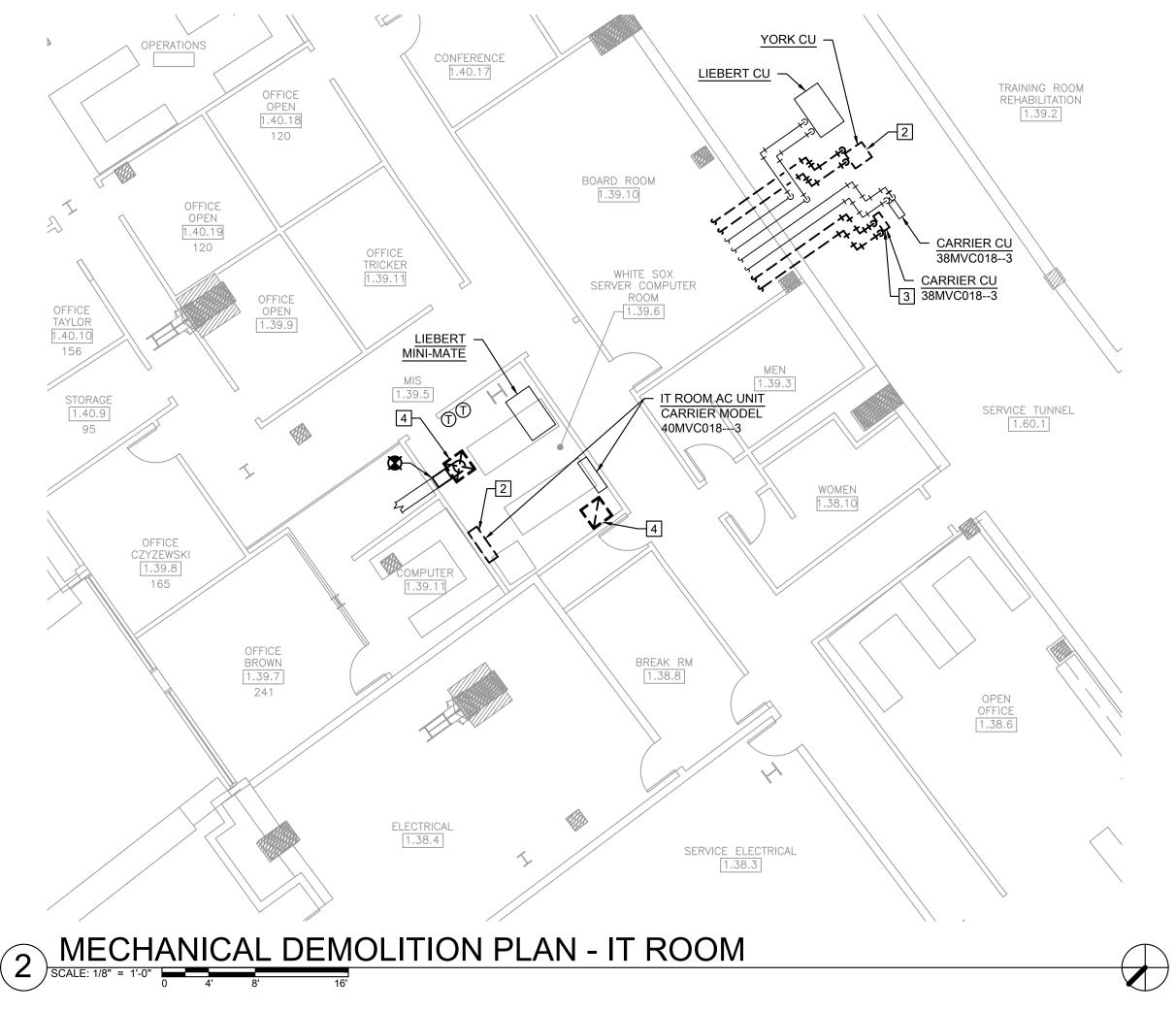
KEYED MECHANICAL DEMOLITION SHEET NOTES I



DECHANICAL DEMOLITION PLAN - CONCOURSE LEVEL OVERALL

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	30 N. Wolf Rd., Second Floor Hillside, IL 60162
	(708) 236-0300 (708) 236-0330 FAX
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	ILLINOIS SPORTS
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	KEY PLAN
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET,
\frown	CHICAGO, ILLINOIS 60616
	DRAWING TITLE: MECHANICAL DEMOLITION
	PLAN - CONCOURSE OVERALL
	I
	DESIGNED BY: DA
	CHECKED BY: MS
	CHECKED BY: MS PROJECT NO: 21276
2021 ISSUED FOR BID	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0" SHEET NO.
2021 ISSUED FOR BID ELIMINARY - NOT FOR CONSTRUCTION	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"





KEYED MECHANICAL DEMOLITION SHEET NOTES

- 1. DISCONNECT AND DEMOLISH EXISTING DX CASSETTES LOCATED IN SPACE BELOW FLOOR CONTAINING POOL EQUIPMENT AND ASSOCIATED ELECTRICAL EQUIPMENT. EQUIPMENT IS DIRECTLY SUPPORTED FROM FLOOR STRUCTURE ABOVE.
- DRAIN TO POINT OF CONNECTION TO SHARED DRAIN LINE. RECOVER REFRIGERANT.
- PIPING.
- 4. DEMOLISH EXISTING CEILING DIFFUSER AND ASSOCIATED CONNECTED DUCT WHEN PRESENT. PROVIDE NEW CEILING TILE WITH 6" BATT INSULATION ON TOP.
- 5. DISCONNECT EXISTING CHILLED WATER PIPING UPSTREAM OF SPLIT. CAP AND RETAIN FOR USE BY NEW FAN COIL SHOWN IN THE NEW WORK PLAN.
- 6. DISCONNECT AND DEMOLISH TWO (2) EXISTING DUCTED FAN COILS ABOVE CEILING, INCLUDING SUPPORTS AND HANGERS.
- 7. DEMOLISH EXISTING SUPPLY DIFFUSERS. REMOVE FLEX DUCT AND ANY SUPPORTS OR CONNECTORS ABOVE CEILING.
- REMAIN SHARED DRAIN LINE.
- CONNECTORS.

DEMOLISHED.

SERVICE TUNNEL [1.60.1]	5 🕱
P.R. 1.31.10 INTERVIEW 1.31.10 ADMIN. OFFICE 1.30.5	STORAGE 1.30.4
BREAK ROOM 1.31.4 COMMAND CENTER 1.29.9 RECEPTION/LOBBY 1.30.7	8"Ø NK 100-S 8"Ø NK
CHECK-IN 1.31.8 HECK-IN 1.31.8 HECK-IN HECK	100-S
$3 \xrightarrow{\text{MECHANICAL DEMOLITION}} 3 \xrightarrow{\text{SCALE: 1/8"} = 1'-0"} \xrightarrow{0 4' 8' 16'} 3 \xrightarrow{16'} 3 \xrightarrow$	N PLAI

M
341,26"
<u></u>

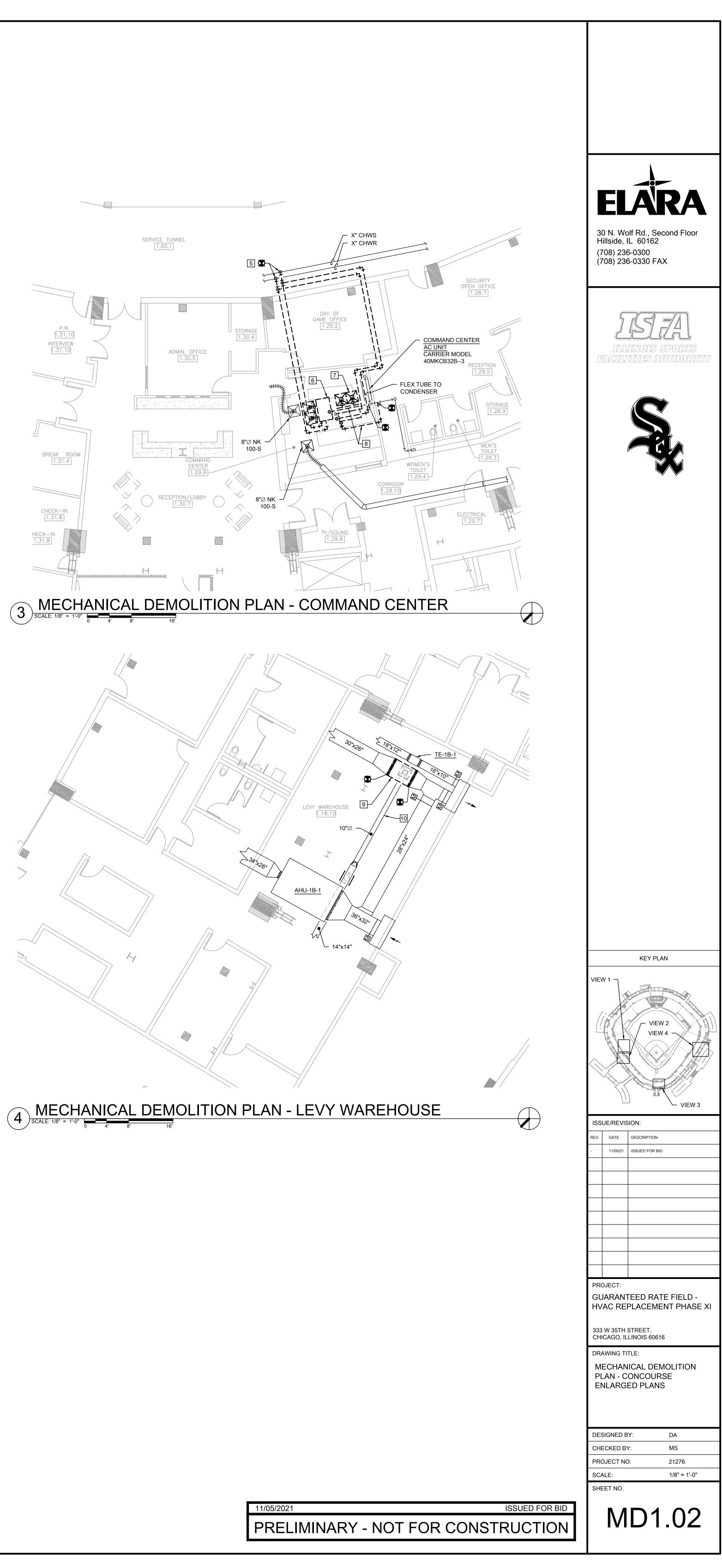
2. DISCONNECT AND DEMOLISH EXISTING DX CASSETTE AND EXTERNAL CONDENSATE PUMP, AND ASSOCIATED CONDENSATE 3. CONDENSING UNITS ARE SUSPENDED HIGH ABOVE SERVICE CORRIDOR. REMOVE UNIT AND ALL ASSOCIATED SUPPORTS AND

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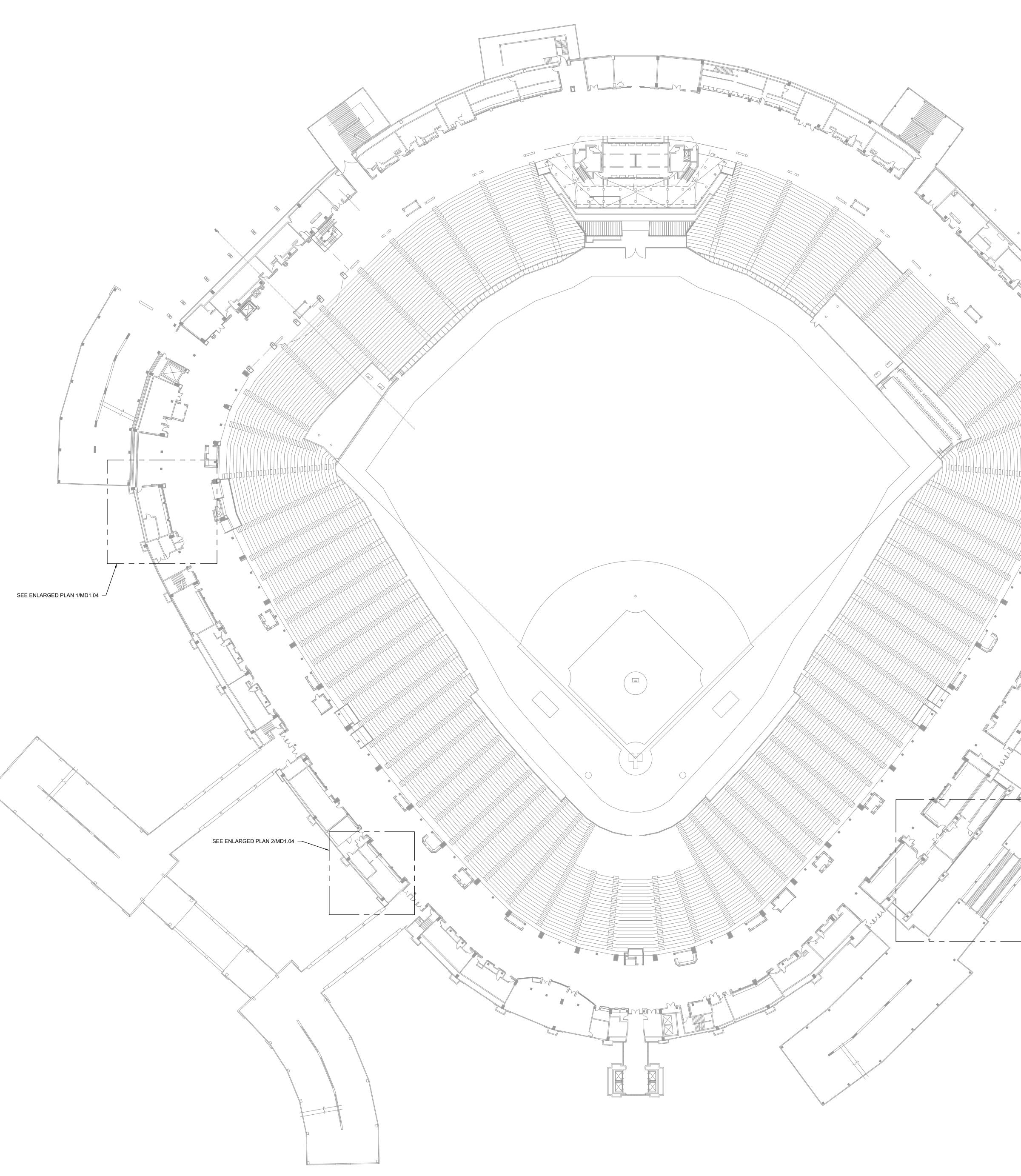
8. DISCONNECT AND DEMOLISH EXISTING CONDENSATE DRAIN LINES ASSOCIATED WITH EACH FAN COIL. CAP AT THE EXISTING TO

9. DISCONNECT AND DEMOLISH EXISTING INLINE RETURN FAN LOCATED ROUGHLY 15'+ ABOVE GRADE AND ASSOCIATED FLEX

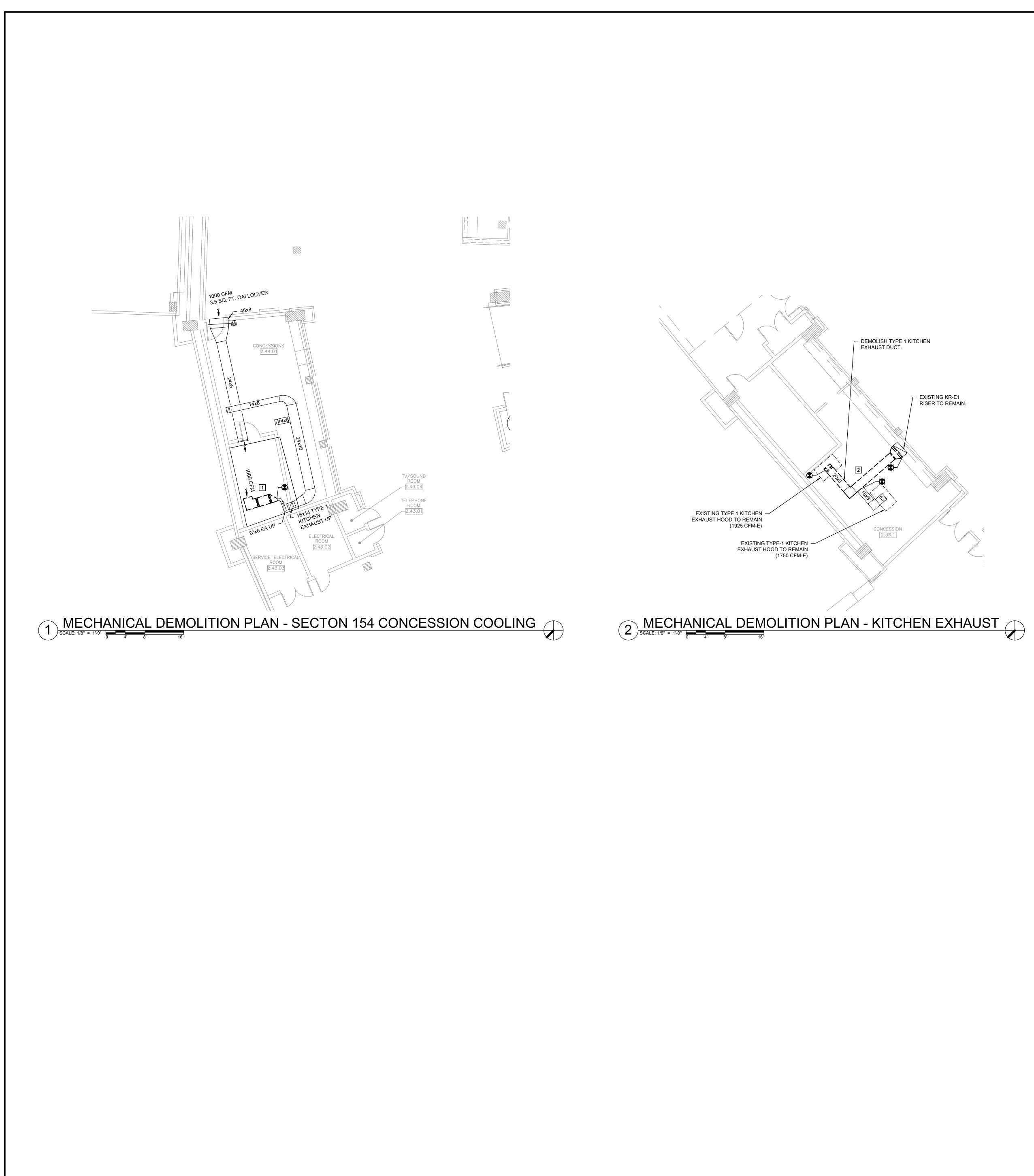
10. CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGING SUSPENDED SUPPLY DUCTS AND GRILLES DIRECTLY BELOW FAN TO BE

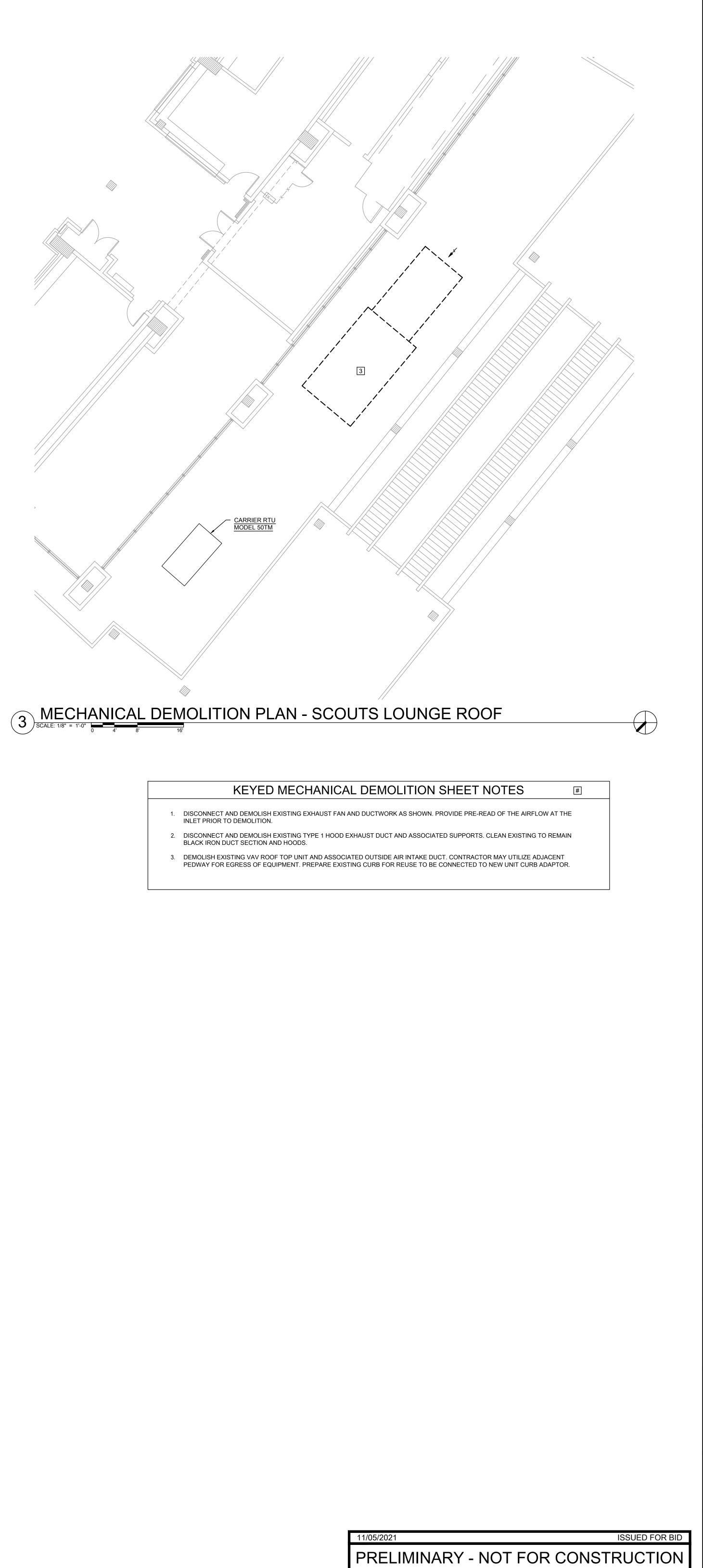


KEYED MECHANICAL DEMOLITION SHEET NOTES I

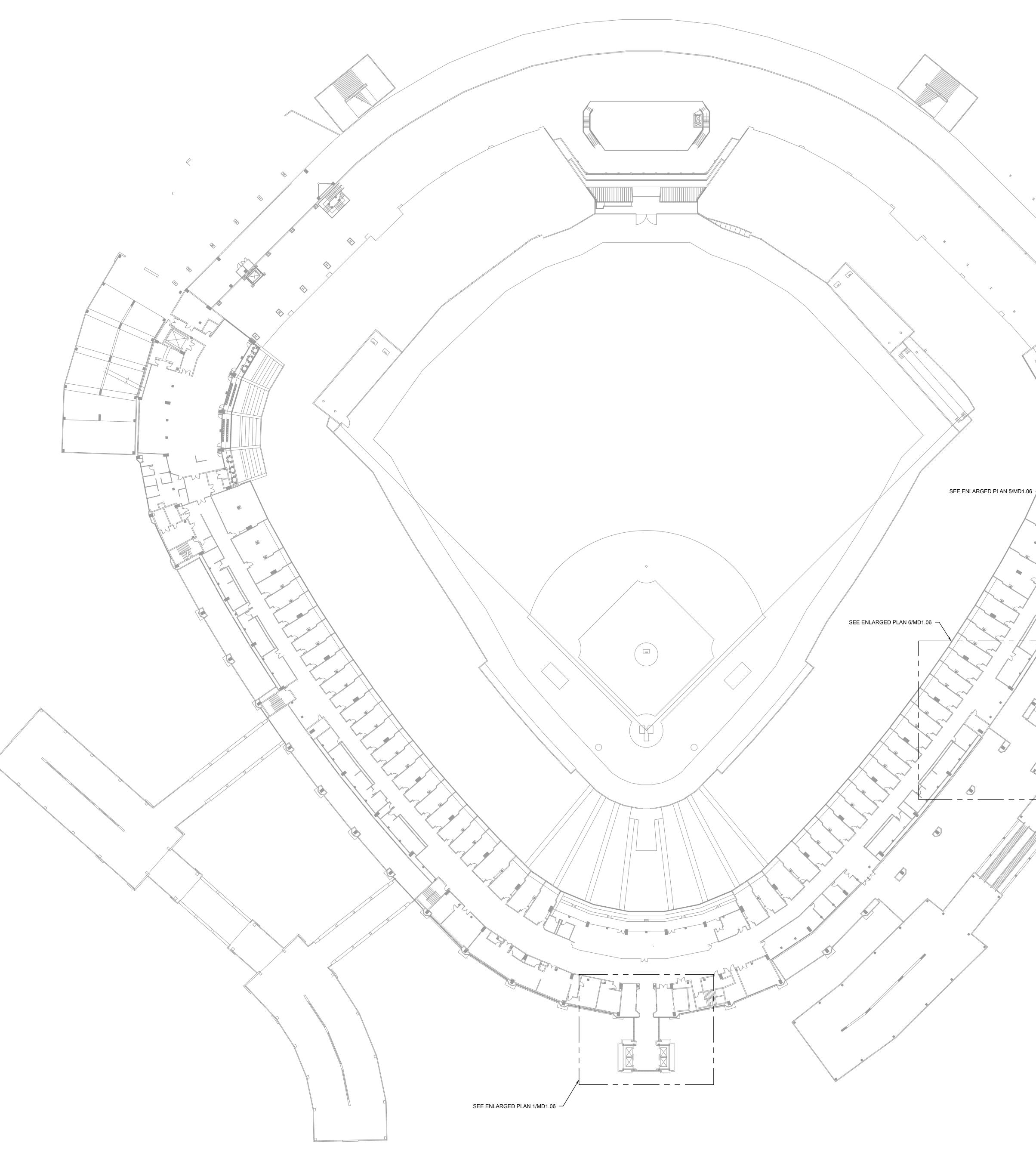


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	30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300
	(708) 236-0300 (708) 236-0330 FAX
	<u>LESTA</u>
	ILLINOIS SPORTS FAGILITIES AUTHORITY
	KEY PLAN
SEE ENLARGED PLAN 3/MD1.04	
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET,
	CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	MECHANICAL DEMOLITION PLAN - LEVEL 100 OVERALL
	DESIGNED BY: DA CHECKED BY: MS
	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
2024	SHEET NO.
ELIMINARY - NOT FOR CONSTRUCTION	MD1.03



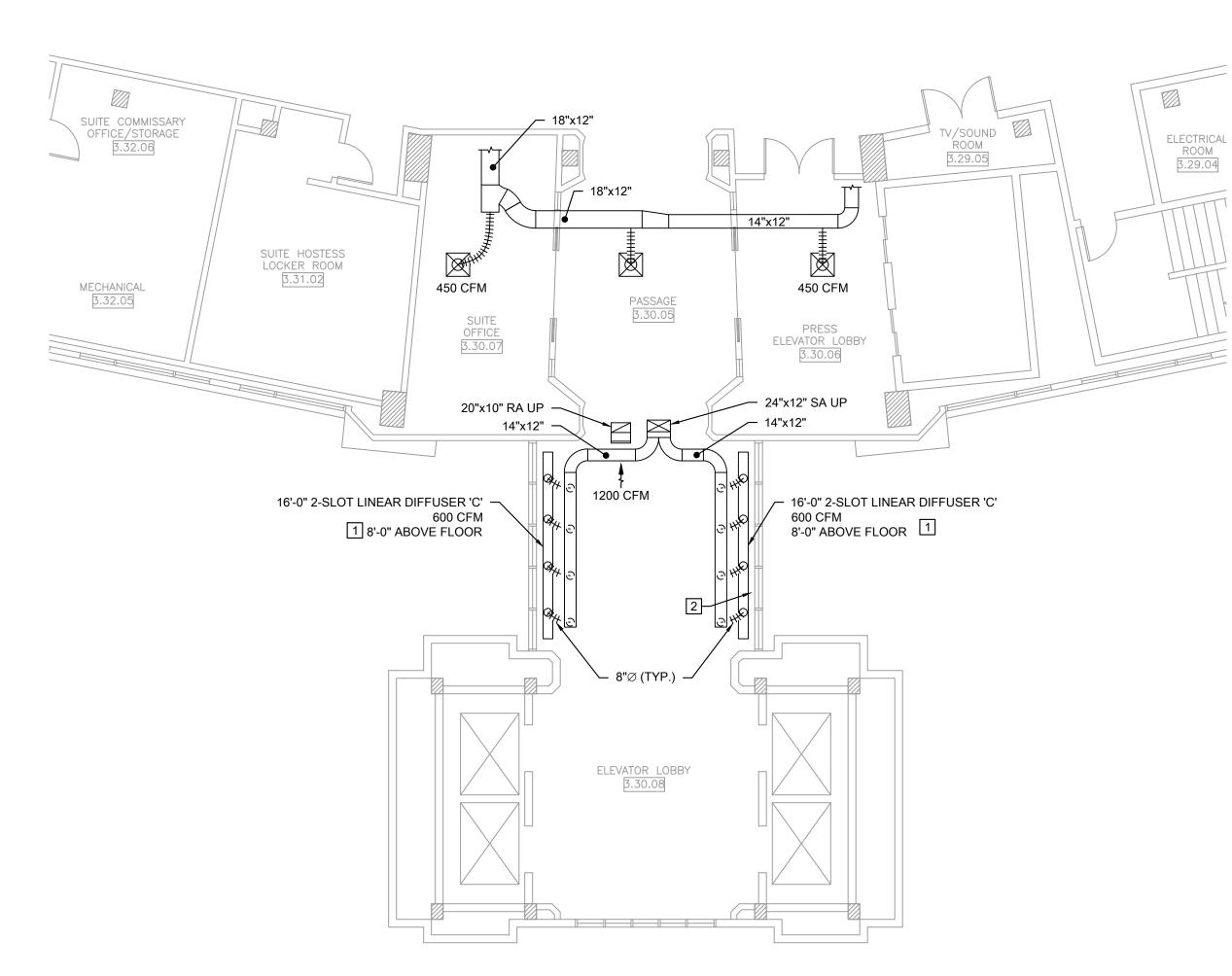


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ILLINOIS SPORTS FAGILITIES AUTIIORITY
KEY PLAN
ISSUE/REVISION: REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID Image: Stream of the stream
GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616
CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 100 ENLARGED PLANS
DESIGNED BY: DA
CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0"
SHEET NO.
MD1.04

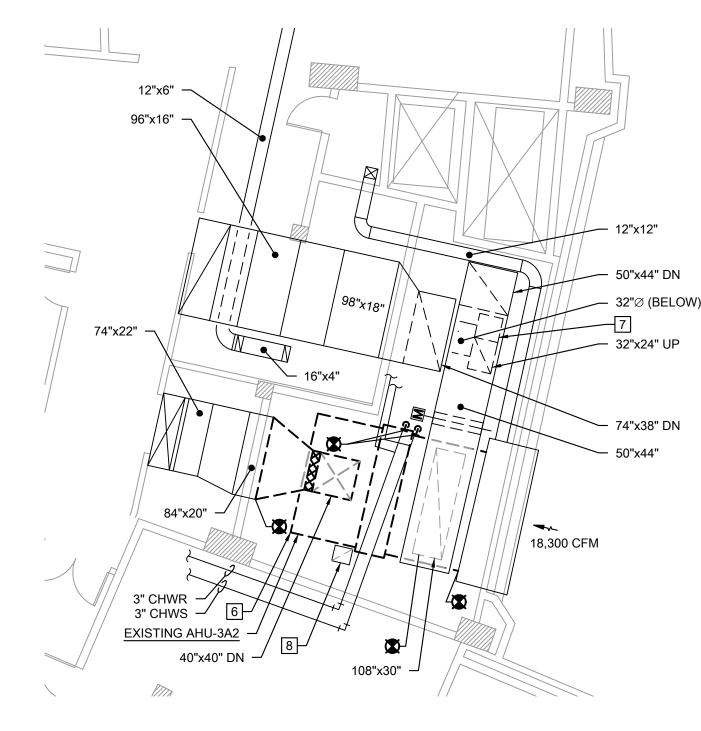


DECHANICAL DEMOLITION PLAN - 200 LEVEL OVERALL

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SEE ENLARGED PLAN 3/MD1.06	
SEE ENLARGED PLAN 2/MD1.06	
SEE ENLARGED PLAN 4/MD1.06	
	KEY PLAN
	ISSUE/REVISION:
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	HVAC REPLACEMENT PHASE XI 333 W 35TH STREET,
	CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	MECHANICAL DEMOLITION PLANS - LEVEL 200 OVERALL
	DESIGNED BY: DA
	CHECKED BY:MSPROJECT NO:21276
	SCALE: 1/32" = 1'-0" SHEET NO.
	MD1.05
ELIMINARY - NOT FOR CONSTRUCTION	



1) SCALE: 1/8" = 1'-0" 0 4' 8' 16'



4 MECHANICAL DEMOLITION PLAN - STADIUM CLUB AHU 3A2



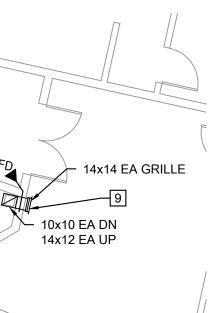
12"x6" EA UP 12"x6" L EXISTING 1" DRAIN DOWN TO FLOOR DRAIN

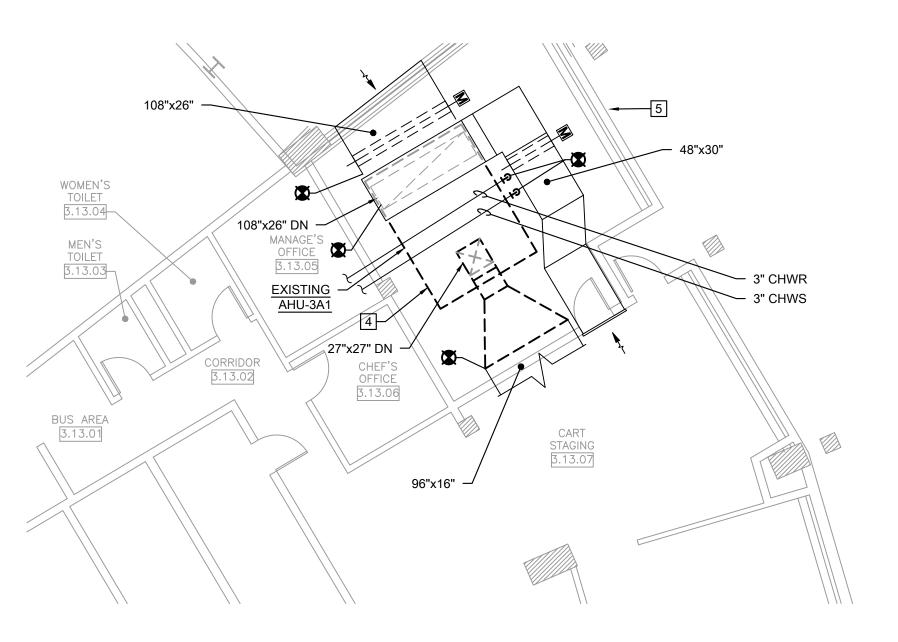
2 MECHANICAL DEMOLITION PLAN - DISHWASHER EXHAUST

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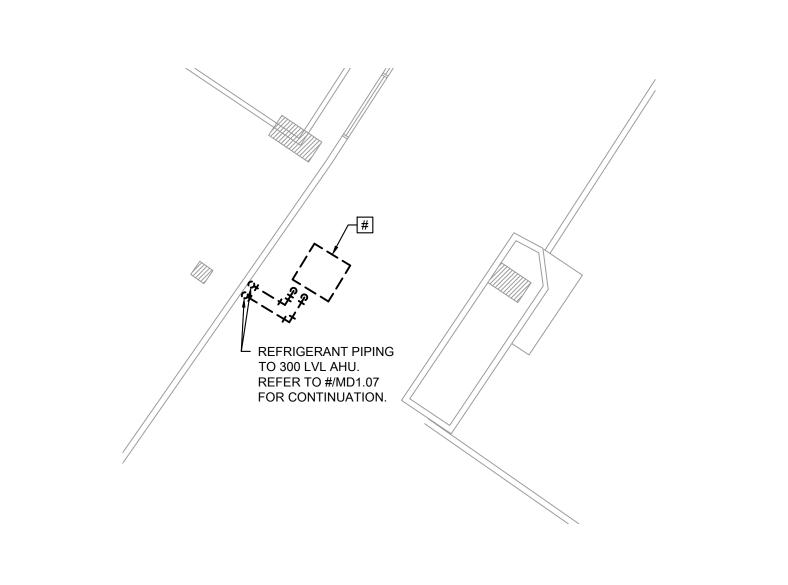
5 MECHANICAL DEMOLITION PLAN - TRASH CHUTE FAN







3 SCALE: 1/8" = 1'-0" SCALE: 1/8" = 1'-0" 0 4' 8' 16'



6 MECHANICAL DEMOLITION PLAN - PANTRY 4.20.1 CU

	KEYED MECHANIC
1.	PRE-READ AIRFLOW AT LINEAR DIFFUSERS AND RETU
2.	NOT USED.
3.	DISCONNECT AND REMOVE EXISTING SECTIONS OF S CONNECTING HORIZONTAL DUCT TO RISER. INCLUDE DISCONNECTION OF BARRIER FROM EXISTING TO RE
4.	DISCONNECT AND DEMOLISH EXISTING AIR HANDLER RECONNECTION AND REUSE BY NEW AIR HANDLER T AND OUTSIDE AIR DUCTS BOTH WHEN KITCHEN HOOI WELL.
5.	CONTRACTOR IS RECOMMENDED TO USE ACCESS BE EQUIPMENT TO BE REMOVED.
6.	DISCONNECT AND DEMOLISH EXISTING AIR HANDLER FOR RECONNECTION AND REUSE BY NEW AIR HANDL RETURN, AND OUTSIDE AIR DUCTS AS WELL AS CHILL
7.	DISCONNECT EXISTING RETURN FAN AND DISASSEME
8.	EXISTING GREASE EXHAUST DUCT TO REMAIN. PROT
9.	PRE-READ AIRFLOW AT TRASH CHUTE EXHAUST GRIL



#

CAL DEMOLITION SHEET NOTES

TURN FOR FAN COIL LOCATED ON FLOOR ABOVE.

STAINLESS STEEL DISHWASHER EXHAUST, INCLUDING RADIUS ELBOW E REMOVAL OF EXISTING CEILING PROTECTION PLASTIC BARRIER AND EMAIN DRAIN.

SERVING KITCHEN. REMOVE CHILD WATER PIPING AT UNIT AND CAP FOR TO BE INSTALLED. PROVIDE PRE-READ OF AIRFLOWS AT SUPPLY, RETURN, OD EXHAUST FANS ARE OFF AND ON. PRE-READ CHILLED WATER FLOW AS

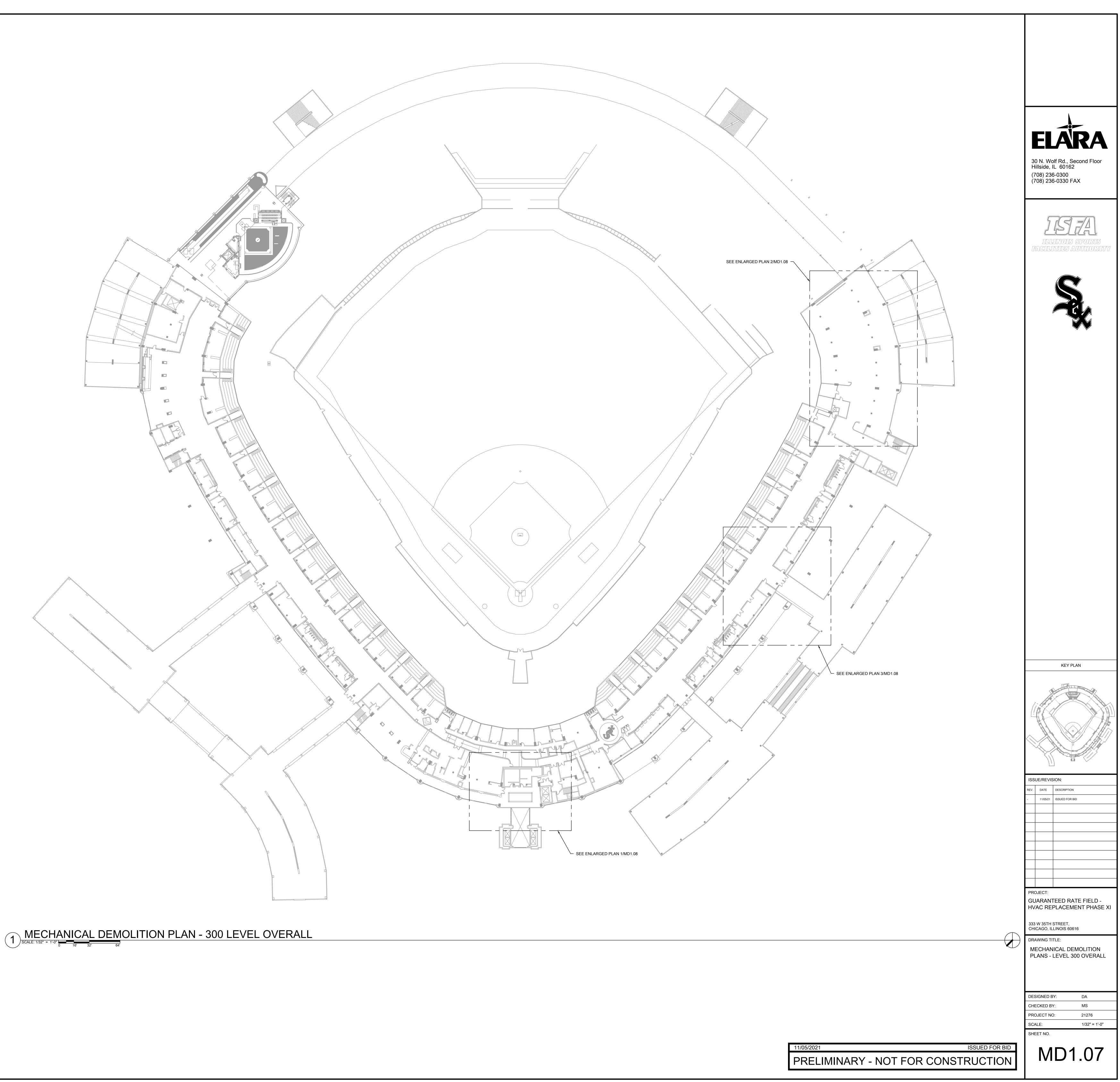
ETWEEN MECHANICAL ROOM AND ADJACENT PEDWAY FOR EGRESS OF

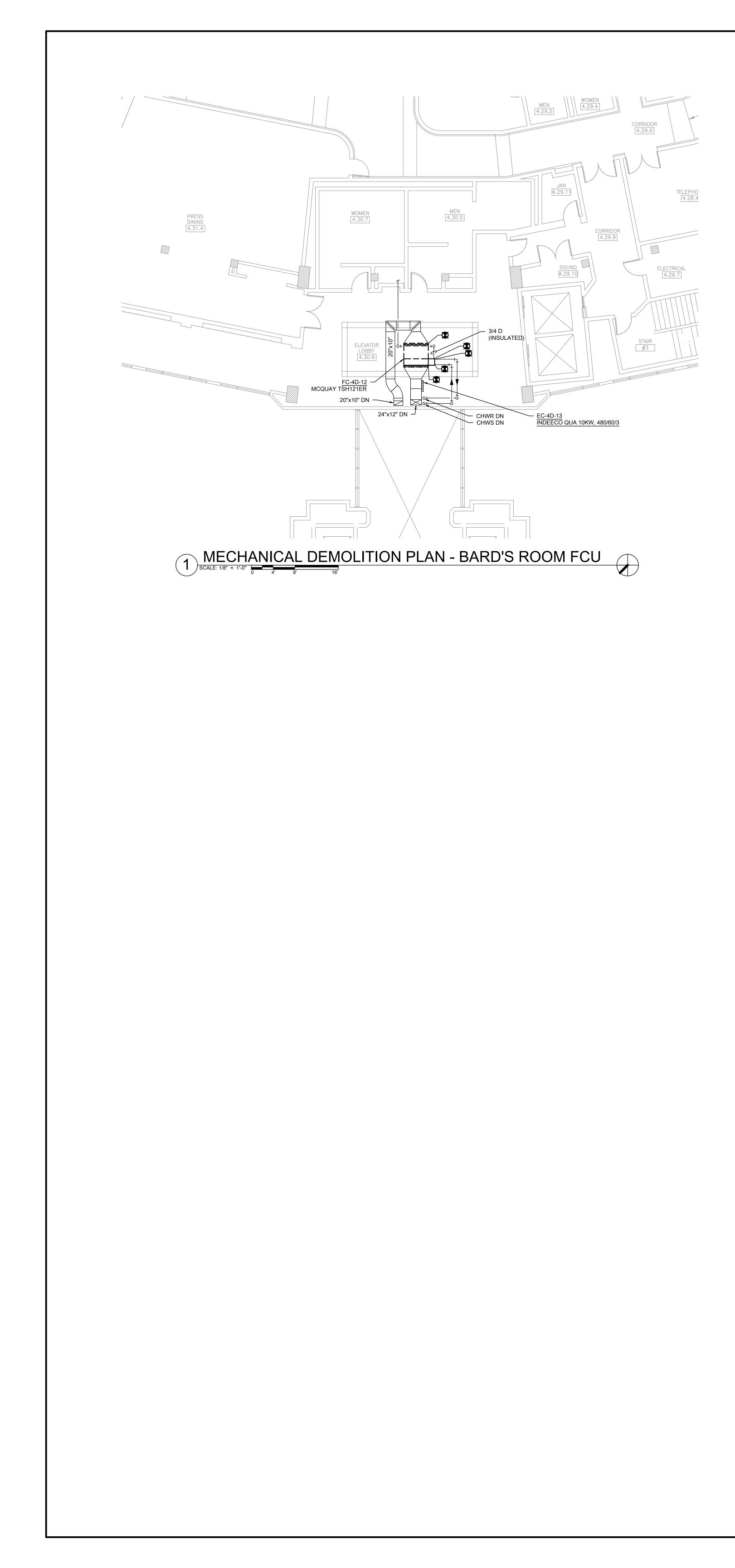
R SERVING STADIUM CLUB. REMOVE CHILD WATER PIPING AT UNIT AND CAP DLER TO BE INSTALLED. PROVIDE PRE-READ OF AIRFLOWS AT SUPPLY, ILLED WATER FLOW. MBLE FOR REFURBISHMENT.

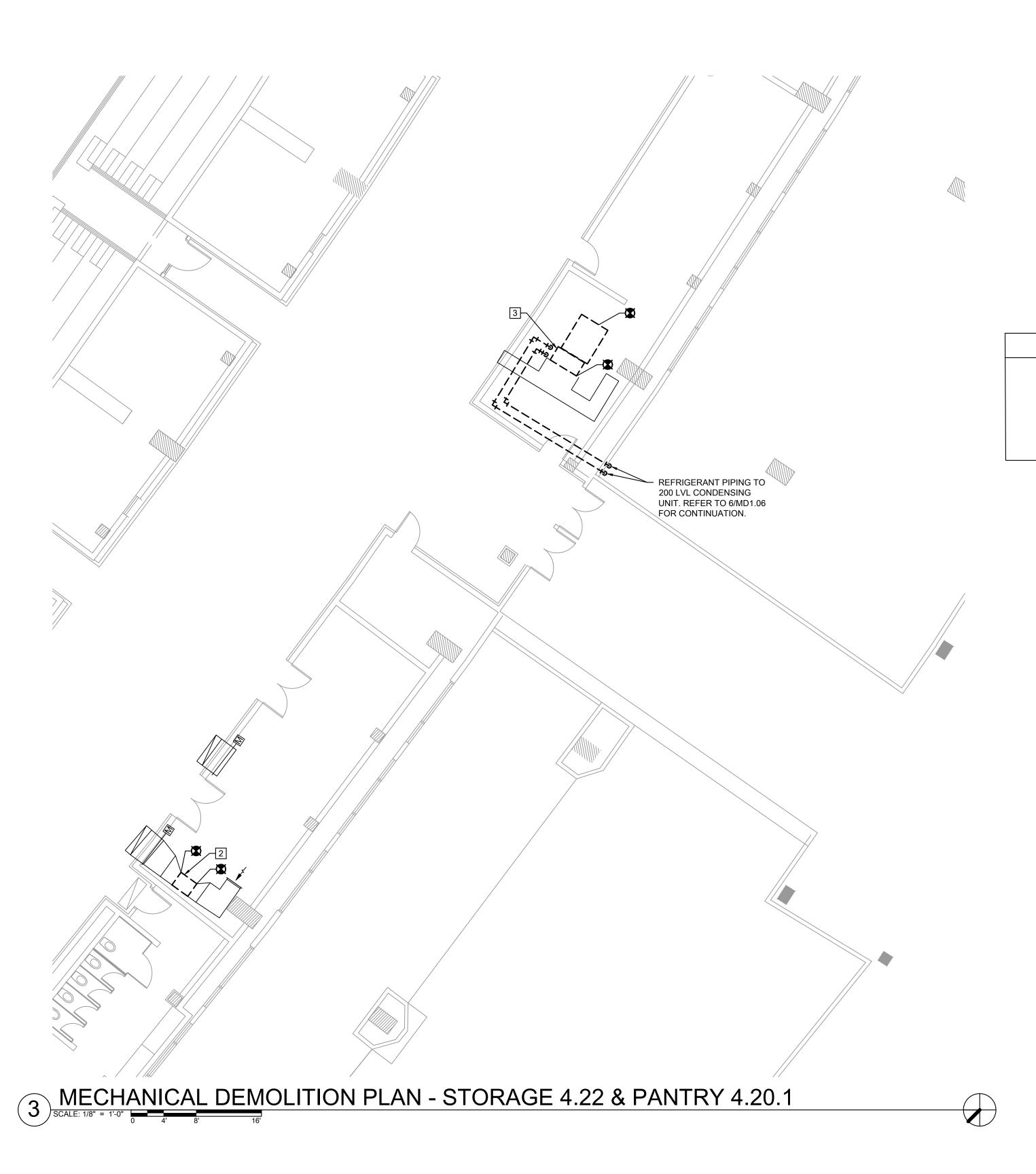
DTECT FROM DAMAGE DURING AHU DEMOLITION AND REMOVAL.

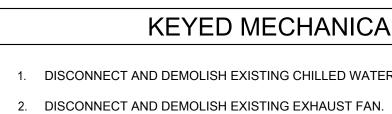
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ELIMINARY -	NOT FOR	CONSTRUCTION

30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300
(708) 236-0300 (708) 236-0330 FAX
ILLINOIS SPORTS FACILITIES AUTIORITY
KEY PLAN
VIEW 2 VIEW 5 VIEW 3 VIEW 6
VIEW 1
ISSUE/REVISION: rev. date description
- 11/05/21 ISSUED FOR BID
PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE:
MECHANICAL DEMOLITION PLANS - LEVEL 200 ENLARGED PLANS
DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0"
SHEET NO. MD1.06







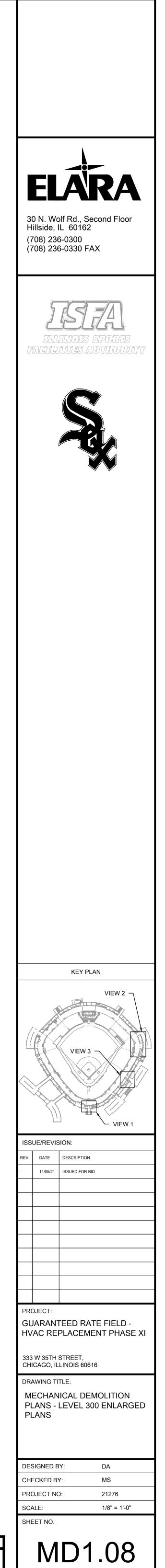


3. DISCONNECT AND DEMOLISH EXISTING SUPPLY FAN, COOLING COIL AND ASSOCIATED REFRIGERANT PIPING. REFER TO MD1.06 FOR CONDENSING UNIT SCOPE.

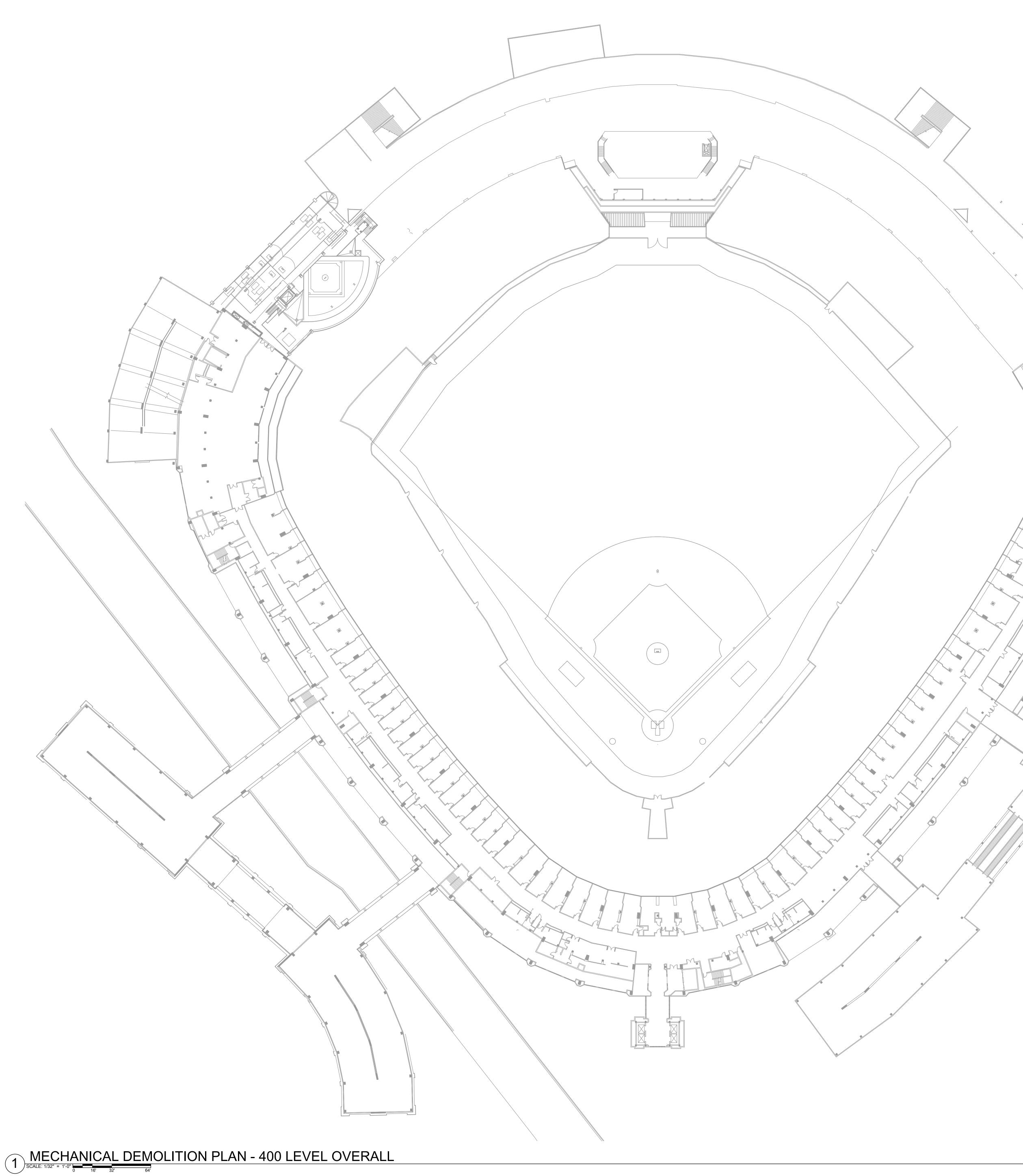
KEYED MECHANICAL DEMOLITION SHEET NOTES

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1. DISCONNECT AND DEMOLISH EXISTING CHILLED WATER FAN COIL UNIT SERVING 200 LEVEL ELEVATOR LOBBY.

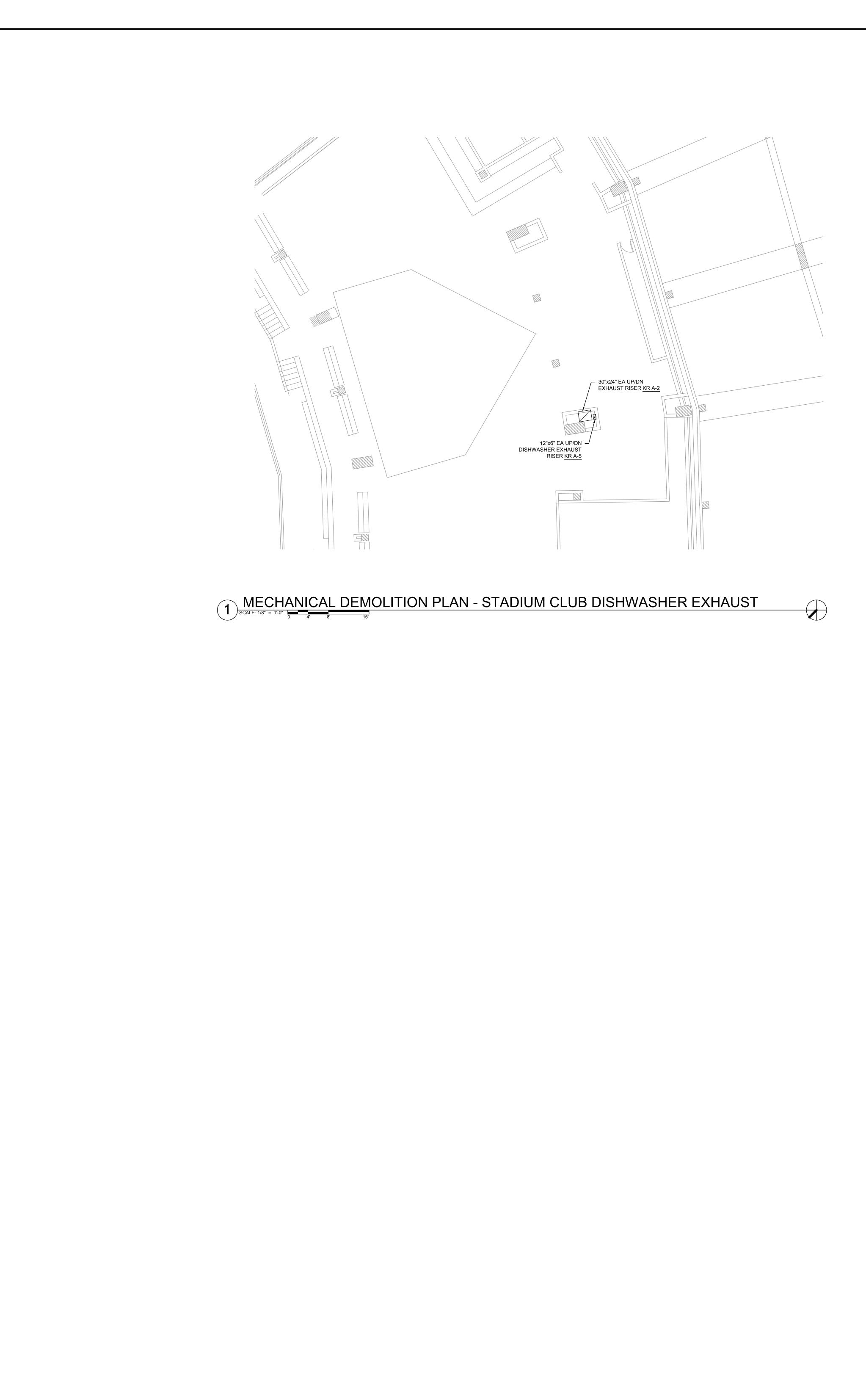


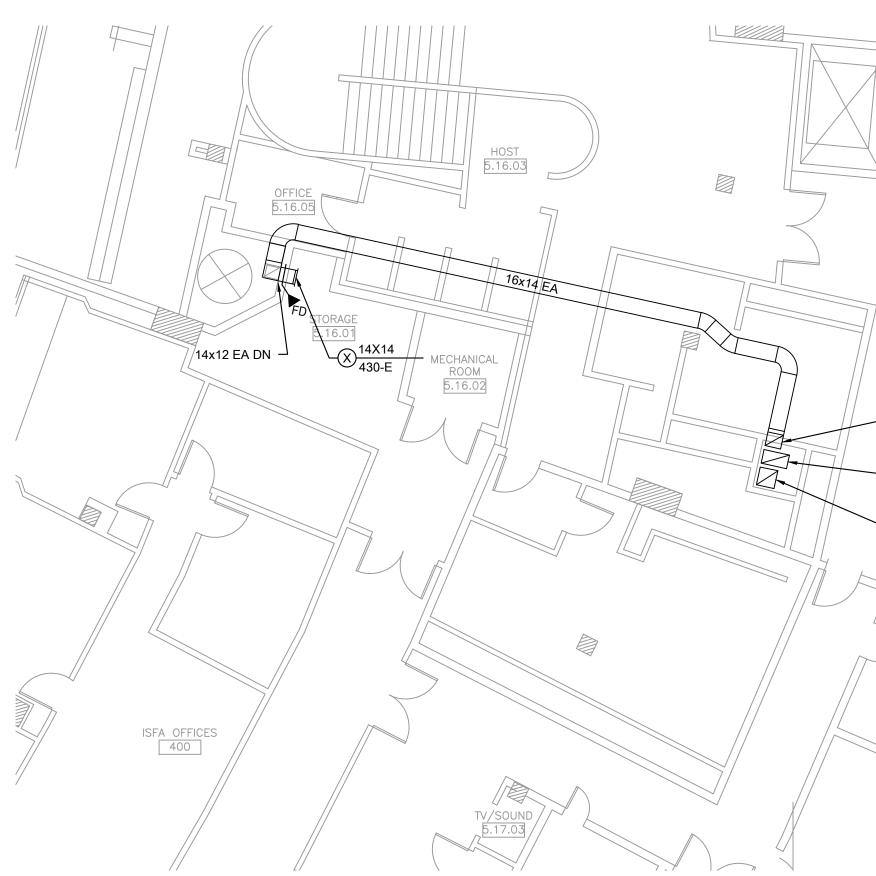
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	ILLINOIS SPORTS FACILITIES AUTHORITY
SEE ENLARGED PLAN 1/MD1.10	
SEE ENLARGED PLAN 1/MD1.10	
SEE ENLARGED PLAN 2/MD1.10	
	KEY PLAN
	ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT:
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	MECHANICAL DEMOLITION PLANS - LEVEL 400 OVERALL
	DESIGNED BY: DA
	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
2021 ISSUED FOR BID	SHEET NO.
ELIMINARY - NOT FOR CONSTRUCTION	MD1.09





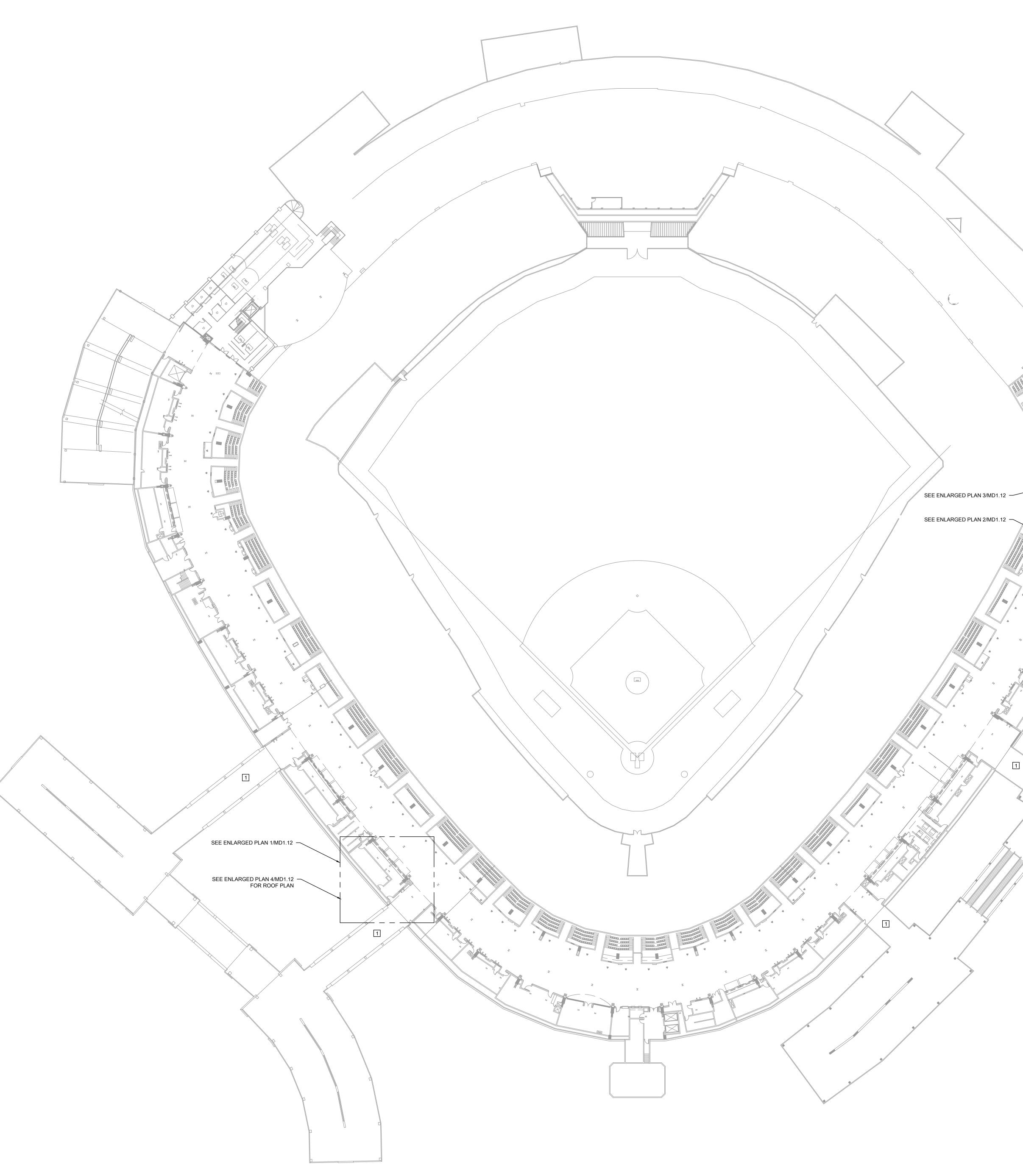
2 MECHANICAL DEMOLITION PLAN - TRASH CHUTE

KEYED MECHANICAL DEMOLITION SHEE

DISHWASHER EXHAUST DUCT SHOWN FOR REFERENCE ONLY.
 TRASH CHUTE EXHAUST DUCT SHOWN FOR REFERENCE ONLY.

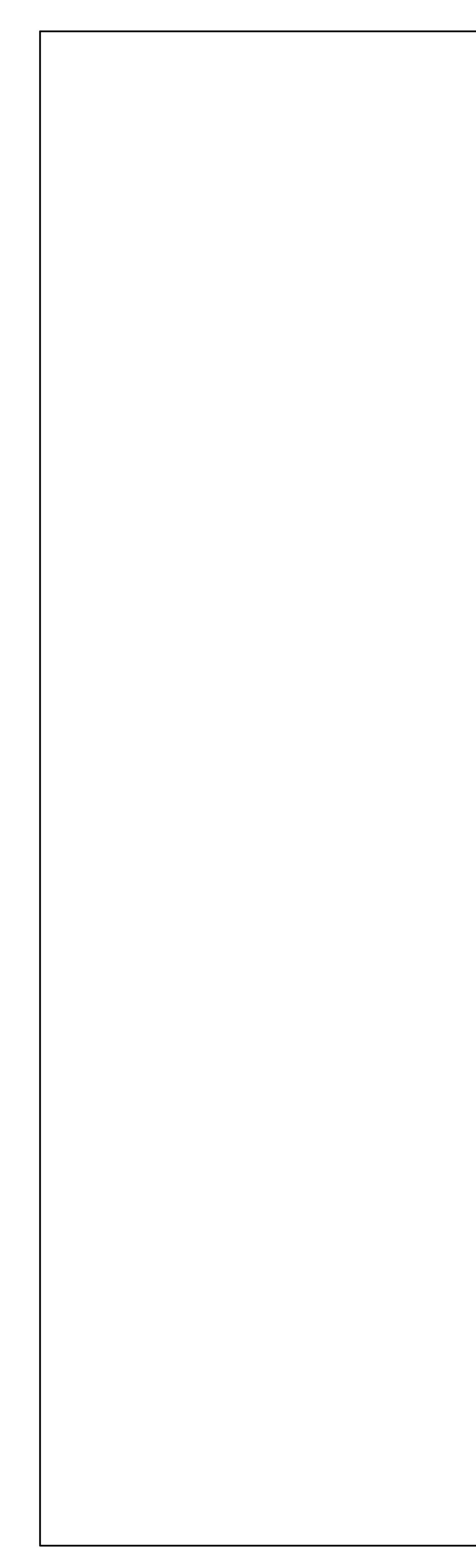
	Section So N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
16"x14" EA UP TO ROOF TRASH CHUTE EXHAUST RISER <u>TR A-1</u> 26"x14" EA UP/DN TOILET EXHAUST RISER <u>TE RA-1</u>	ILLINOIS SPORTS FACILITIES AUTHORITY
18"x18" EA UP/DN KITCHEN EXHAUST KR A-1	
ET NOTES #	
	KEY PLAN VIEW 3 VIEW 2 VIEW 2 VIEW 2
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	MECHANICAL DEM OLTION PLAN SDESIGNED BY:DACHECKED BY:MSPROJECT NO:SCALE:1/8" = 1'-0"SHEET NO.
ISSUED FOR BID RELIMINARY - NOT FOR CONSTRUCTION	MD1.10

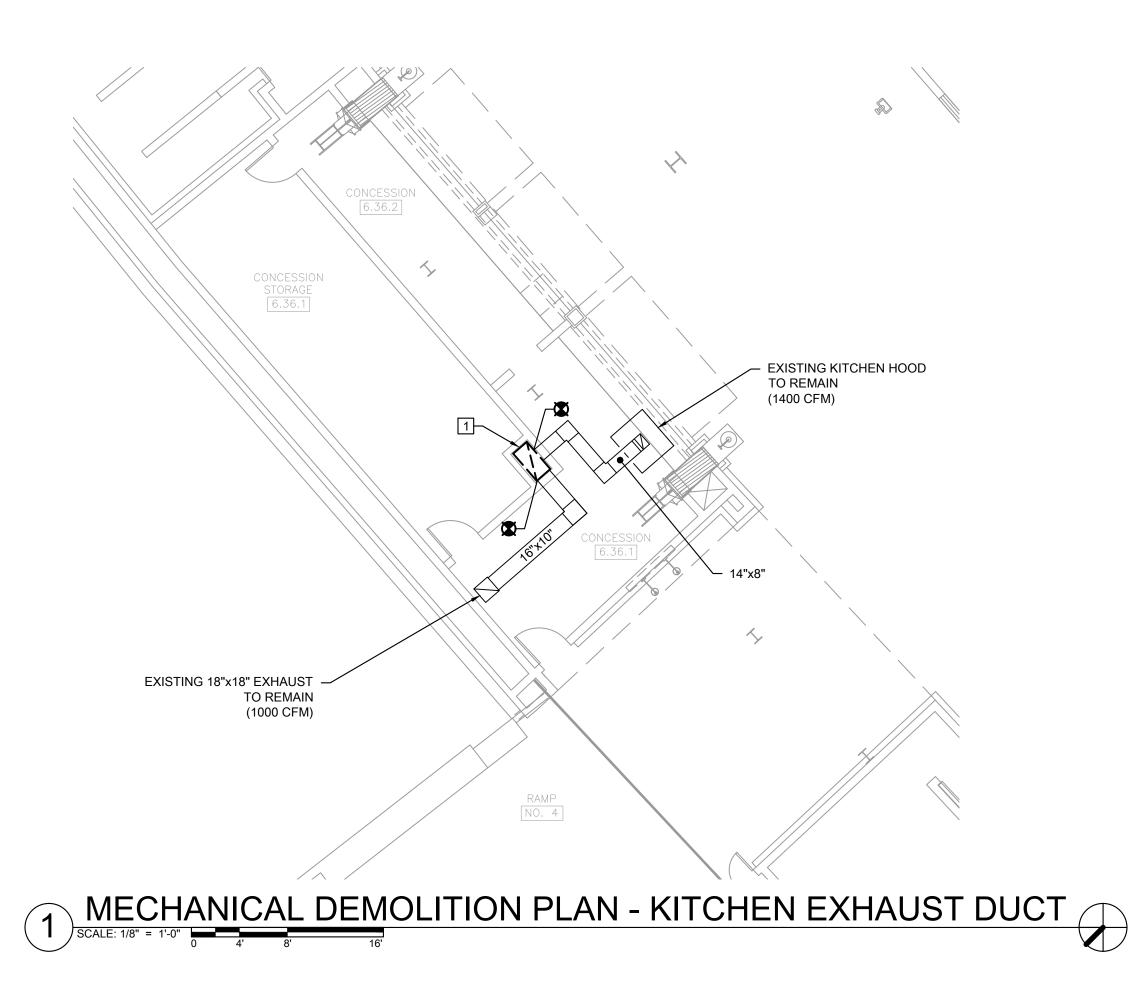
KEYED MECHANICAL DEMOLITION SHEET NOTES IF REMOVAL OF DEMOLISHED EQUIPMENT AND INGRESS OF NEW EQUIPMENT SHOULD BE COORDINATED WITH ISFA AND CHICAGO WHITE SOX. IT IS RECOMMENDED TO UTILIZE THE EXTERIOR RAMPS FOR DELIVERING EQUIPMENT TO THE 300 AND 500 LEVELS.

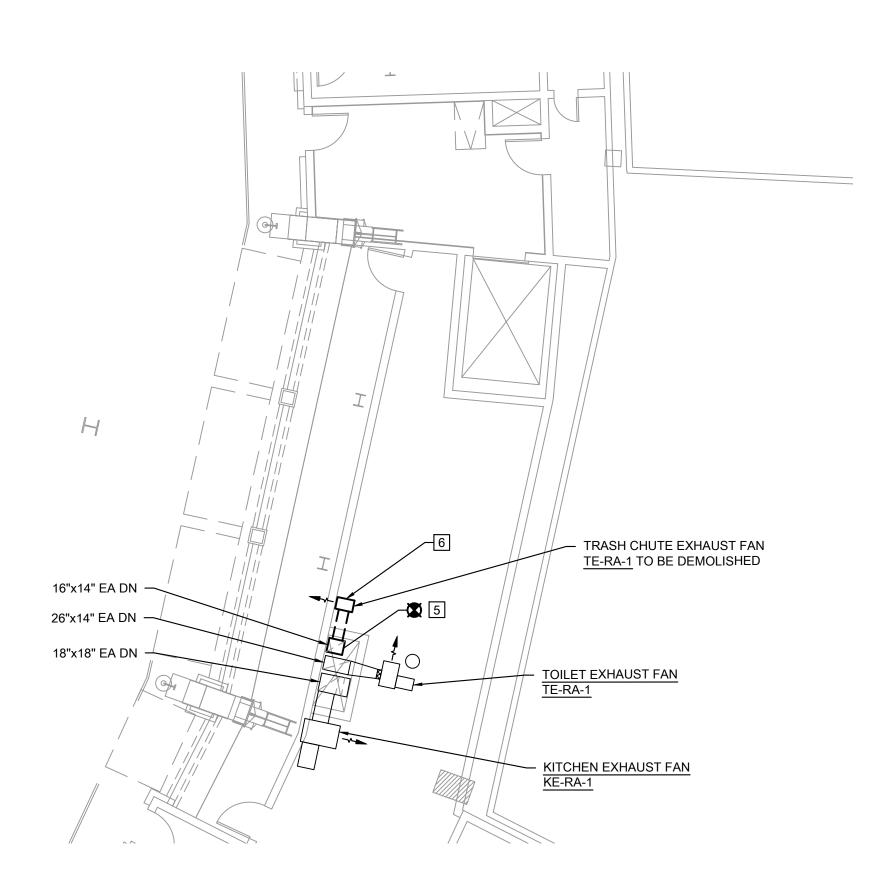


DECHANICAL DEMOLITION PLAN - 500 LEVEL OVERALL

	SO N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-030 FAX
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	30 N. Wolf Rd., Second Floor Hillside, IL 60152 (708) 238-0330 FAX
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GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 OVERALL DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0'	REV. DATE DESCRIPTION
333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 OVERALL DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"	GUARANTEED RATE FIELD -
CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"	333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION
	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
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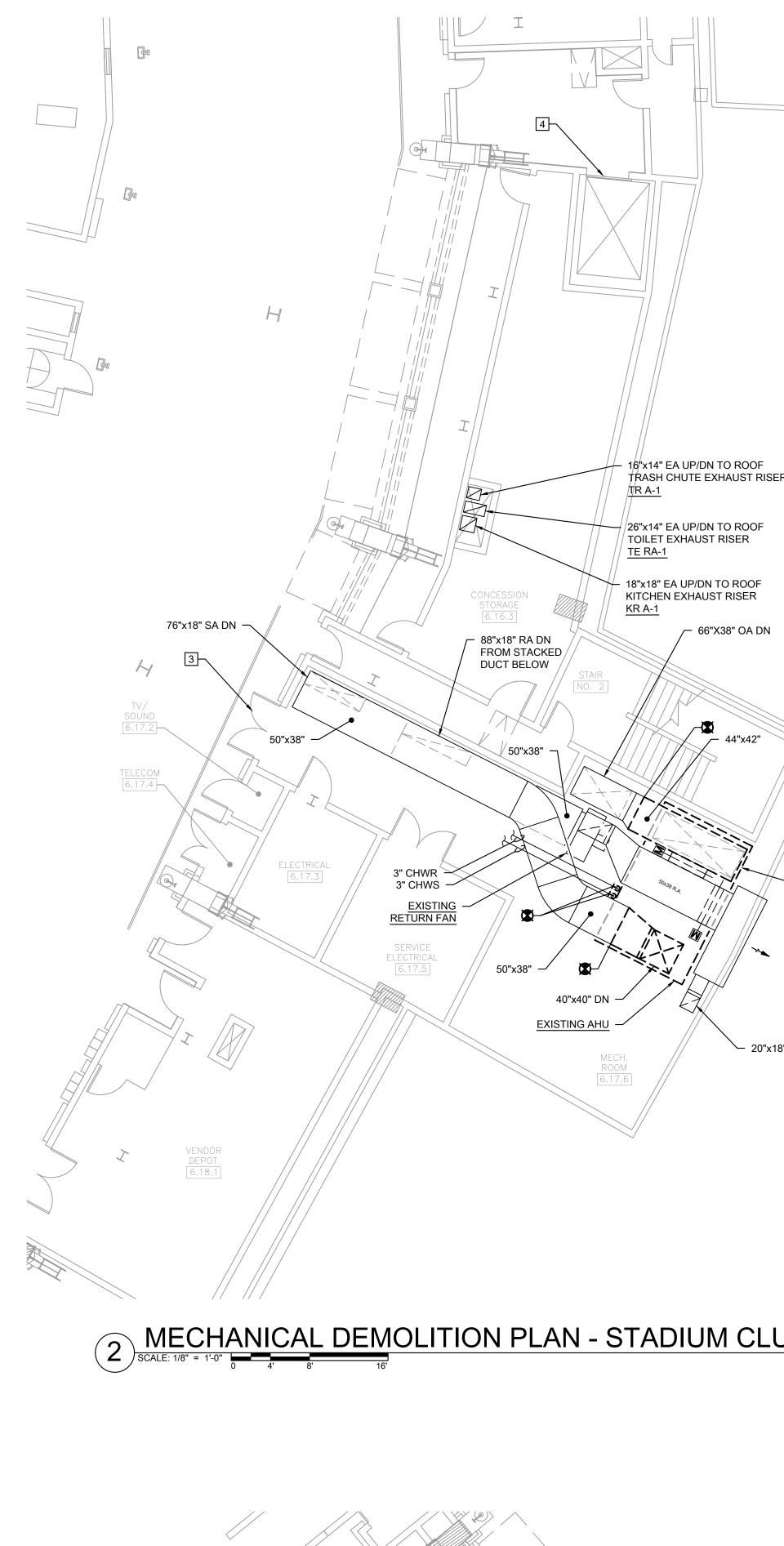
3 SCALE: 1/8" = 1'-0" SCALE: 1/8" = 1'-0" G 4' 8' 16'

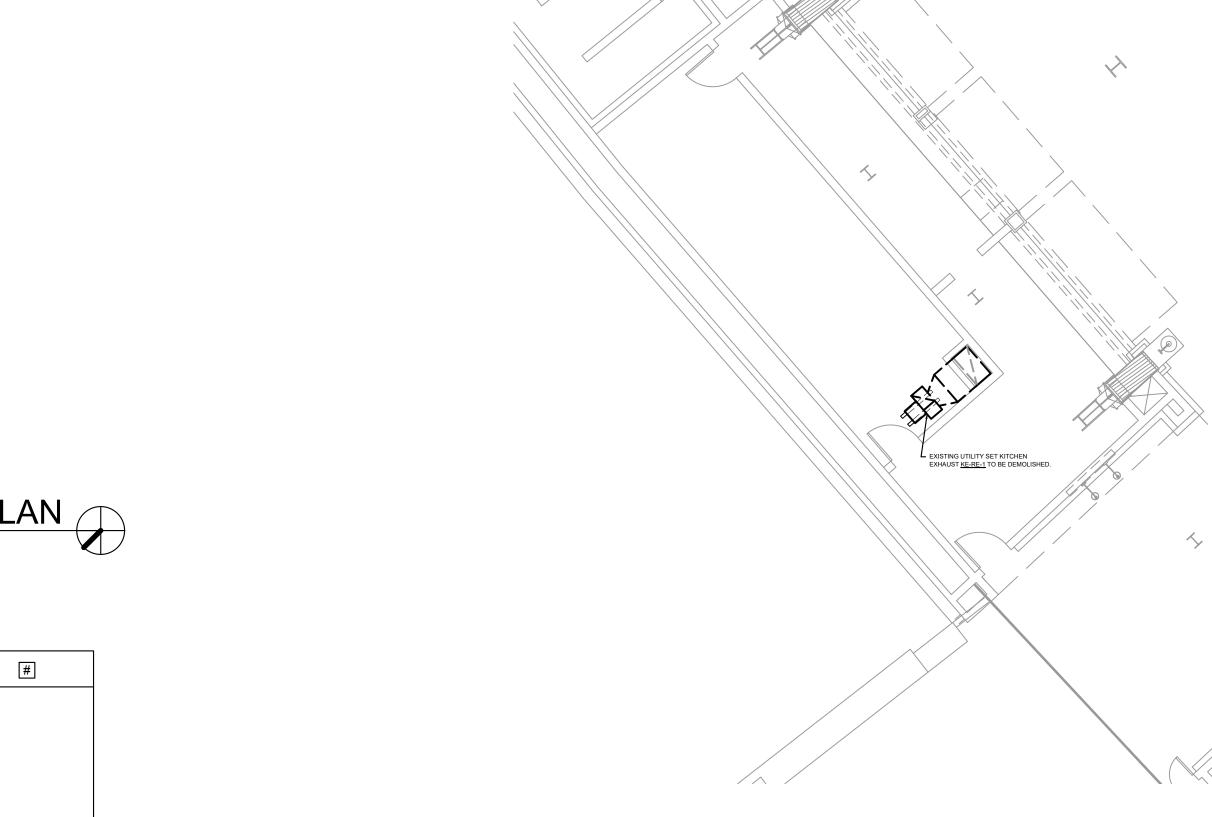
KEYED MECHANICAL DEMOLITION SHEET NOTES

1. EXISTING 36"x14" KR-E1 EXHAUST RISER DN. CAP AT FLOOR AND ABANDON IN PLACE.

READINGS AT ALL THREE INLETS, AND CONFIRMATION OF EXISTING DAMPERS AND AIR INLETS.

- 2. DISCONNECT AND DEMOLISH EXISTING ELECTRIC HEAT, CHILLED WATER AIR HANDLER. REMOVE SUPPLY AND OUTSIDE AIR DUCTWORK TO FACILITATE NEW CONNECTIONS FOR NEW AIR HANDLER.
- DOUBLE DOORS CONNECTING MECHANICAL ROOM TO 500 LEVEL CONCOURSE IS RECOMMENDED FOR REMOVAL OF DEMOLISHED MECHANICAL EQUIPMENT AND OTHER MATERIALS.
- 4. SERVICE ELEVATOR REACHES ALL FLOORS. COORDINATE WITH ISFA AND CHICAGO WHITE SOX FOR ACCESS LIMITATIONS AND
- REQUIREMENTS. 5. DEMOLISH EXISTING 16"X14" EXHAUST DUCT STUB ABOVE ROOF AS PART OF DEMOLITION OF TRASH CHUTE FAN. PROTECT OPEN DUCT WITH WEATHERTIGHT SEALED COVER DURING CONSTRUCTION PRIOR TO INSTALLATION OF NEW DUCTWORK.
- PERFORM PREREAD OF EXISTING EXHAUST FAN PRIOR TO DEMOLITION. FINAL REPORT SHALL INCLUDE A READING AT THE FAN,

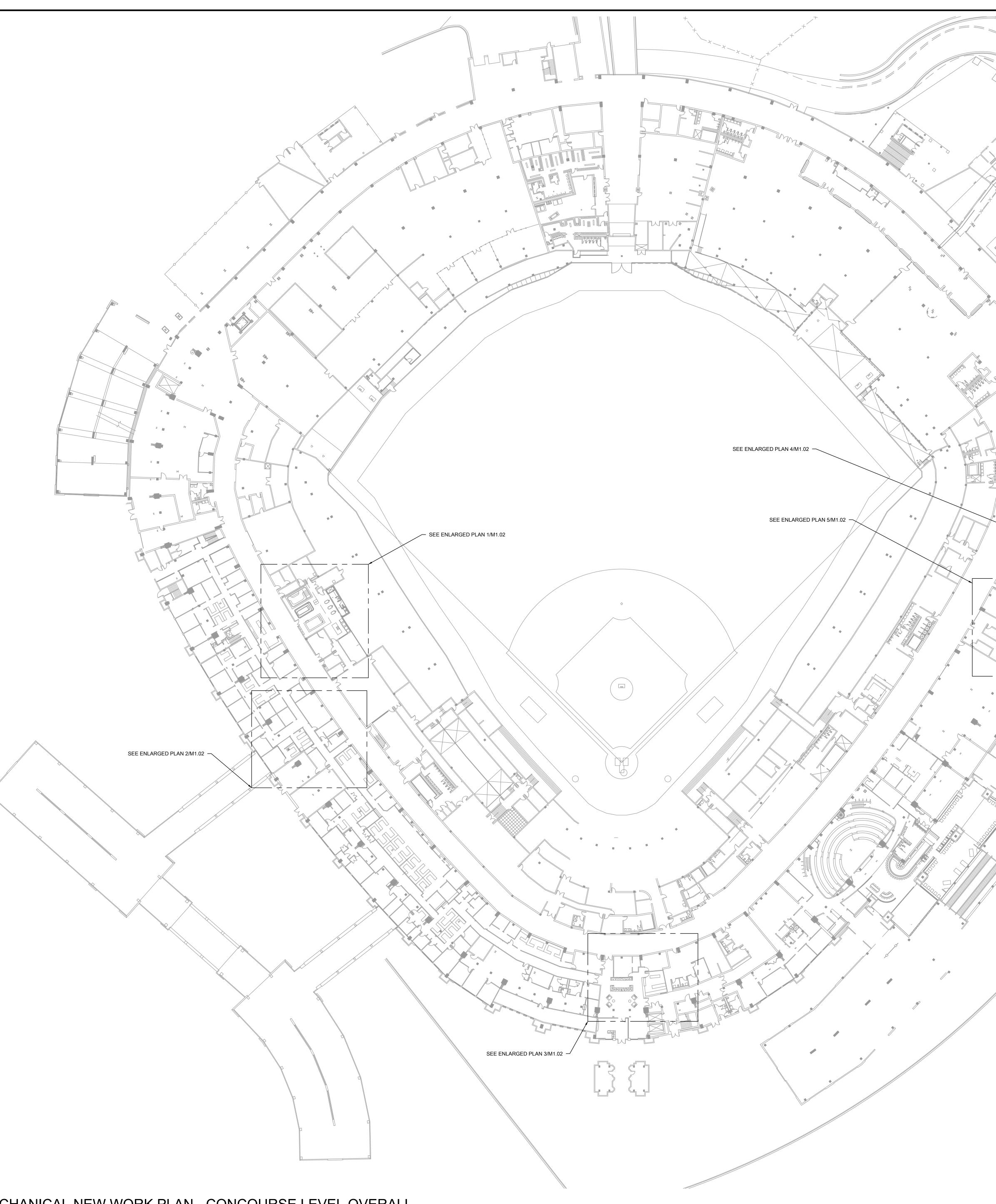




5 MECHANICAL DEMOLITION PLAN - KITCHEN EXHAU

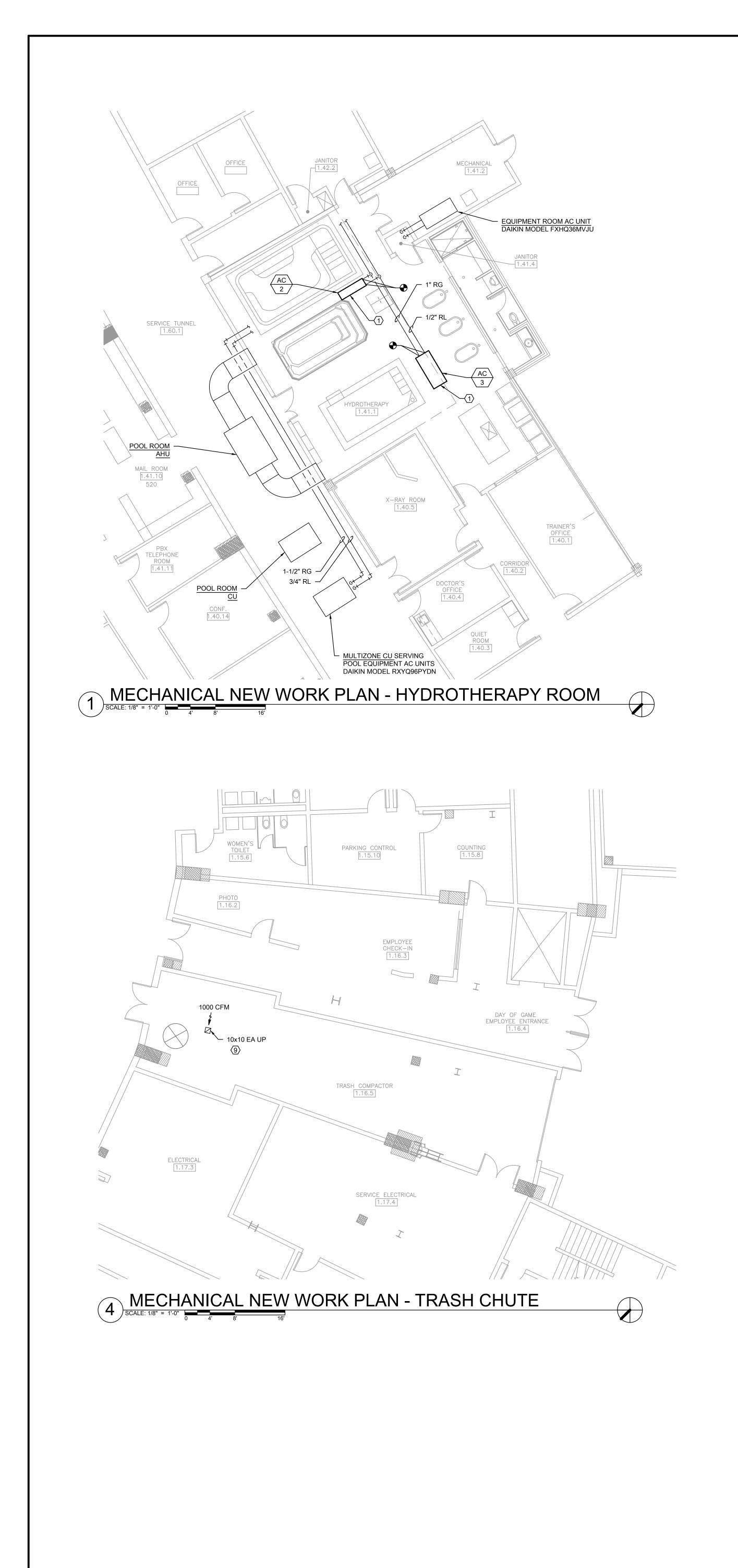
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ST DUCT ROOF PLAN		ISSUE/REVISION:
ST DUCT ROOF PLAN GUARANTEED RATE FIELD-HVAC REPLACEMENT PHASE 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1-0" SHEET NO. SHEET NO.		- 11/05/21 ISSUED FOR BID
ST DUCT ROOF PLAN GUARANTEED RATE FIELD-HVAC REPLACEMENT PHASE 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'0" SHEET NO. SHEET NO.		
ST DUCT ROOF PLAN GUARANTEED RATE FIELD-HVAC REPLACEMENT PHASE > 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'0" SHEET NO. SHEET NO.		
333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO.		PROJECT:
CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL DEMOLITION PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO.	ST DUCT ROOF PLAN	HVAC REPLACEMENT PHASE >
PLAN - LEVEL 500 ENLARGED PLANS DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO. 1/8" = 1'-0"		CHICAGO, ILLINOIS 60616 DRAWING TITLE:
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SHEET NO.		CHECKED BY: MS PROJECT NO: 21276
	ISSUED	SHEET NO.

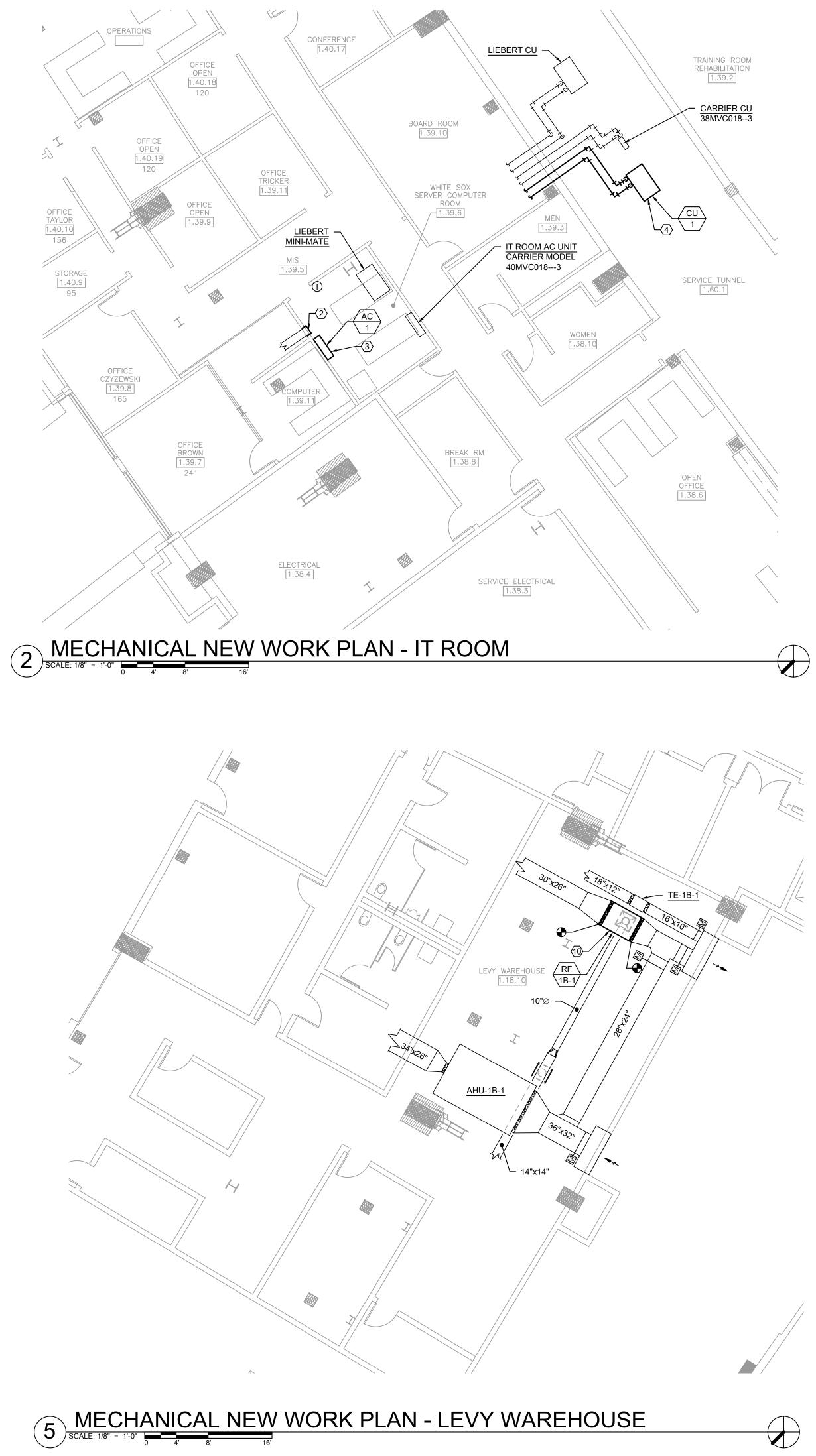
KEYED MECHANICAL NEW WORK SHEET NOTES ④

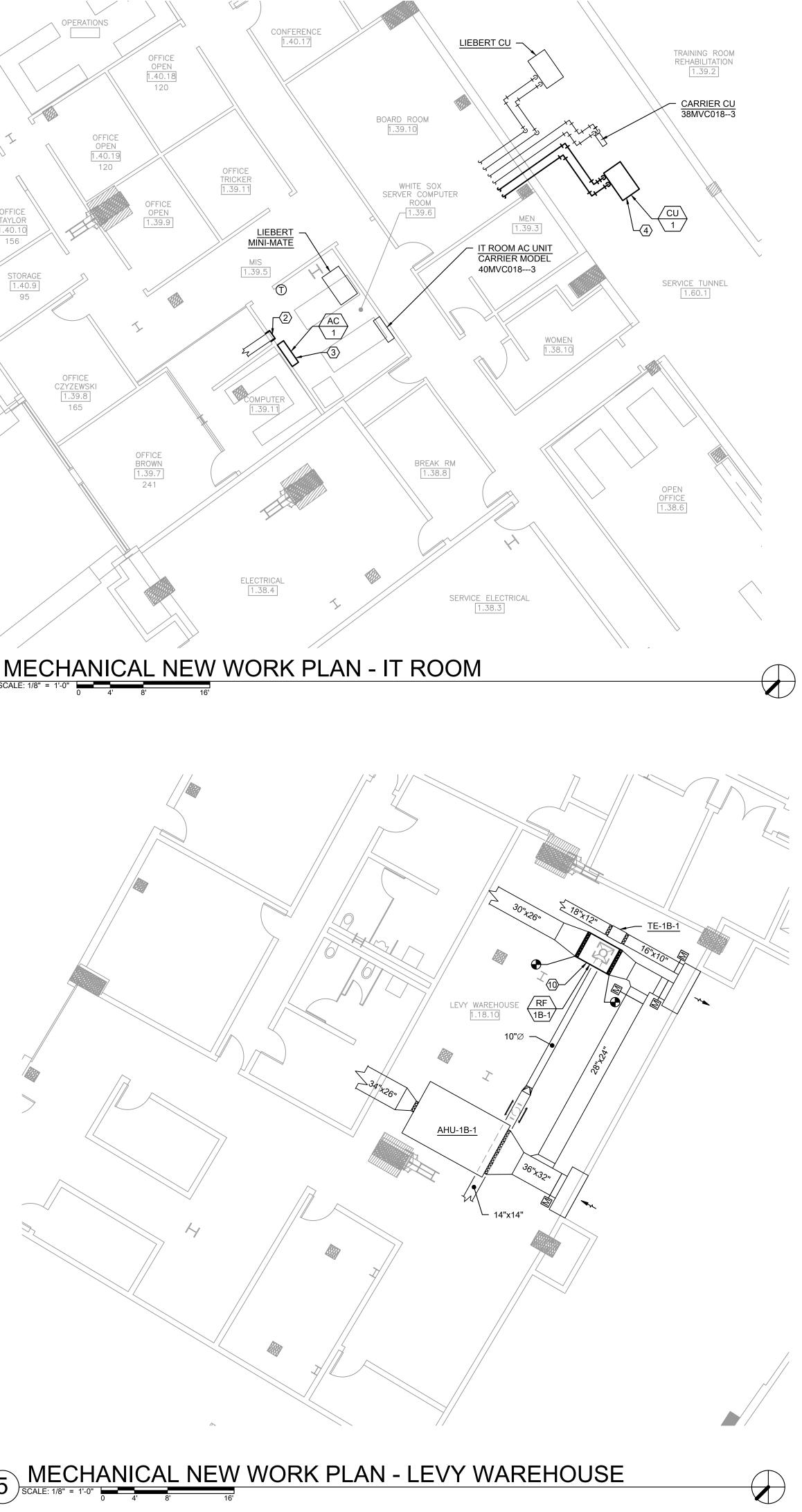


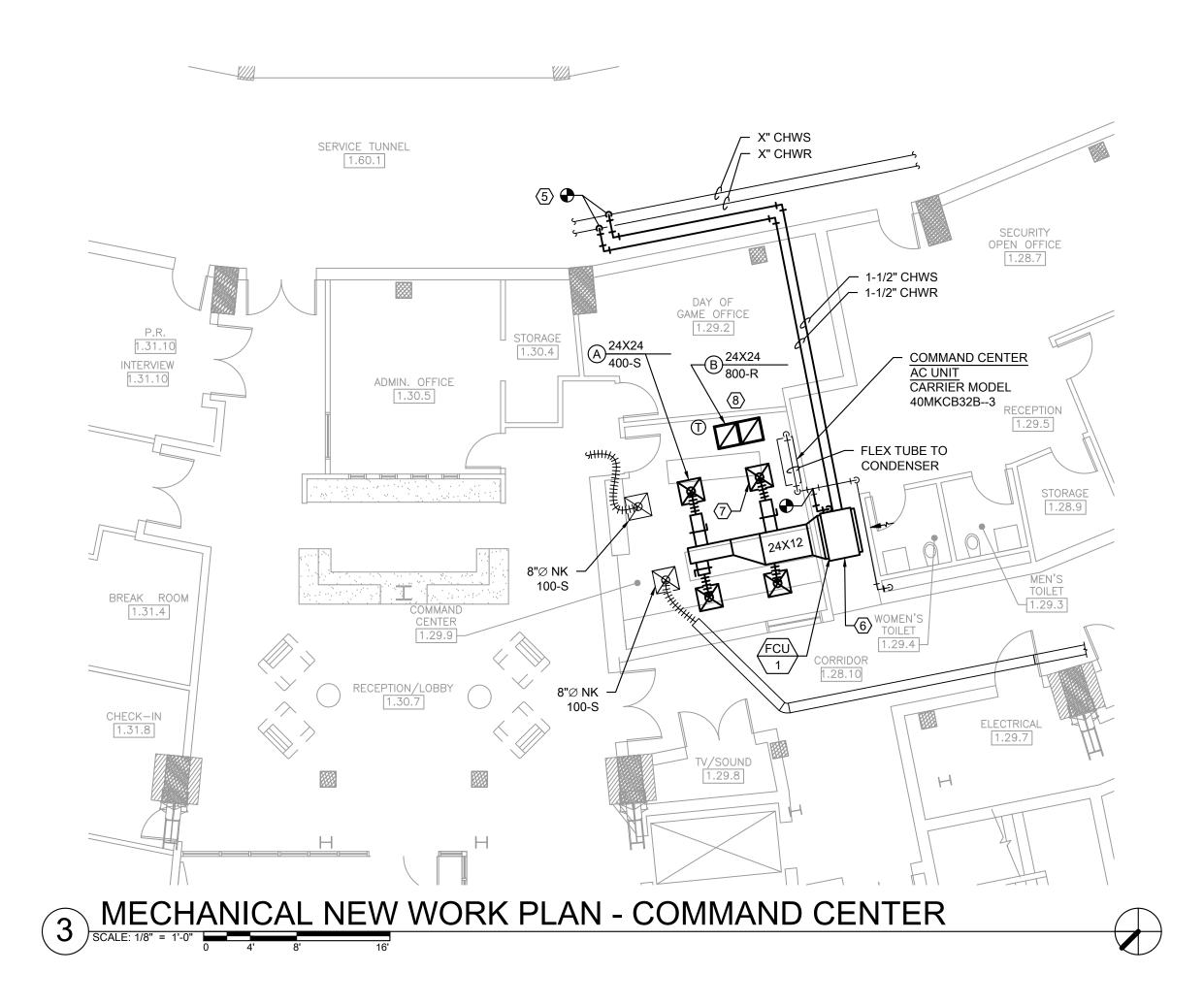
1 MECHANICAL NEW WORK PLAN - CONCOURSE LEVEL OVERALL

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	ELÁRA
	30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300
	(708) 236-0300 (708) 236-0330 FAX
	LELLA ILLINOIS SPORTS
	FACILITIES AUTHORITY
	KEY PLAN
	ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	MECHANICAL NEW WORK
	PLAN - CONCOURSE OVERALL
	DESIGNED BY: DA CHECKED BY: MS
	PROJECT NO: 21276
	SCALE: 1/32" = 1'-0" SHEET NO.
2021 ISSUED FOR BID	
ELIMINARY - NOT FOR CONSTRUCTION	M1.01









	KEYED MECH
1.	MOUNT TWO (2) NEW CASSETTE UNITS IN L REFRIGERANT SUCTION, AND CONDENSAT
2.	CAP SUPPLY DUCT ABOVE CEILING.
3.	INSTALL NEW WALL MOUNTED CASSETTE L TO EXISTING CONDENSATE DRAIN LINE AB CEILING AND OUT TO CORRIDOR FOR FINA SHOWN, COORDINATED WITH EXISTING AV
4.	LOCATE NEW CONDENSING UNIT ON STRUC FROM STRUCTURE ABOVE.
5.	CONNECT NEW 1-1/2" CHWS/R LINES TO EX ACCESSORIES IN ACCORDANCE WITH THE
6.	INSTALL NEW FAN COIL UNIT ABOVE ADJAC SPECIFICATIONS. PROVIDE DRAIN PAN AND
7.	INSTALL NEW DUCT DISTRIBUTION AND SUI DELIVER AIR DIRECTLY DOWN ONTO DIFFU MUST MATCH EXISTING OR IF MATCHING TI ROOM.
8.	INSTALL NEW RETURN GRILLES IN EXISTING TILES MUST MATCH EXISTING OR IF MATCH IN THE ROOM.
9.	INLET TO TRASH CHUTE EXHAUST FAN TR-/ EXISTING FIRE DAMPER IN FLOOR SLAB AN CONTRACTOR TO PROVIDE SCAFFOLDING TRASH COMPACTOR EQUIPMENT BELOW A BALANCE SUBCONTRACTOR.
	CONTRACTOR SHALL THOROUGHLY CLEAN THIS SYSTEM. REFER TO RISER DIAGRAM A

AN THE COMPLETE DUCT RUN, ALL BRANCH DUCTS, AND AIR GRILLES CONNECTED TO MAND OTHER FLOOR PLANS FOR INLETS AND ACCESS POINTS. 10. INSTALL NEW INLINE RETURN FAN IN WAREHOUSE. PROVIDE NEW FLEX CONNECTORS AND SPRING ISOLATED SUPPORTS. ONCE INSTALLED, CONTRACTOR SHALL RETURN AFTER MANUFACTURER RECOMMENDED HOURS TO ADJUST BELT TENSION.



CHANICAL NEW WORK SHEET NOTES

I LOCATIONS OF PREVIOUS UNITS. CONNECT TO EXISTING REFRIGERANT LIQUID, ATE DRAIN LINES. TIE TO EXISTING CONTROLS AND RECHARGE WITH REFRIGERANT.

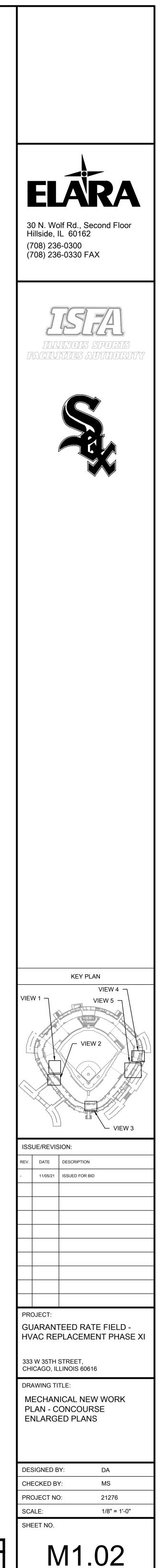
E UNIT JUST BELOW CEILING. ROUTE DISCHARGE FROM INTEGRAL CONDENSATE PUMP ABOVE CEILING WITH NEW TEE. ROUTE INSULATED REFRIGERANT LINES UP TO ABOVE AL CONNECTION TO NEW CONDENSING UNIT. INSTALL NEW THERMOSTAT IN LOCATION AVAILABLE WALL SPACE.

RUCTURAL PLATFORM ELEVATED ABOVE THE SERVICE CORRIDOR. SUPPORT PLATFORM EXISTING TAPS IN CORRIDOR. PROVIDE NEW ISOLATION VALVES AND OTHER PIPING HE PROVIDED DETAIL. INSULATE PER SPECIFICATION. JACENT CORRIDOR. SUPPORT INDEPENDENTLY FROM STRUCTURE ABOVE PER AND UNIT MOUNTED RETURN FILTER TO DRAW AIR FROM PLENUM. SUPPLY DIFFUSERS IN EXISTING CEILING. SUPPORT FLEX AT FINAL CONNECTION TO

FUSER. REPLACE ANY CEILING TILES DAMAGED DURING WORK. REPLACEMENT TILES G TILES ARE UNAVAILABLE OR CANNOT BE OBTAINED, REPLACE ALL CEILING TILES IN THE ING CEILING. REPLACE ANY CEILING TILES DAMAGED DURING WORK. REPLACEMENT

CHING TILES ARE UNAVAILABLE OR CANNOT BE OBTAINED, REPLACE ALL CEILING TILES R-A1 LOCATED NEAR STRUCTURAL SLAB ABOVE. TEST AND CONFIRM OPERATION OF

AND PROVIDE PRE-READ AND POST INSTALLATION READING OF AIRFLOW AT DUCT INLET. G OR OTHER TEMPORARY WORK PLATFORM THAT WILL NOT IMPEDE THE OPERATION OF AND PROVIDE REQUIRED FALL PROTECTION F TO THEIR WORKERS AND TEST AND

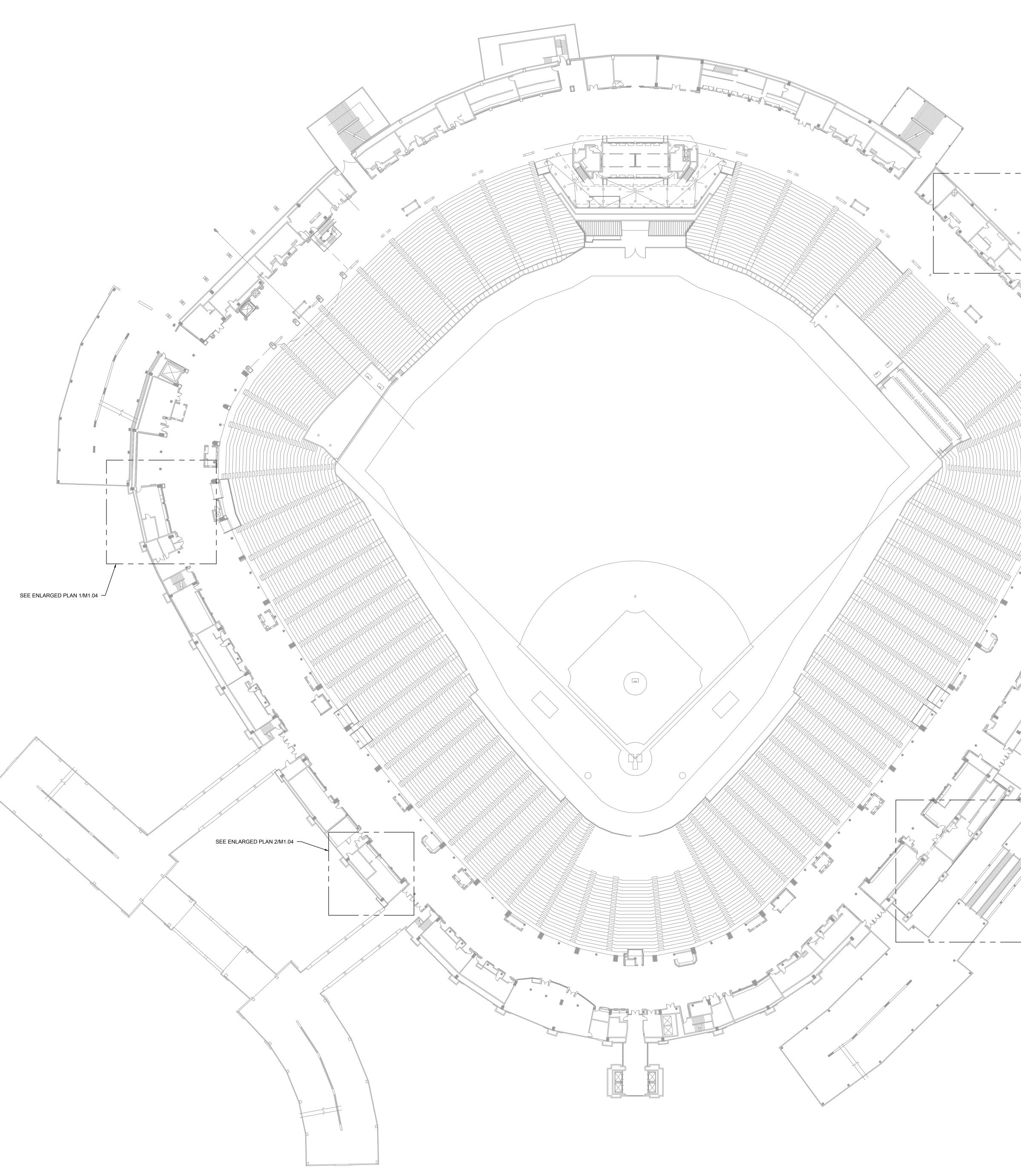


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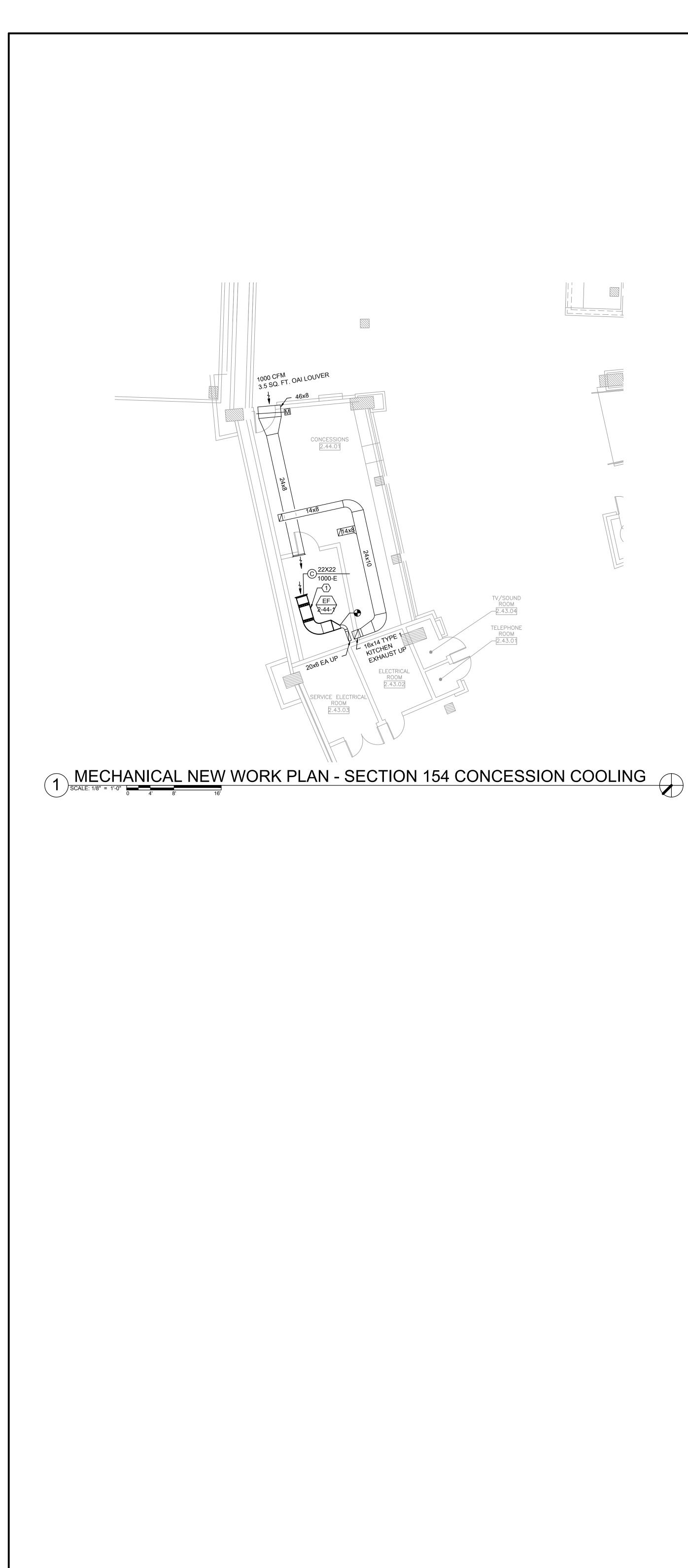
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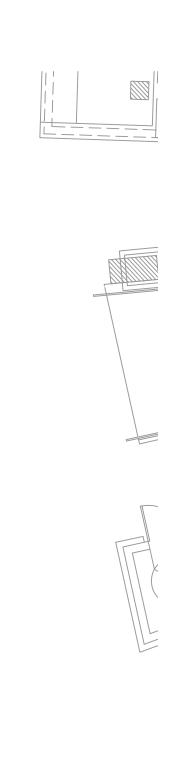
KEYED MECHANICAL NEW WORK SHEET NOTES III



DECHANICAL NEW WORK PLAN - 100 LEVEL OVERALL

SEE ENLARGED PLAN 4/M1.04	ELARA 30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
	ILLINOIS SPORTS FACILITIES AUTIORITY
	KEY PLAN
SEE ENLARGED PLAN 3/M1.04	
	ISSUE/REVISION: REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID - 11/05/21 ISSUED FOR BID - 1 - I - - I
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECHANICAL NEW WORK
	PLAN - LEVEL 100 OVERALL DESIGNED BY: DA CHECKED BY: MS
2021 ISSUED FOR BID ELIMINARY - NOT FOR CONSTRUCTION	PROJECT NO: 21276 SCALE: 1/32" = 1'-0" SHEET NO. M1.03

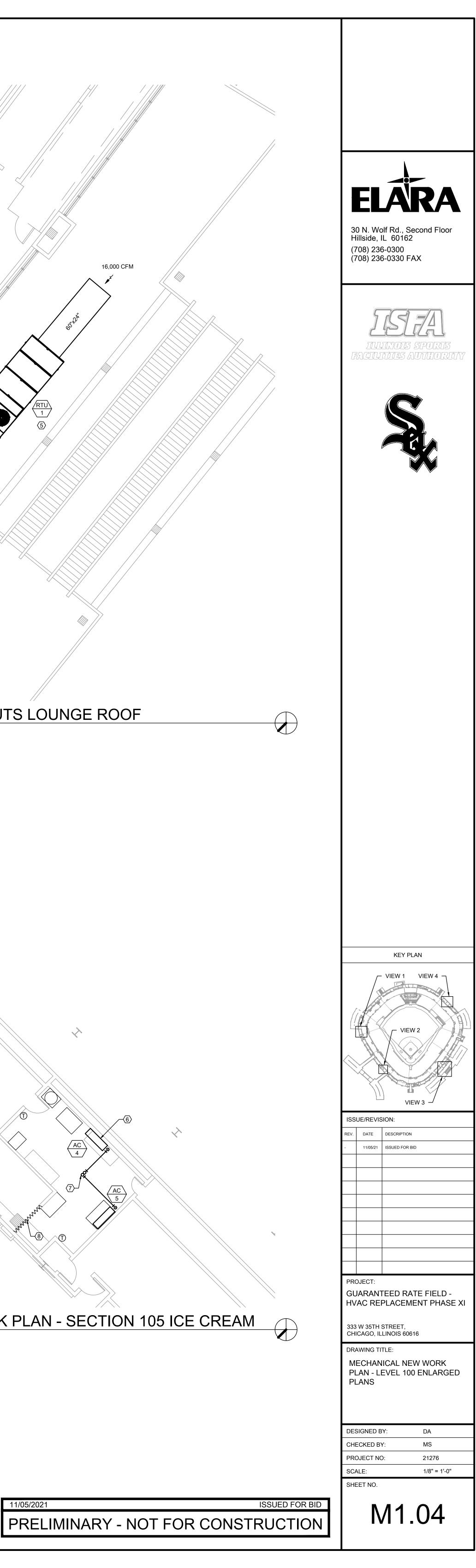




EXISTING TYPE 1 KITCHEN -EXHAUST HOOD TO REMAIN (1925 CFM-E) EXISTING TYPE-1 KITCHEN -EXHAUST HOOD TO REMAIN (1750 CFM-E)

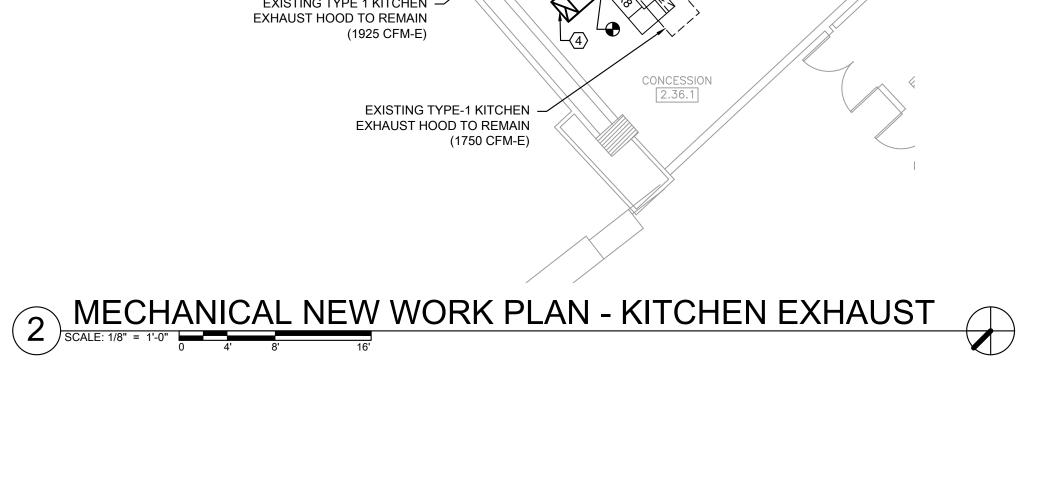
KEYED MECHANICAL NEW WORK SHEET NOTES

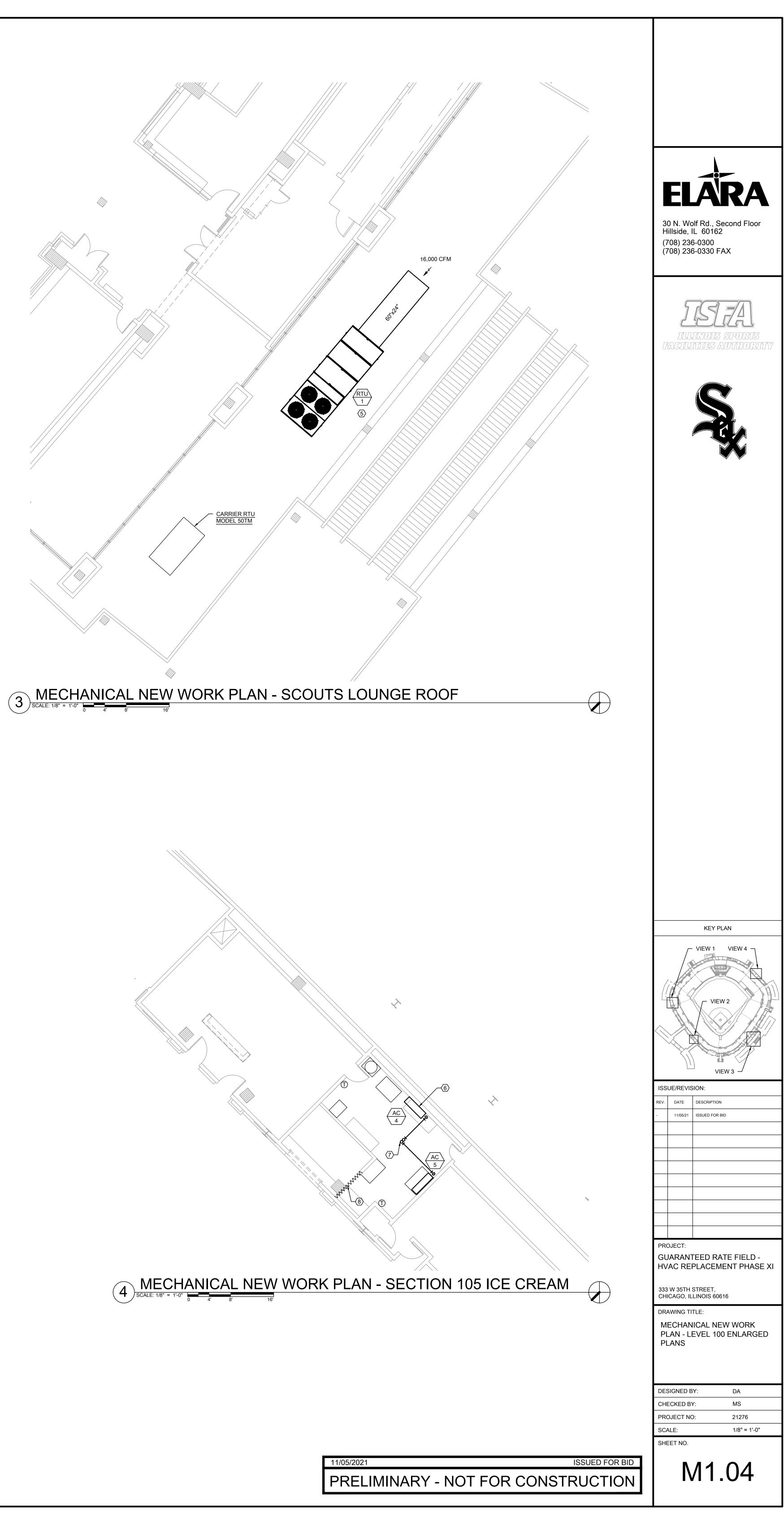
- 1. INSTALL NEW EXHAUST FAN, EXHAUST AIR INLET, UPSTREAM AND DOWNSTREAM DUCTWORK AND FITTINGS.
- CLEANOUTS IN ACCORDANCE WITH CODE. COVER IN FIRE-WRAP PER SPECIFICATIONS. 3. EXISTING KR-E1 RISER TO BE CAPPED IN SPACE AND ABANDONED IN PLACE. PROVIDE ACCESS DOOR TO ALLOW FUTURE
- INSPECTION IF NECESSARY. PROVIDE DRAIN IN DUCT CAP ROUTED TO CLOSEST FLOOR SINK OR FLOOR DRAIN. PROVIDE WITH SIGHT GLASS AND ISOLATION VALVE FOR DIAGNOSING IF ABANDONED DUCT RISER IS TAKING ON WATER. 4. INSTALL NEW 26x14 BLACK IRON KITCHEN EXHAUST DUCT UP THROUGH ROOF TO NEW KITCHEN EXHAUST FAN KEF-1. REFER TO SCHEMATIC RISER DIAGRAM ON M2.01. PROVIDE FIRE WRAP PER SPECIFICATIONS. ENSURE EXISTING DUCT SECTIONS THAT REMAIN ARE CLEANED PRIOR TO WELDING NEW CONNECTIONS.
- 5. INSTALL NEW VAV ROOF TOP UNIT ON EXISTING CURB WITH CURB ADAPTER. BASIS OF DESIGN UNIT WILL REQUIRE ADAPTER CDI PART # 1-5025-5032. CONNECT TO EXISTING SUPPLY AND RETURN DUCTS BELOW. COORDINATE INTEGRATION OF NEW UNIT INTO EXISTING SIEMENS BAS WITH OWNER DESIGNATED BAS REPRESENTATIVE.
- CONTROL/THERMOSTAT ON WALL AS SHOWN.
- 7. ROUTE REFRIGERANT LINES FOR NEW DX CASSETTES HIGH BEFORE PENETRATING THROUGH ROOF TO NEW ROOF MOUNTED CONDENSING UNIT. SUPPORT AND INSULATE PER DETAILS AND SPECIFICATIONS.
- 8. INSTALL VINYL CURTAIN STRIP DOOR TO ISOLATION POINT OF SALE AREA FROM BACK ROOM TO CONTAIN COOLING TO THE STORAGE AREA. BLOCK AND SEAL ANY OPENINGS BETWEEN THE TWO SPACES NOT COVERED BY THE VINYL STRIPS.

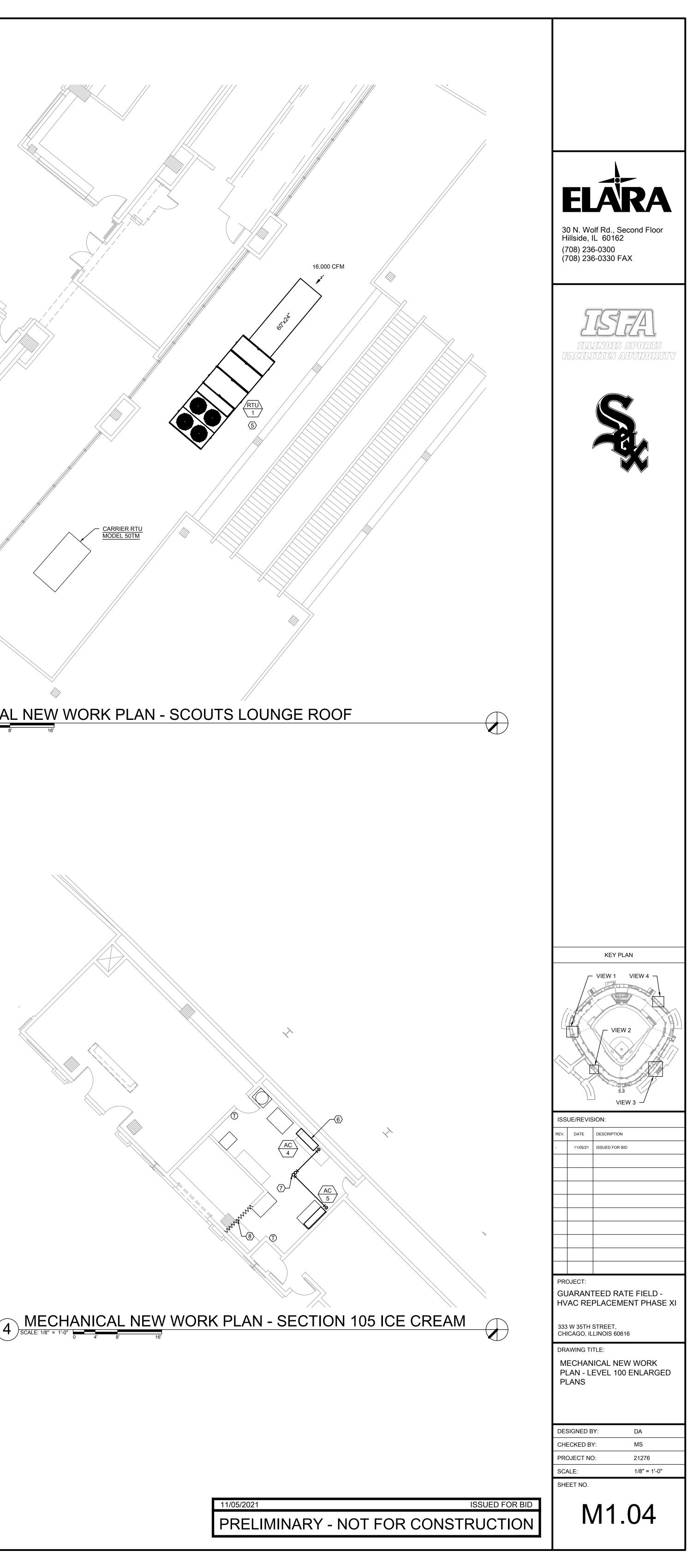


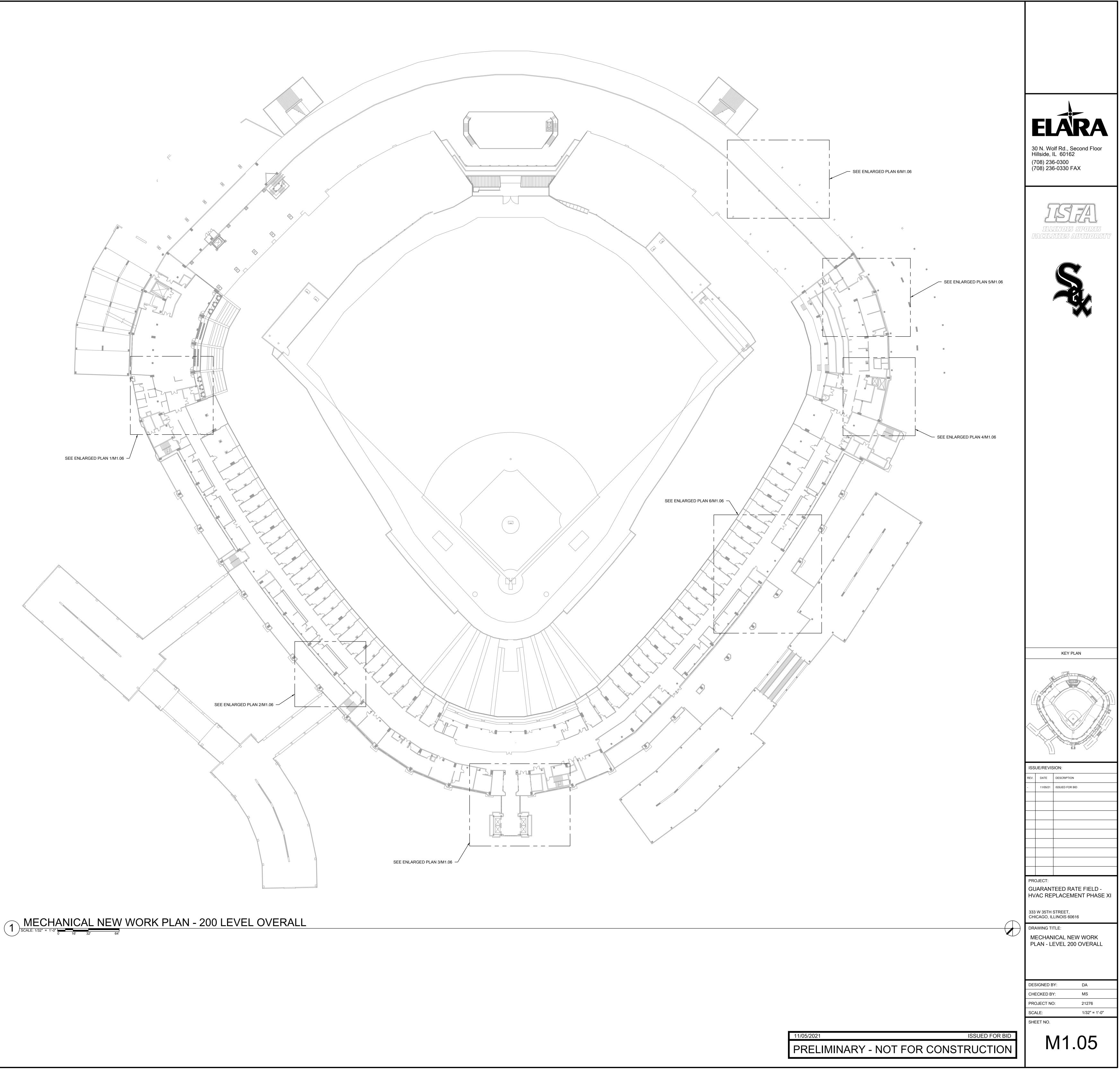
6. INSTALL NEW WALL MOUNTED DX CASSETTE UNIT. PROVIDE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. MOUNT REMOTE

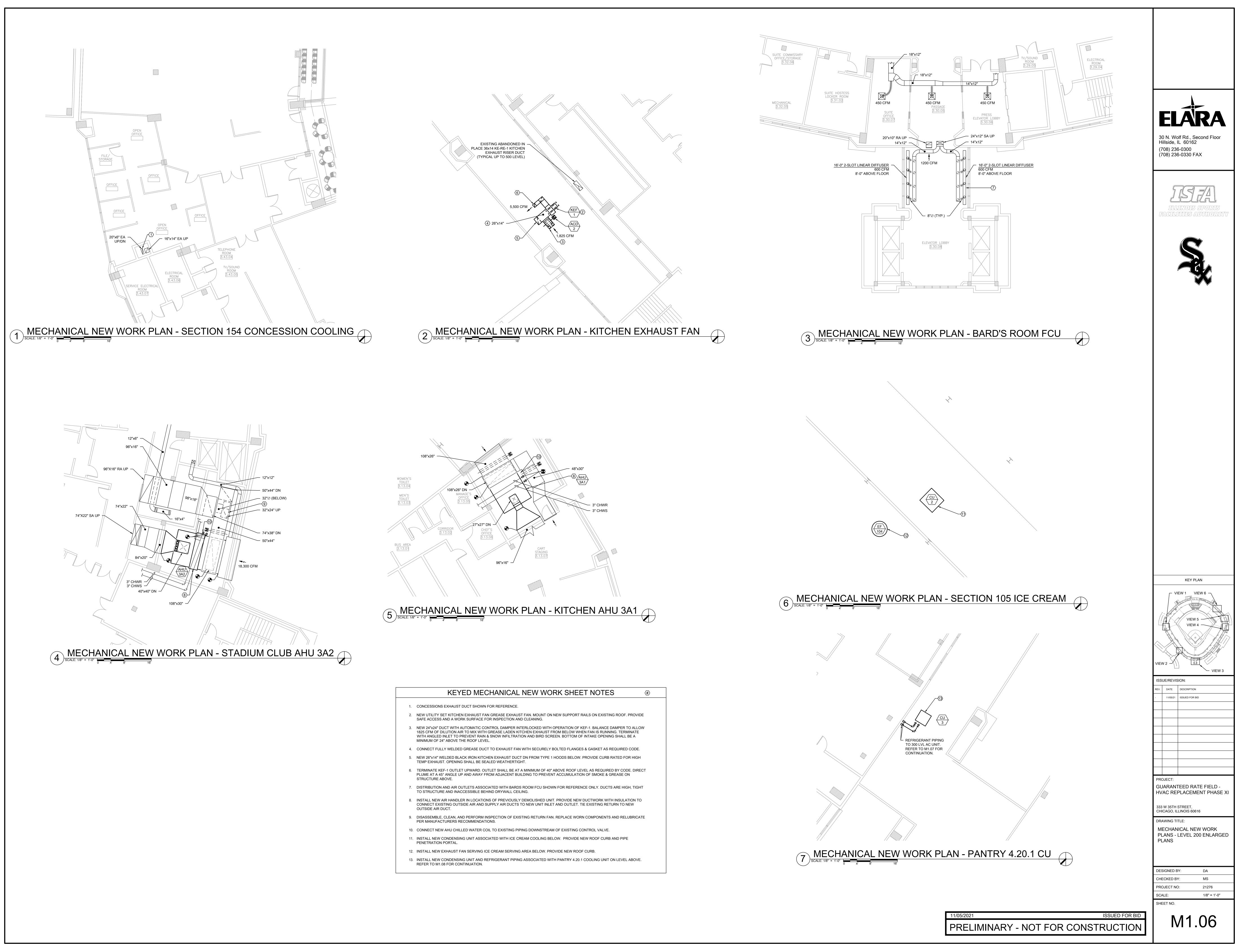
2. RECONFIGURE DUCTWORK SERVING HOOD TO FACILITATE RISER RELOCATION. DUCT SHALL BE SLOPED AND PROVIDED WITH

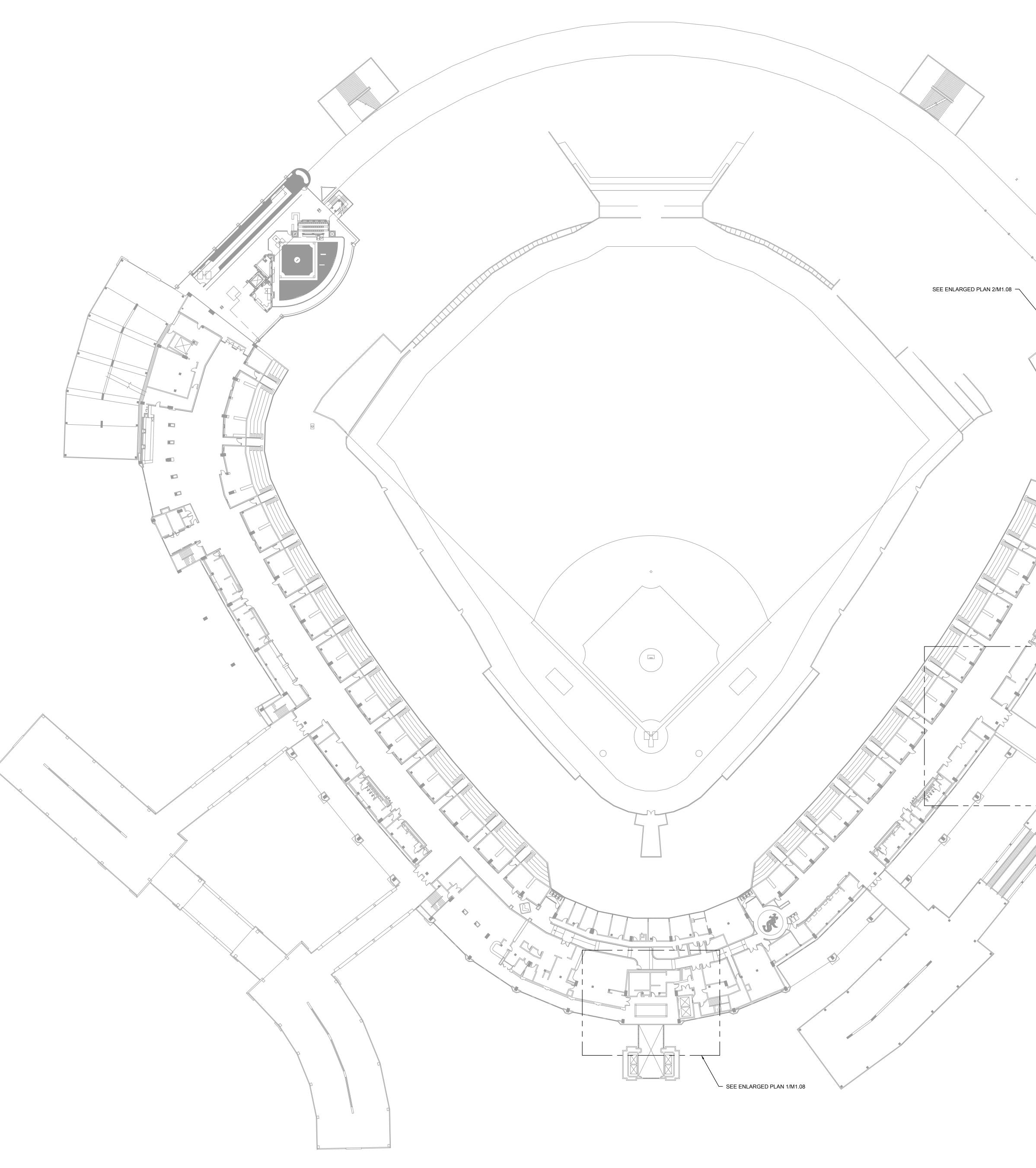




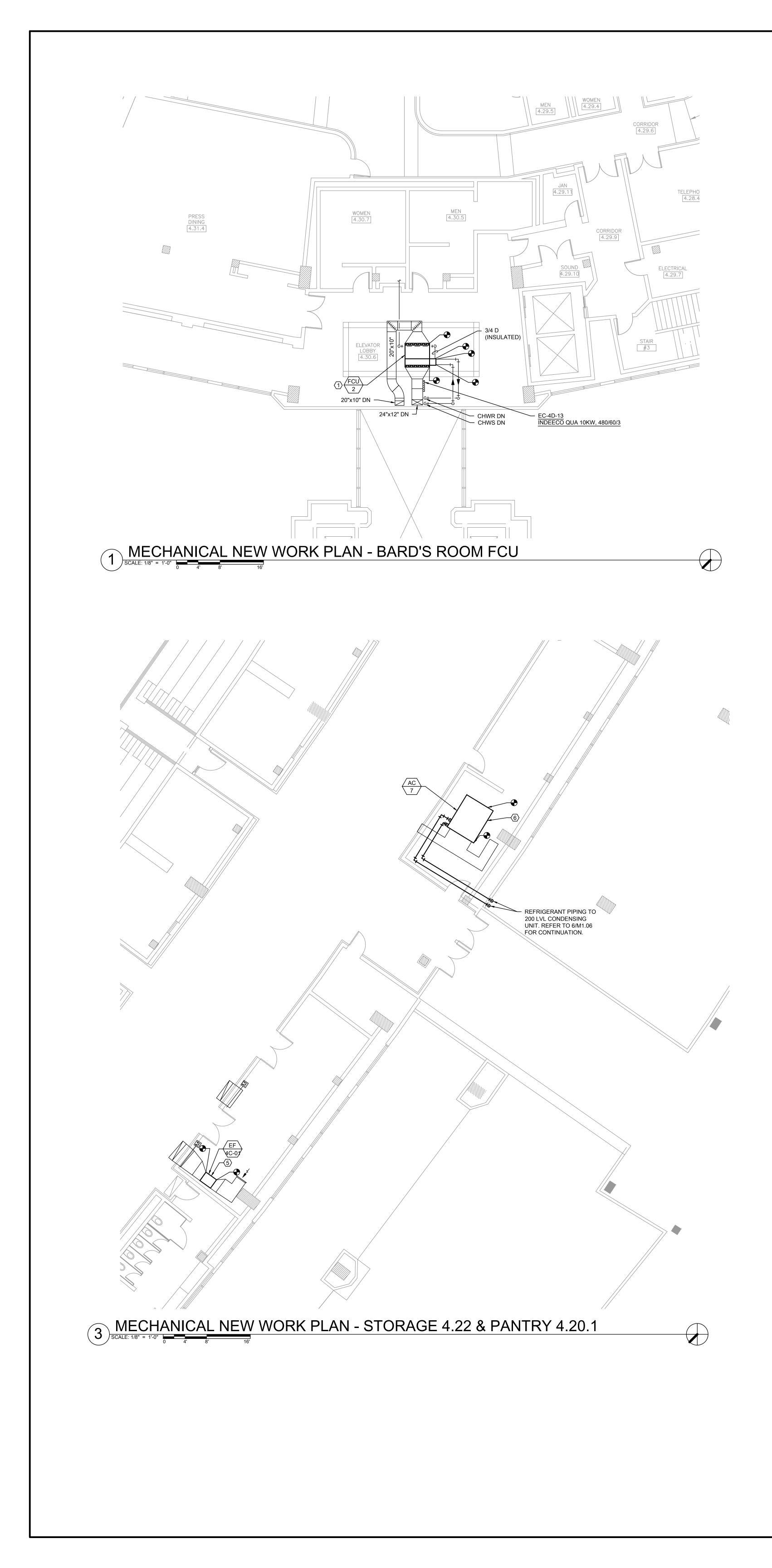








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	(708) 236-0330 FAX
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	KEY PLAN
SEE ENLARGED PLAN 3/M1.08	
	ISSUE/REVISION:
	- 11/05/21 ISSUED FOR BID
	PROJECT:
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
\frown	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: MECHANICAL NEW WORK PLANS - LEVEL 300 OVERALL
	DESIGNED BY: DA
	CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
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ELIMINARY - NOT FOR CONSTRUCTION	M1.07





	K

- 2. TRASH CHUTE EXHAUST DUCT SHOWN FOR REFERENCE. DUCT TO BE CLEANED PRIOR TO INSTALLATION OF NEW EXHAUST FAN ON ROOF.
- INSTALLATION.
- FOR CONDENSING UNIT.

KEYED MECHANICAL NEW WORK SHEET NOTES 1. INSTALL NEW FAN COIL UNIT ABOVE CEILING TO SERVE LOWER LEVEL ELEVATOR LOBBY. CONNECT TO EXISTING SUPPLY AND RETURN DUCTS AS WELL AS EXISTING CHILLED WATER PIPING AND CONDENSATE DRAIN LINE.

 $\langle \# \rangle$

3. AIR OUTLETS AND INLETS FOR AHU-3A-2 SHOWN FOR REFERENCE. SYSTEM TO BE BALANCED UPON COMPLETION OF

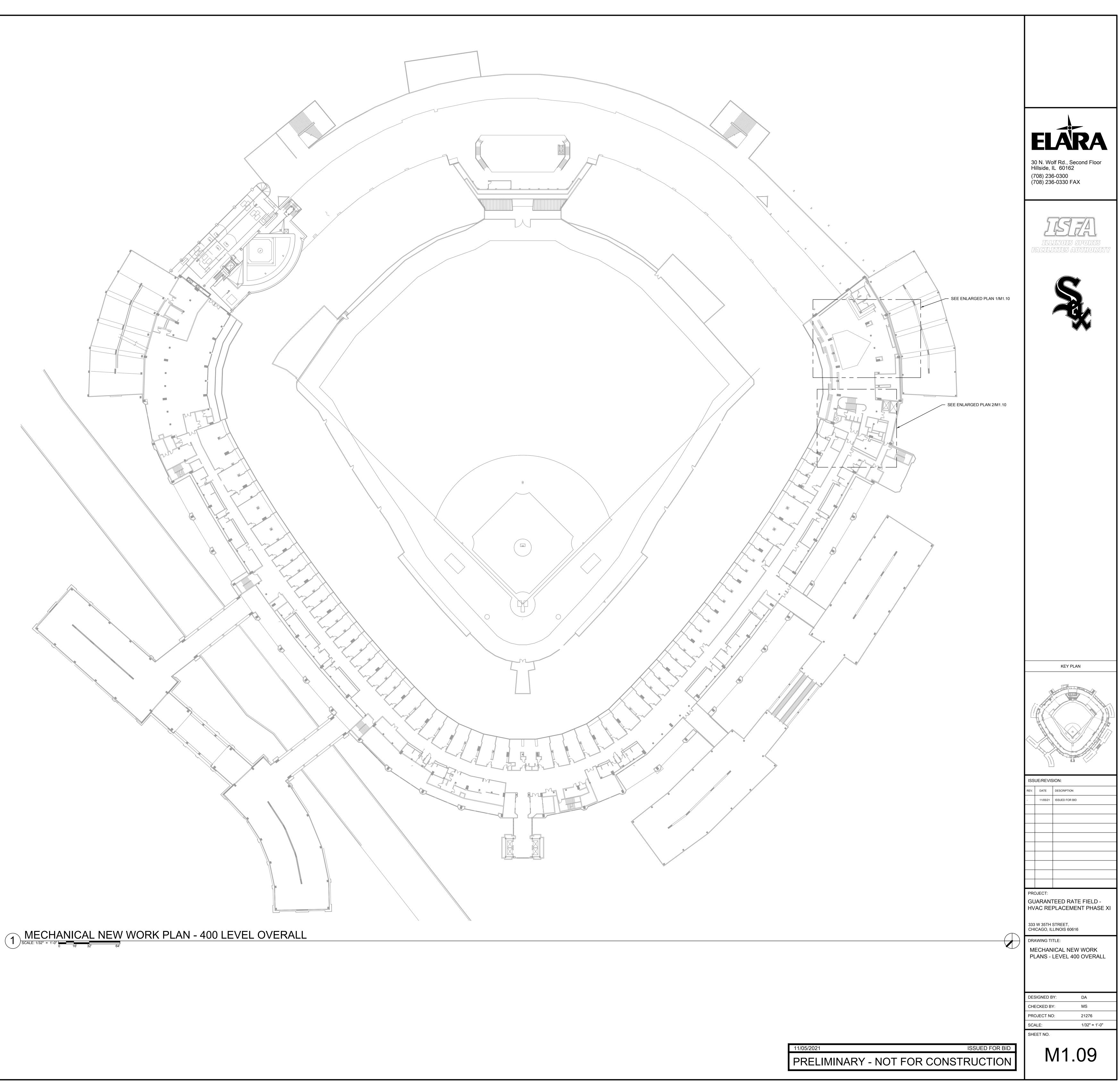
4. DISHWASHER EXHAUST DUCT SHOWN FOR REFERENCE. DUCT BELOW TO BE REPAIRED AND DRAIN SECTION INSTALLED.

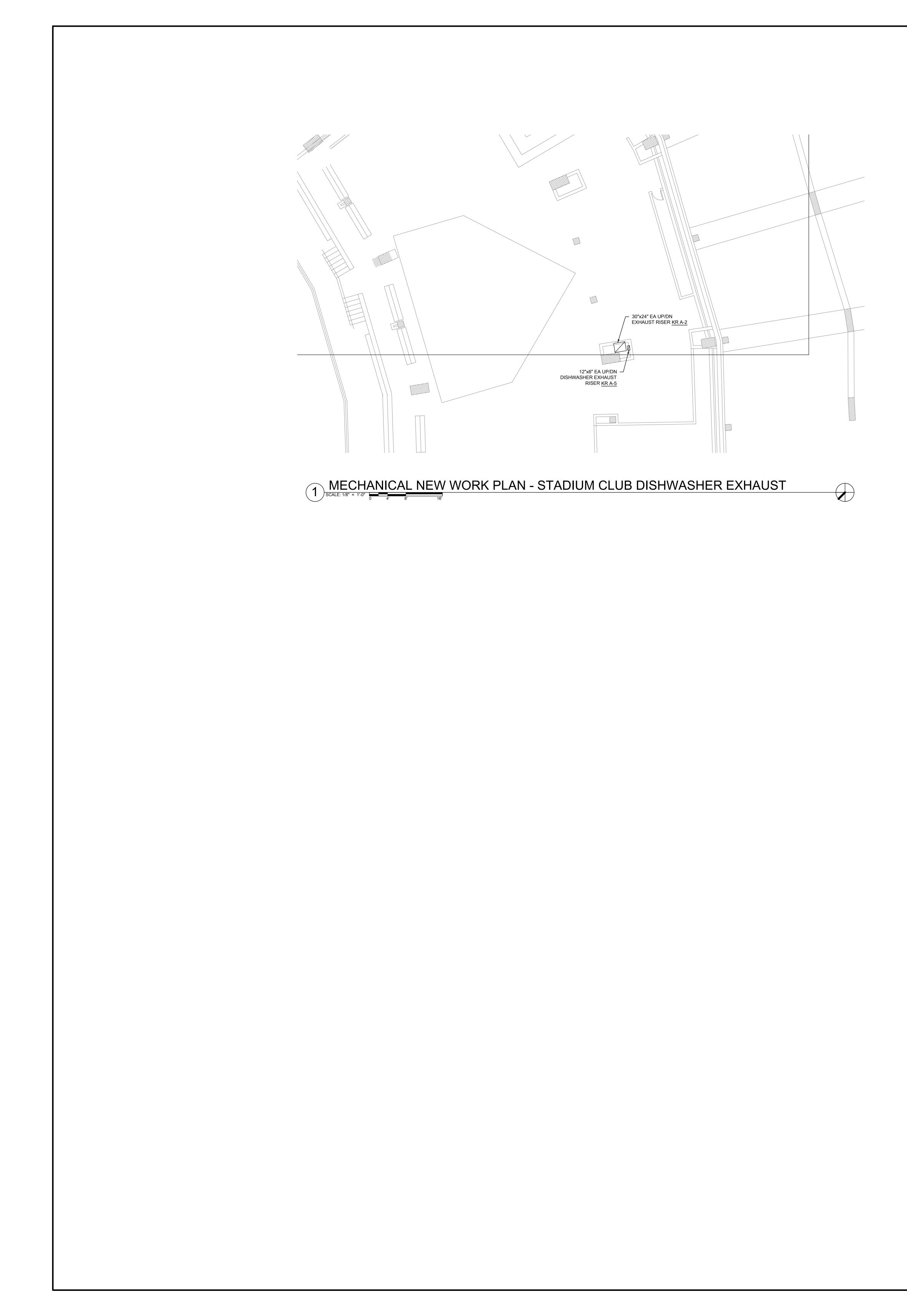
5. INSTALL NEW EXHAUST FAN IN PLACE OF DEMOLISHED ONE. CONNECT TO EXISTING DUCTWORK WITH NEW FLEX CONNECTIONS AND TIE TO EXISTING CONTROLS INCLUDING MOTORIZED DAMPERS.

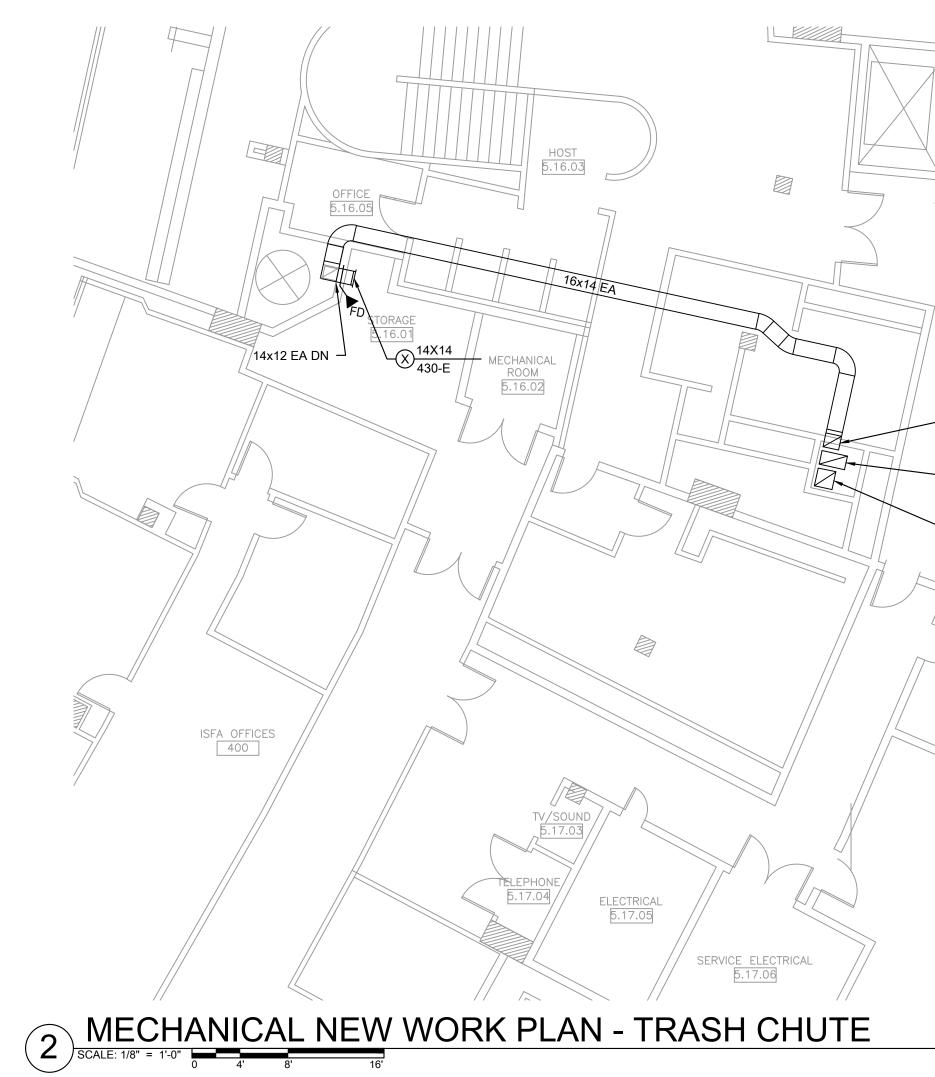
6. INSTALL NEW DX DUCTED FAN COIL. CONNECT TO EXISTING SUPPLY AND RETURN DUCTS. ROUTE NEW INSULATED REFRIGERANT LINES OUT THROUGH EXISTING WALL PENETRATIONS AND DOWN TO NEW CONDENSING UNIT ON ROOF BELOW. REFER TO M1.06

3⊓ H (7		olf Rd., IL 6016 6-0300			
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		KEY	PLAN		
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ISS				VIEW 1	
	DATE 11/05/21	DESCRIPTI ISSUED FO			
GL HV 333 CH	W 35TH	PLACE STREET, LINOIS 6		ELD - PHASE XI	
M Pl	AWING TI ECHAN _ANS - NLARG	IICAL N LEVEL		DRK	
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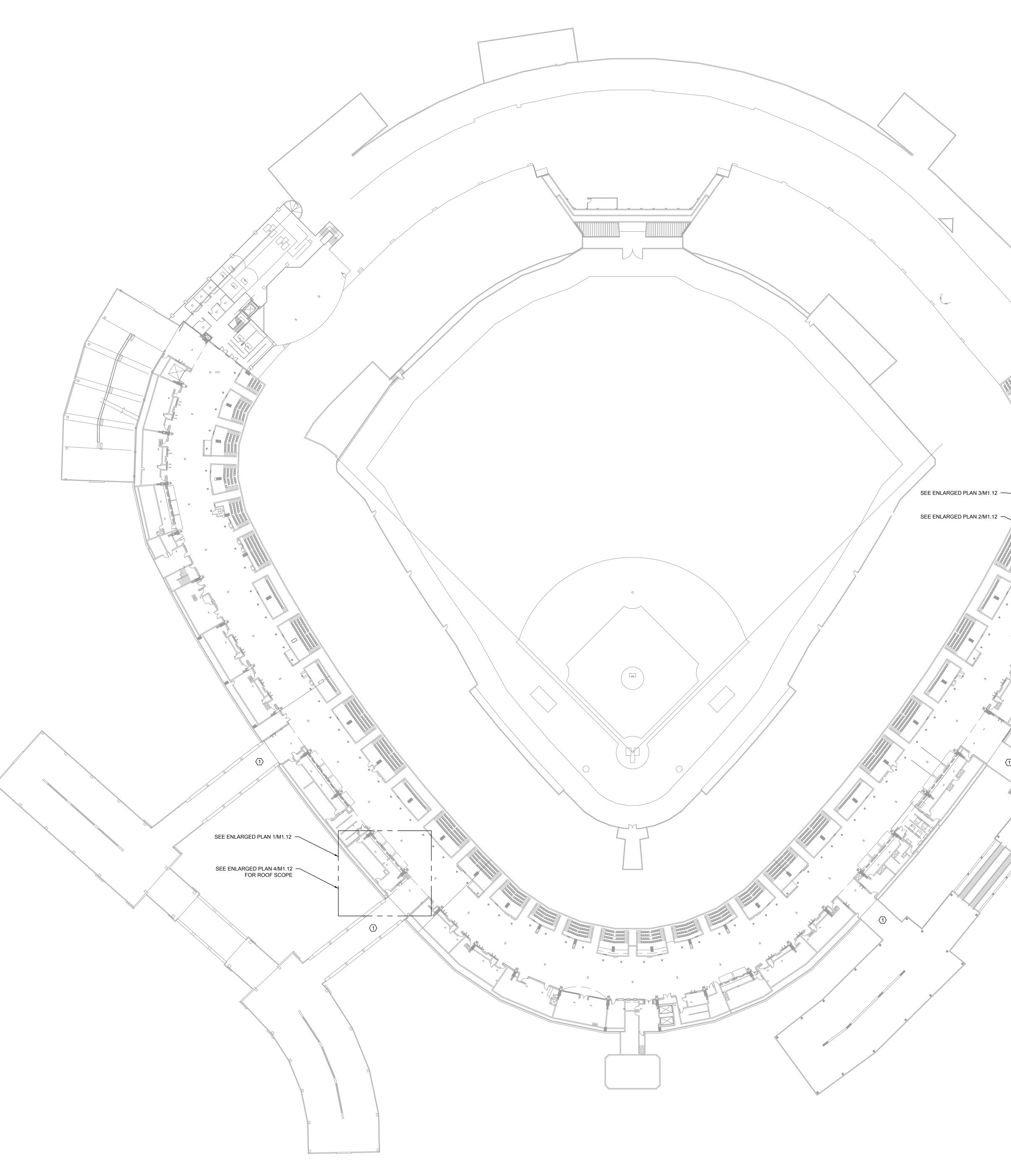


KEYED MECHANICAL NEW WORK SHEET NOTES

- 1. DISHWASHER EXHAUST DUCT SHOWN FOR REFERENCE ONLY.
- CLEAN EXHAUST DUCT AND REBALANCE EXISTING GRILLE TO AIRFLOW SHOWN. EXCERCISE EXISTING FIRE DAMPER A REPLACE FUSIBLE LINK.

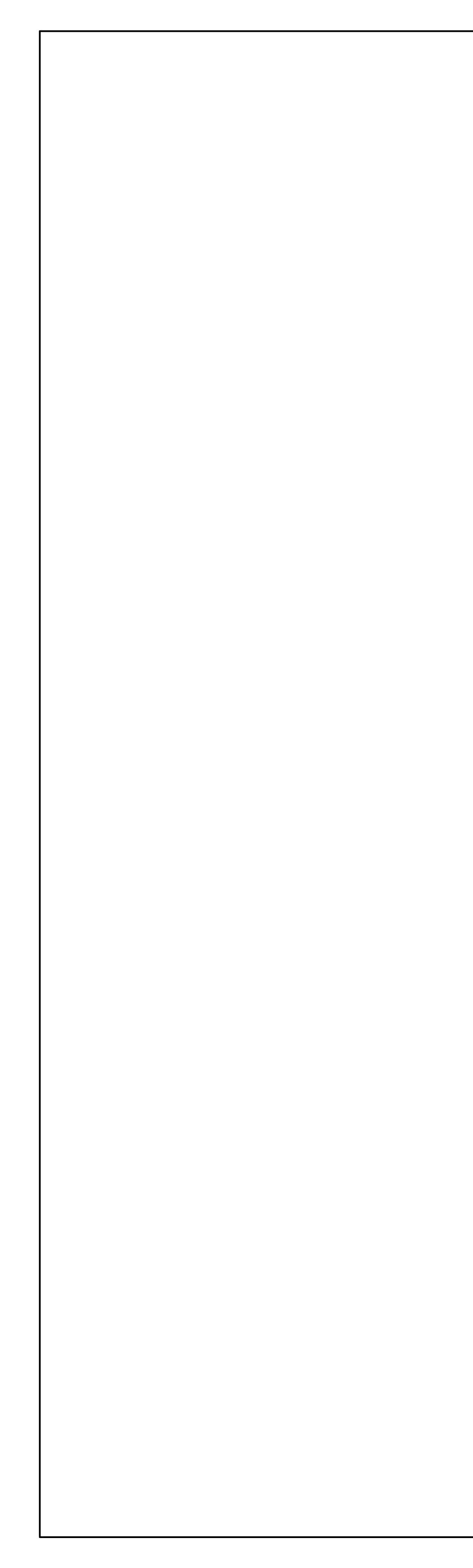
	SON. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
16"x14" EA UP TO ROOF TRASH CHUTE EXHAUST RISER TR A-1 26"x14" EA UP/DN TOILET EXHAUST RISER TE RA- 18"x18" EA UP/DN KITCHEN EXHAUST KR A-1	ILLINOIS SPORTS FACILITIES AUTHORITY
ELEVATOR MACHINE ROOM E-17.03	
RAND	
	KEY PLAN
	ISSUE/REVISION: REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID - 11/05/21 ISSUED FOR BID - - - - 11/05/21 ISSUED FOR BID - - - <t< th=""></t<>
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: MECANICAL NEW WORK PLANS - LEVEL 400 ENLARGED PLANS
5/2021 ISSUED FOR BID RELIMINARY - NOT FOR CONSTRUCTION	DESIGNED BY: DA CHECKED BY: MS PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO. M11.10

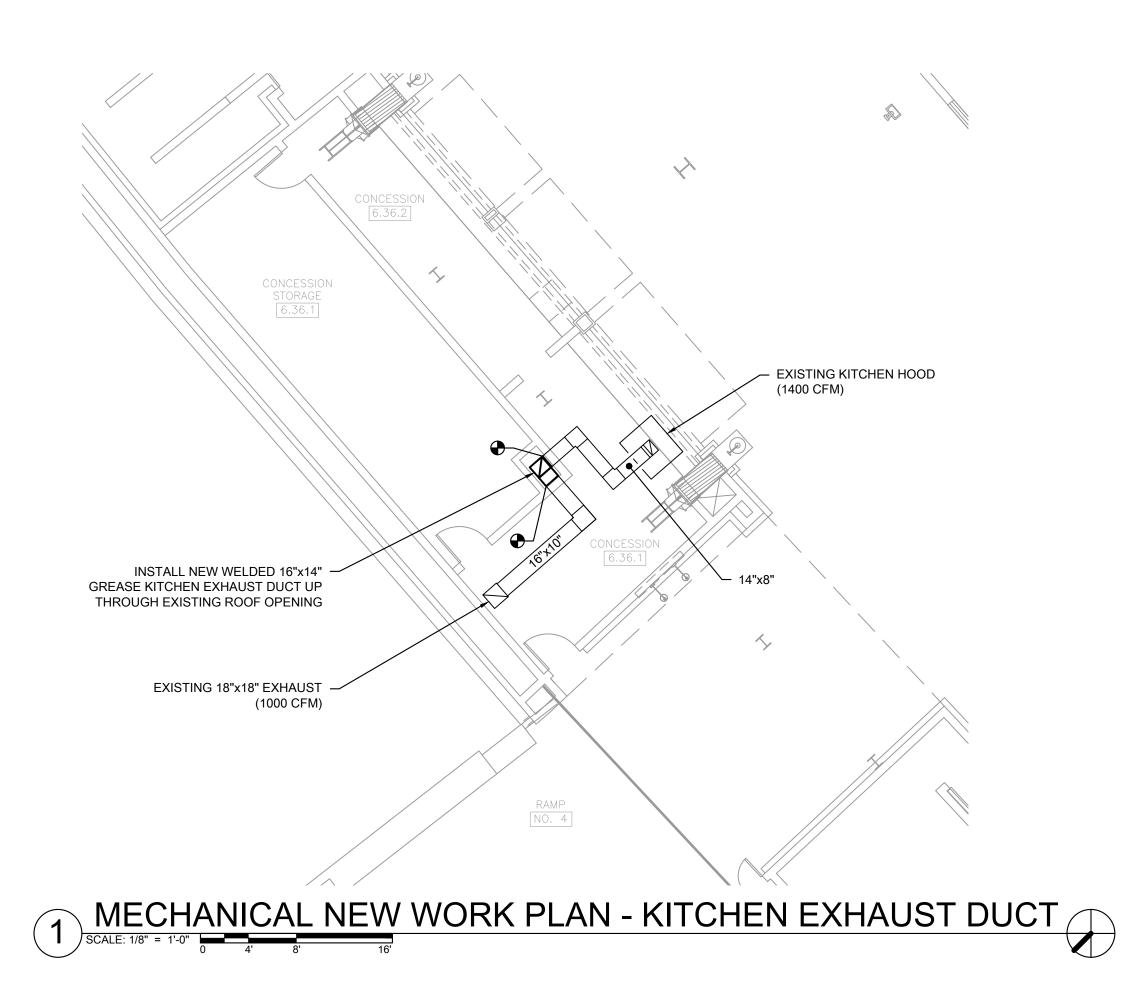
KEYED MECHANICAL NEW WORK SHEET NOTES ④ REMOVAL OF DEMOLISHED EQUIPMENT AND INGRESS OF NEW EQUIPMENT SHOULD BE COORDINATED WITH ISFA AND CHICAGO WHITE SOX. IT IS RECOMMENDED TO UTILIZE THE EXTERIOR RAMPS FOR DELIVERING EQUIPMENT TO THE 300 AND 500 LEVELS.

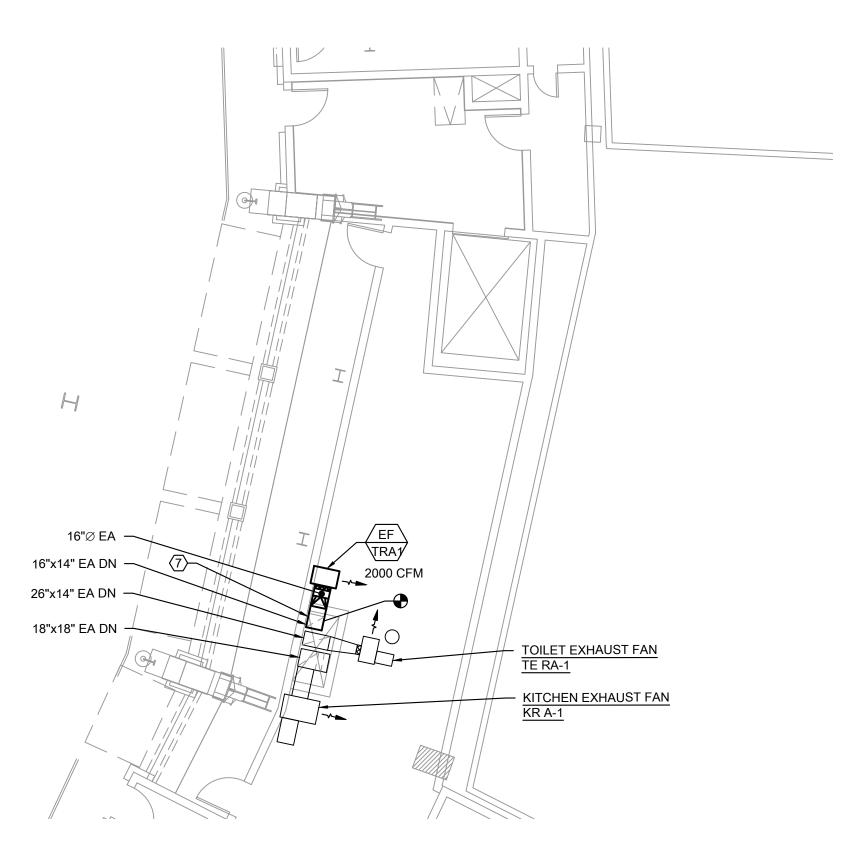


1 MECHANICAL NEW WORK PLAN - 500 LEVEL OVERALL

	ELÂRA
	30 N. Wolf Rd., Second Floor Hillside, IL 60162
	Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
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	<u>LESTZA</u>
	ILLINOIS SPORTS FACILITIES AUTHORITY
	KEY PLAN
	ISSUE/REVISION:
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	HVAC REPLACEMENT PHASE XI
\frown	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: MECHANCIAL NEW WORK PLANS - LEVEL 500 OVERALL
	DESIGNED BY: DA CHECKED BY: MS
	PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
2021 ISSUED FOR BID	
ELIMINARY - NOT FOR CONSTRUCTION	M1.11



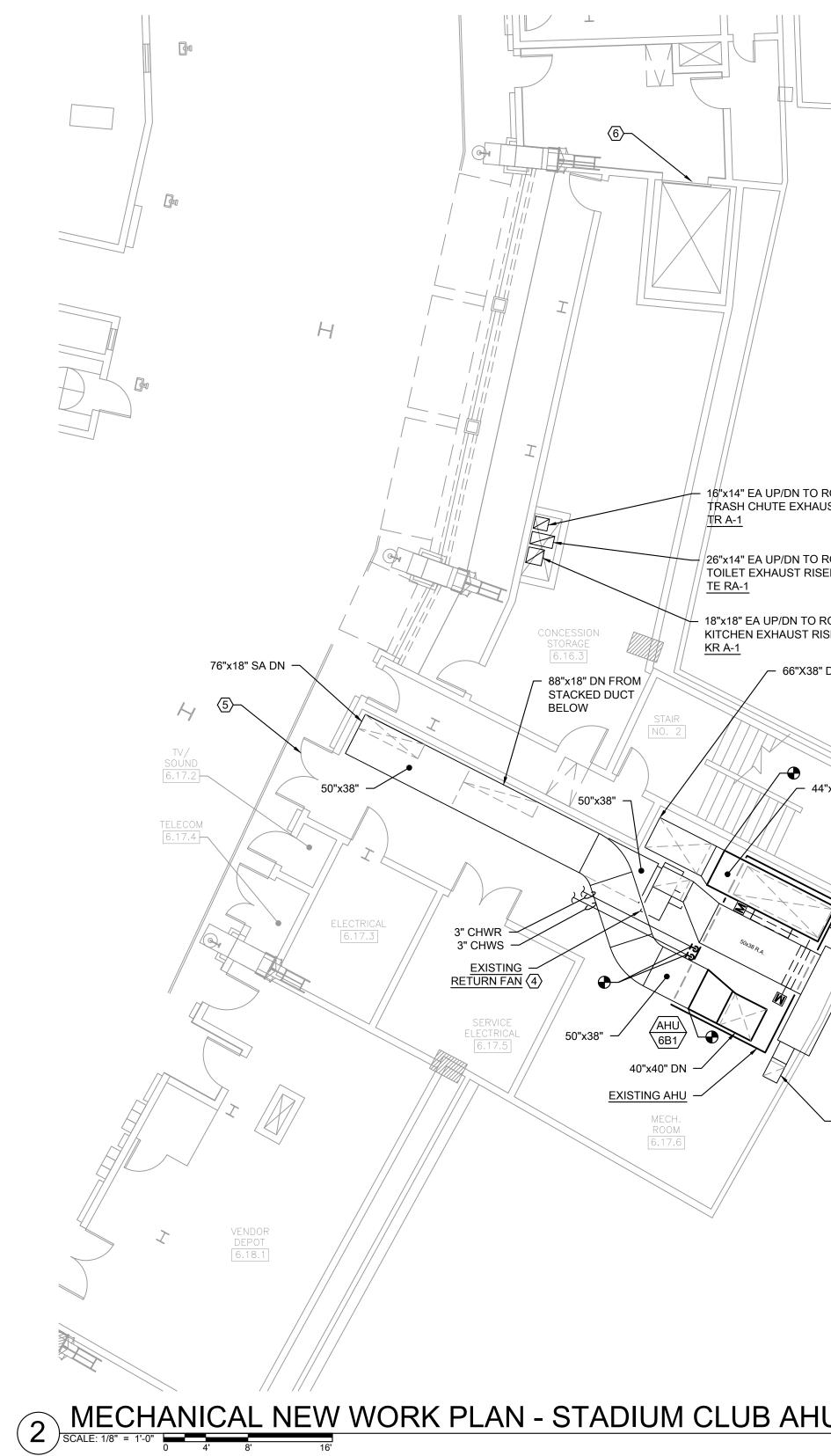


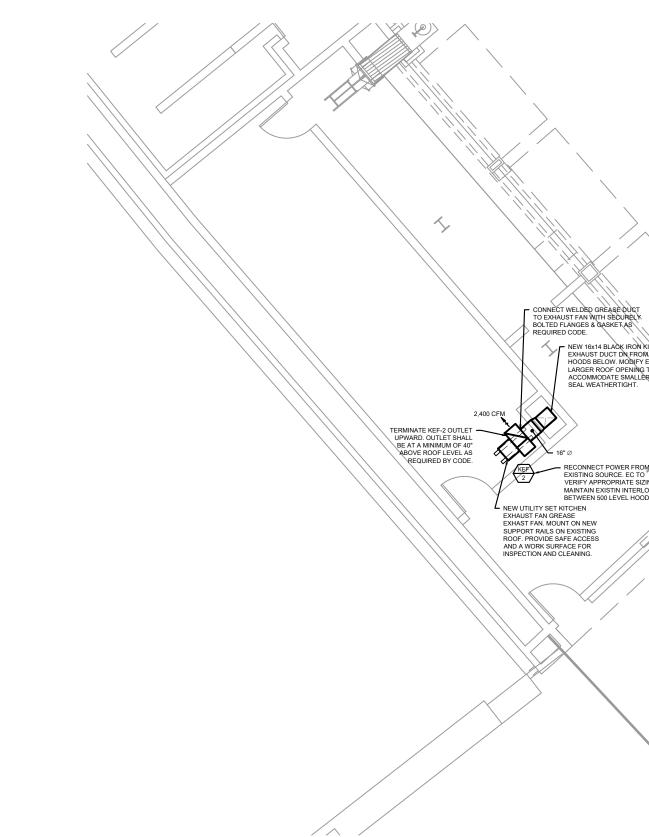


3 MECHANICAL NEW WORK PLAN - TRASH CHUTE EXHAUST ROOF PLAN

KEYED MECHANICAL NEW WORK SHEET NOTES

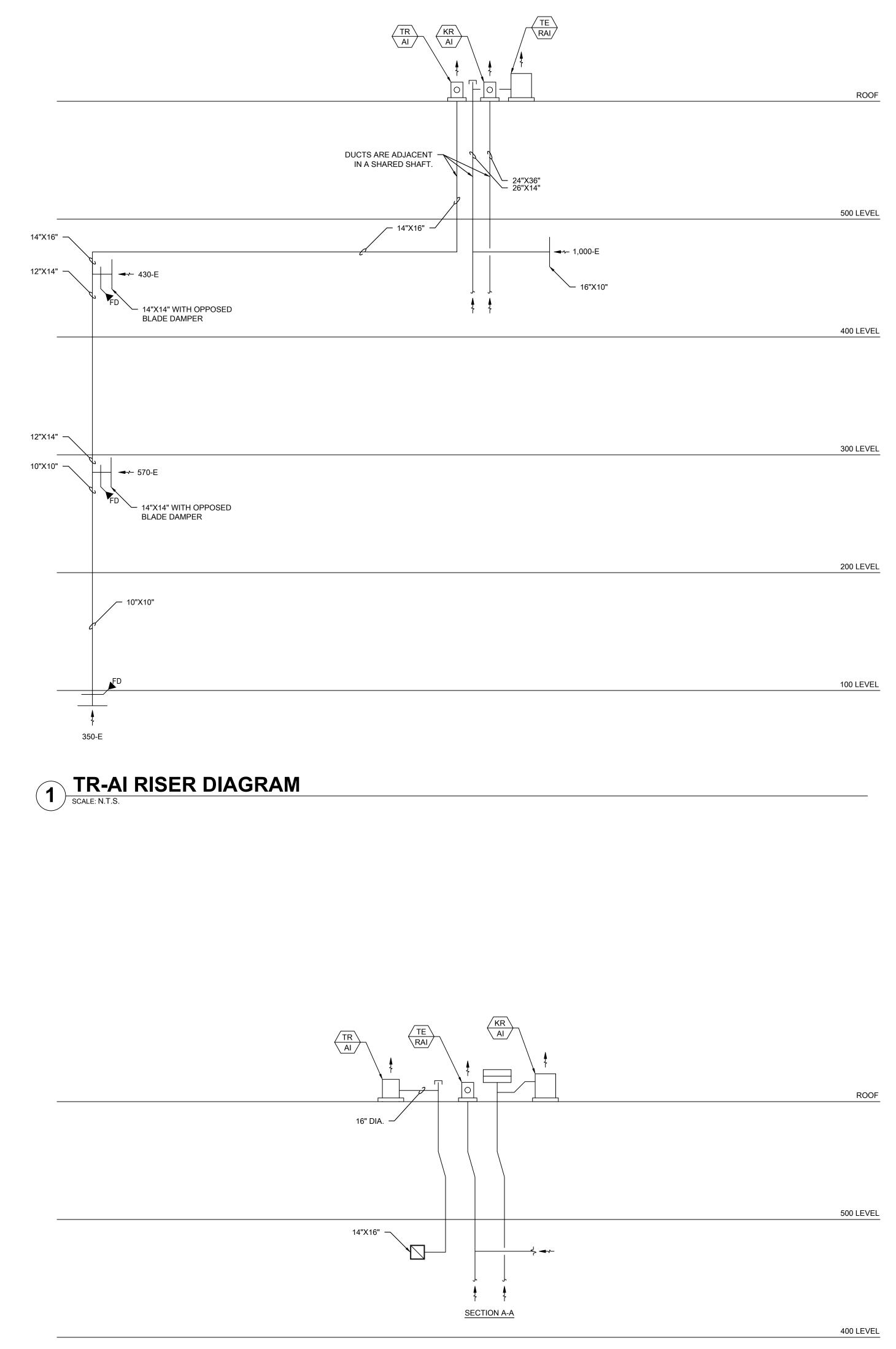
- 1. VFD FOR NEW 1-1/2 HP KITCHEN EXHAUST FAN KEF-2. COORDINATE FINAL LOCATION WITH SPACE EQUIPMENT LAYOUT.
- CLEAN EXISTING TO REMAIN TYPE 1 HOOD DUCTWORK THOROUGHLY. PROVIDE NEW CLEANOUT AND ACCESS IF NOT CURRENTLY PRESENT.
- INSTALL NEW AIR HANDLER IN LOCATIONS OF PREVIOUSLY DEMOLISHED UNIT. PROVIDE NEW DUCTWORK WITH INSULATION TO CONNECT EXISTING OUTSIDE AIR AND SUPPLY AIR DUCTS TO NEW UNIT INLET AND OUTLET. TIE EXISTING RETURN TO NEW OUTSIDE AIR DUCT.
- 4. DISASSEMBLE, CLEAN, AND PERFORM INSPECTION OF EXISTING RETURN FAN. REPLACE WORN COMPONENTS AND RELUBRICATE PER MANUFACTURERS RECOMMENDATIONS.
- 5. DOUBLE DOORS CONNECTING MECHANICAL ROOM TO 500 LEVEL CONCOURSE IS RECOMMENDED FOR MECHANICAL EQUIPMENT
- INGRESS. UNIT SHALL REQUIRE SOME AMOUNT OF FIELD ASSEMBLY DUE TO LIMITED AREA OF ENTRY TO MECHANICAL SPACE.6. SERVICE ELEVATOR SUITABLE FOR SMALL EQUIPMENT INGRESS. FEATURES ACCESS ON ALL FLOORS. COORDINATE USE AND
- ANY REQUIRED LOCKOUTS WITH ISFA AND CHICAGO WHITE SOX. 7. INSTALL NEW RADIUS ELBOW FITTING AND CONNECT TO EXISTING EXHAUST RISER SERVING TRASH CHUTE. SEAL AND LEAK
- TEST RISER TO CONFIRM INTEGRITY OF EXISTING DUCTWORK. CONNECT TO NEW ROOF MOUNTED UTILITY SET EXHAUST FAN.



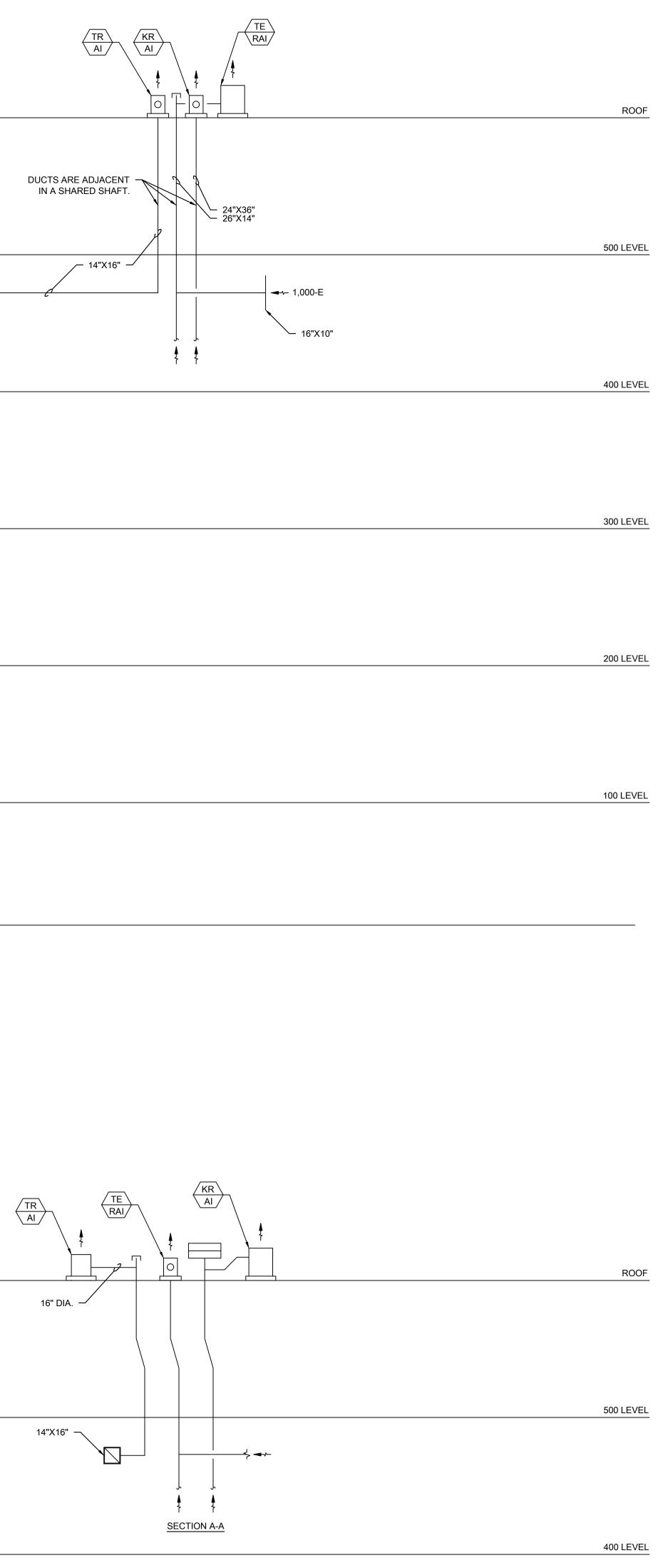


4 MECHANICAL NEW WORK PLAN - KITCHE

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	30 N. Wolf Rd., Second Floor
	Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
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OF	<u>L'ELIZZI</u> ILLINOIS SPORTS
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	KEY PLAN
ĚN CHILDREAD	VIEW 3
	VIEW 2
	VIEW 1 & 4
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
EXHAUST DUCT ROOF PLAN	
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: MECHANCIAL NEW WORK
	PLAN - LEVEL 500 ENLARGED PLANS
	DESIGNED BY: DA CHECKED BY: MS
	PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO.
021 ISSUED FOR	
LIMINARY - NOT FOR CONSTRUCTION	

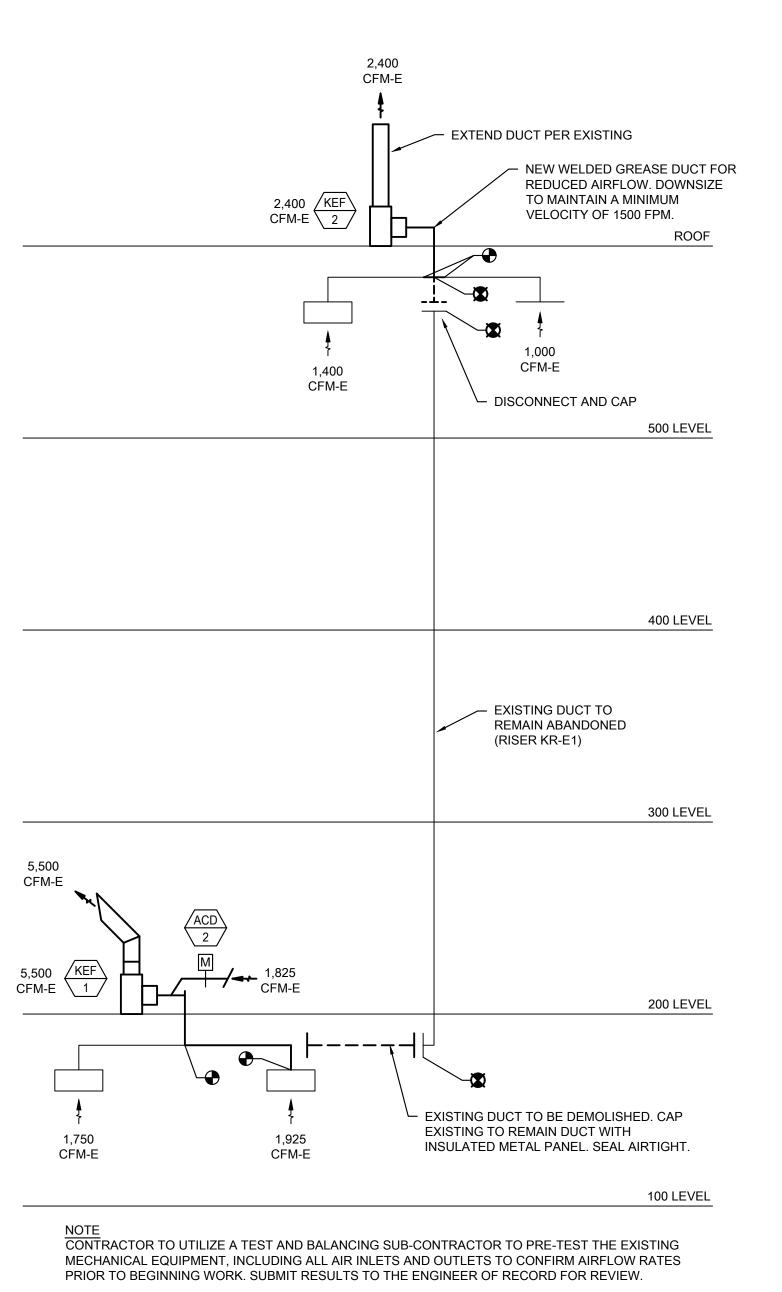




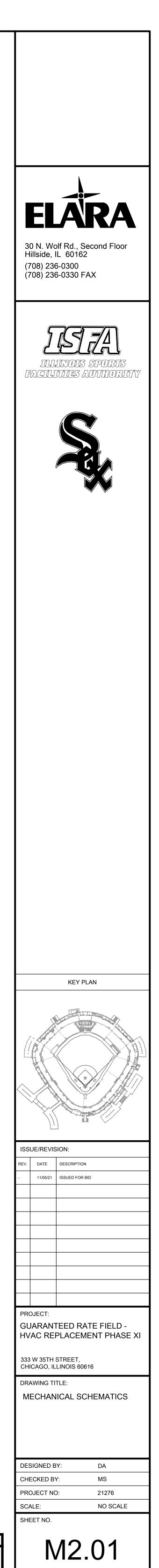




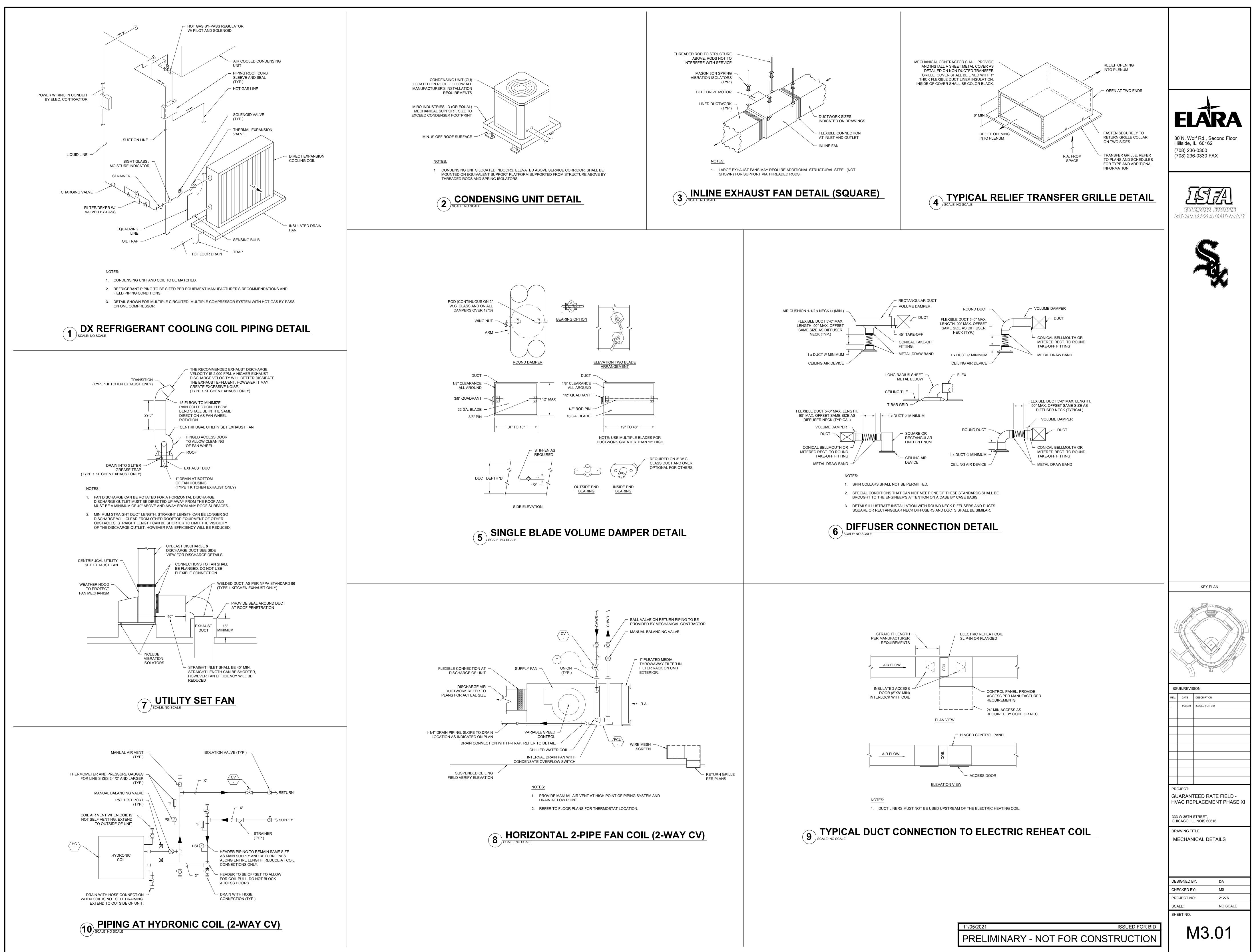


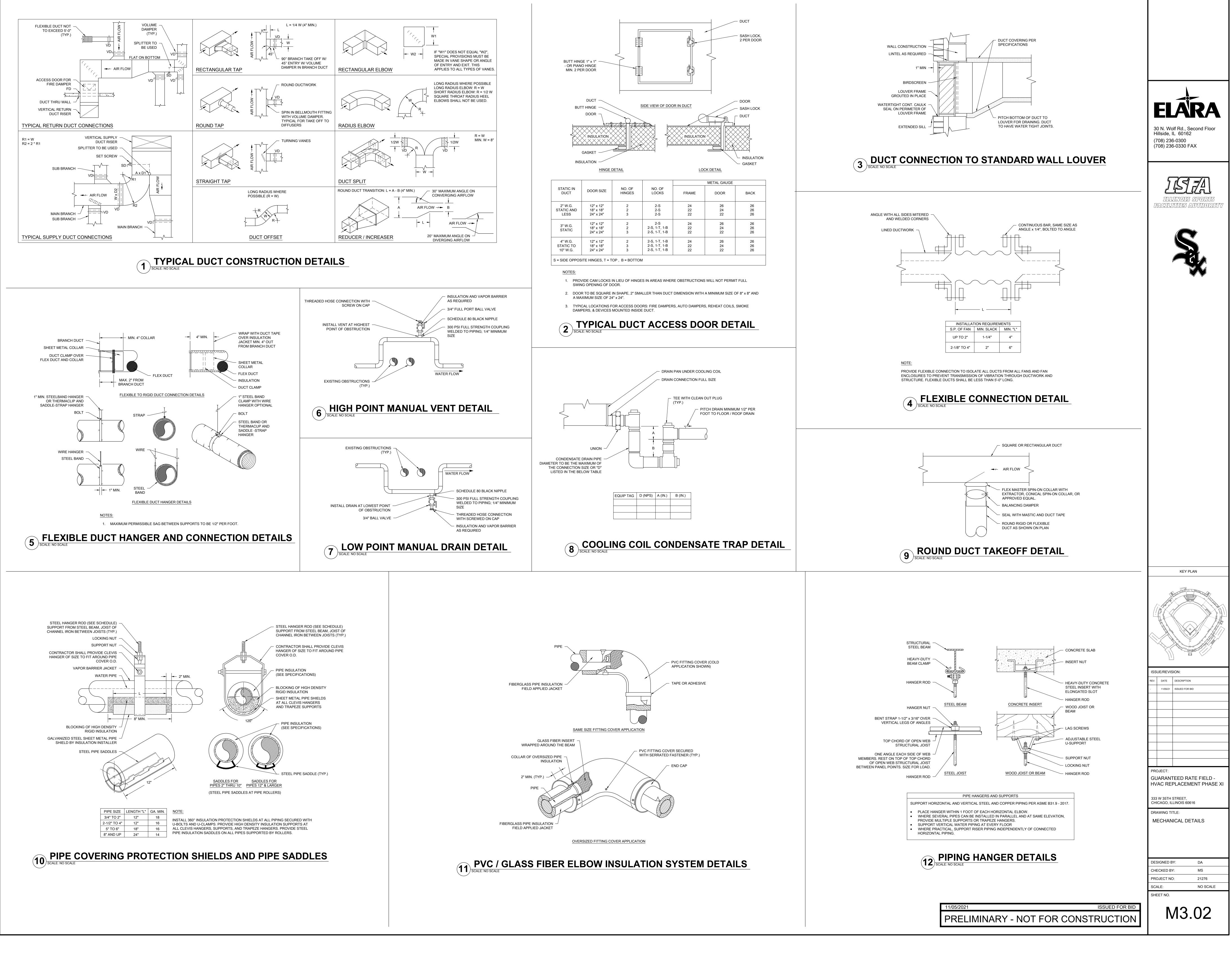


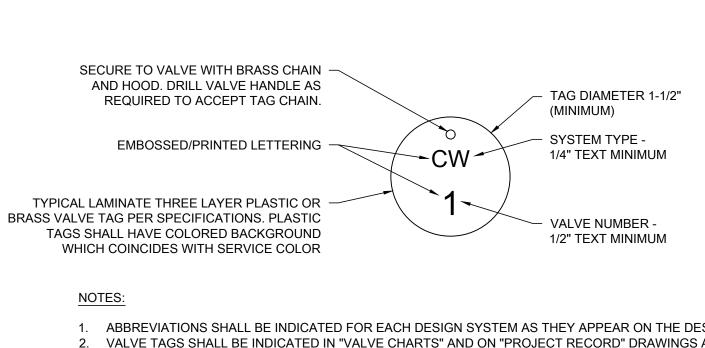
1 KITCHEN EXHAUST SCHEMATIC DIAGRAM



ISSUED FOR BID PRELIMINARY - NOT FOR CONSTRUCTION







- ABBREVIATIONS SHALL BE INDICATED FOR EACH DESIGN SYSTEM AS THEY APPEAR ON THE DESIGN DRAWINGS.
 VALVE TAGS SHALL BE INDICATED IN "VALVE CHARTS" AND ON "PROJECT RECORD" DRAWINGS AND SHALL CORRELATE WITH TAG I.D.'S.
- 3. ALL MAJOR SYSTEMS ON-OFF, CONTROL, AND BALANCING VALVES SHOULD HAVE AN ASTERIK***. PROVIDE 8.5" x 11" VALVE TAG SHEETS IN A 3-RING BINDER FOR REPRODUCTION AND/OR FUTURE EDITING.
 REFERENCE ALL "VALVE TAGS" TO "VALVE TAG CHARTS", "AS BUILT DRAWINGS", AND "O & M MANUAL DATA" (INDEX VALVES PER

э.	REFERENCE ALL VALVE TAGS TO VALVE TAG CHARTS, AS BUILT DRAWINGS,
	CHART). EXAMPLE VALVE TAG CHART BELOW:

	VALVE TAG CHART FOR: XXXXXXX	MOD: XXX	AREA: XXX	WING: XXX	FLO	OR: XXX		
VALVE TAG #	LOCATION (ALSO SEE AS-BUILT DRAWINGS)	(WHAT IT DO	FUNCTION ES & WHAT/WHER	E IT SERVICES)	TYPE	SIZE	MANUFACTURER	MODEL NUMBER
CW-1	RM. XXX - ABOVE CEILING	ON/OFF - FIXTU	JRES IN RM. XXX 8	. XXX	BV	1"	BELL AND GOSSETT	XX-XXX-XX
CW-2	CORR. XXX - ABOVE DOOR @ RM. XXX	BALANCE - 2ND	FLOOR, EAST SIE	DE, NORTH WING	BFV	1-1/2"	ALLEN BRADLEY	XX-XXX-XX
CW-3	BOILER RM. XXX - NE CORNER	ON/OFF - MAIN	- BLDGS X, Y, & Z		GV	8"	BELL AND GOSSETT	XX-XXX-XX
CW-4	RM. XXX - BEHIND N. ACCESS PANEL	ON/OFF - EXTE	RIOR FIELD HOUS	E - IRRIGATION	BV	3"	M & M	XX-XXX-XX
CW-5	RM. XXX - ABOVE CEILING	ON/OFF - MIXIN	IG VALVE - EYEWA	SH	BV	1"	GTM & S	XX-XXX-XX

1 VALVE TAG AND VALVE CHART DETAIL SCALE: NO SCALE

TAG LEGEND (PLUMBING EXAMPLE) CW = COLD / CITY WATER HW = HOT WATER HWR = HOT WATER RE-CIRCULATING G = GAS FP = FIRE PROTECTION TAG LEGEND (HYDRONIC EXAMPLE) HWS = HOT WATER SUPPLY HWR = HOT WATER RETURN

CHWS = CHILLED WATER SUPPLY CHWR = CHILLED WATER RETURN G = GAS

PERS LINE OF SI				<u> </u>		
	NOTES:					
	MANU • F F E 3 • F 2. IDEN UNCO ON B SAME POIN 3. IDEN	ICIL TYPE MARKERS UFACTURED MARKER FOR INDOOR USE, UT POSSIBLE GIVEN THE ENDS SECURED WITH SCHEME. FOR OUTDOOR USE, DUTY ZIP TIES. TIFICATION MARKER OVERED PIPES AT 20 FOTH SIDES OF WALL E COLOR AS IDENTIFI TING AWAY FROM M TIFICATION COLOR S SISTING PIPING IN WH	RS AS FOLLC ILIZE ADHES PIPE OR IN ARROW TA UTILIZE "STF S SHALL BE '-0" INTERVA S WHERE PI ICATION MAI ARKER INDIC SCHEME TO B	WS WILL SIVE PIPE SULATIO PE OF M RAP ARO PLACED LS, AT AI PES PAS RKERS S CATING D BE PER T	BE ACCEPTABLE MARKERS - LARG NOUTER DIAMET ATCHING SIZE AN UND" TYPE SECU ON ALL EXPOSED LL VALVES AND B S THROUGH. ARR HALL ALSO BE PL DIRECTION OF FLC THE TABLE BELOW	E: GEST SIZE ER, WITH BOTH D COLOR RED WITH HEAVY O COVERED AND RANCHES, AND OW TAPE OF ACED ON PIPES OW. / UNLESS THERE
		SIZ			RS	
		OUTSIDE	LENGTH			
		DIAMETER OF PIPE OF COVERING	COLOR F "A"		SIZE OF LETTERS "B"	
					LETTERS	
	1	OF COVERING 3/4" TO 1-1/4" 1-1/2" TO 2" 2'-1/2" TO 6" 8" TO 10"	"A" 8" 12" 24"		LETTERS "B" 1/2" 3/4" 1-1/4" 2-1/2"	
PLAN TAG		OF COVERING 3/4" TO 1-1/4" 1-1/2" TO 2" 2'-1/2" TO 6" 8" TO 10"	"A" 8" 12" 24"		LETTERS "B" 1/2" 3/4" 1-1/4" 2-1/2"	N MARKER



4 AHU 3A2 DETAIL SCALE: NO SCALE

3 AHU 3A1 DETAIL



11/05/2 PR

	30 N. Wo Hillside, 1 (708) 236	olf Rd., Seco IL 60162	
		INOIS SI INOIS AU	ZA PORTS THORITY
		KEY PLAN	1
	ISSUE/REVIS		
	REV. DATE - 11/05/21	DESCRIPTION ISSUED FOR BID	
		LEED RATE	E FIELD - IT PHASE XI
	333 W 35TH CHICAGO, IL	STREET, LINOIS 60616	
	DRAWING TI	TLE: IICAL DETA	NILS
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	DESIGNED B CHECKED B PROJECT NO	Y:	DA MS 21276
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	KITCHEN EXHAUST FANS (KEF)																	
				PE	RFORMAN	CE												
EQUIP. TAG	SERVICE LOCATION MFR MODEL TYPE DR							CFM	SP (IN. WC)	FRPM		BHP	RPM	HP	VOLTS	HZ	PHASE	NOTES
KEF-1	CONCESSION 2.36.1	200 LEVEL ROOF	LOREN COOK 195CA-SW		CENTRIFUGAL AIRFOIL BLOWER UPBLAST	DIRECT	547	5500	2.2	1881	30	2.59	1725	3.0	460	60	3	SEE BELOW
KEF-2	CONCESSION 6.36.1	UPPER ROOF	PER ROOF LOREN COOK 150CA-SWSI CENTRIFUGAL AIRFOIL BLOWER UPBLAST		DIRECT	374	2400	2.4	2,271	22	1.21	1725	1.5	460	60	3	SEE BELOW	
 PROVID PROVID PROVID 	ALL BE CONSTRUCTED OF CARBO DE WITH ACCESS OPENING IN OUT DE WITH FLANGE AT INLET FOR SE DE VISIBLE GREASE RECEPTACLE DTOR MUST BE LOCATED OUTSIDE	ER FAN HOUSING FOR CLEA CURELY BOLTED CONNECTI NOT TO EXCEED 1 GALLON	NING AND INSPEC	CTION OF THE F	AN BLADES PER NFPA 96. PER NFPA 96.		THICKNESS.											

														Α	IR H	AND	DLING	UNIT	S (AHU)												
EQUIP.	TAG					GENERAL	-					SUPPLY FAN									RETURN/EXHAUST FAN							ER	ELEC		
ABB.	NO.	LOCATION	SERVICE	MFR	MODEL	OPERATING WEIGHT (LBS)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	MIN. OA (CFM)	HYDRONIC COILS	TOTAL AIR FLOW (CFM)	ESP (IN. WC)	TSP (IN. WC)	TYPE	QTY.	FAN RPM		MOTOR HP (EACH) BHP (EAC	TOTAL AIR FLOW CH) (CFM) (IN. WC)	TSP (IN. WC) TYP	E QTY. FR				- TYPE	MERV	APD (IN. WC)	VOLTS	HZ PHA	BE N
AHU	3A-01	MECH RM 3-13-9	STADIUM CLUB KITCHEN	CARRIER	39MN SIZE 30	5132	171	108	60		CC-1 EHC-1	- 13800	2.5	3.63	AF	1	2054	1800	20			NONE				4" ANGLE	13	0-2" WC	460	60 3	
AHU	3A-02	MECH RM 3-17-8	LOWER STADIUM CLUB	CARRIER	39MN SIZE 36W	6057	180	120	71		CC-2 EHC-2	- 18300	2.5	3.75	AF	1	2022	1800	30	EXISTING RF	3A2: 12,460 CFM	AT 2" TSP, 7.5	5 HP MOTO	OR - 6.7 BHP,	480V/3Ø	4" ANGLE	13	0-2" WC	460	60 3	
ΔHU	6B-01	MECH RM 6-17-6	UPPER STADIUM CLUB	CARRIER	39MN SIZE 30	5132	171	115	60		CC-3 EHC-3	- 13845	2.5	3.63	AF	1	2054	1800	20	EXISTING RF	-6B1: 13,845 CFN	/ AT 2" TSP, 10	НР МОТС	DR - 5.5 BHP,	480V/3ø	4" ANGLE	13	0-2" WC	460	60 3	

- 1. 2" FOAM INJECTED DOUBLE WALL CONSTRUCTION. R-13 MINIMUM WITH THERMALLY BROKEN PANELS.
- 5. FULL PERIMETER BASE RAIL. REFER TO UNIT DETAILS FOR HEIGHT.
- 6. FACTORY MOUNTED AND WIRED ECM FAN ARRAY WITH SINGLE 0-10V CONTROLLER. 7. FACTORY MOUNTED AND WIRED DISCONNECT SWITCH.
- 8. BACNET INTERFACE. 9. REFER TO HYDRONIC COIL SCHEDULE FOR FURTHER INFORMATION.
- 10. INTEGRAL ENERGY RECOVERY DEVICE. REFER TO ENERGY RECOVERY DEVICE SCHEDULE FOR FURTHER INFORMATION. 11. FACTORY INSTALLED LOW-LEAKAGE BYPASS DAMPERS FOR SUPPLY AND RETURN AROUND ENTHALPY WHEEL.
- 12. MANUFACTURER CERTIFIED START-UP.
- 13. SINGLE POINT POWER CONNECTION. 14. PROVIDE (1) EXTRA SET OF FILTERS FOR OWNER'S STOCK.
- 15. SCHEDULED MANUFACTURER AND MODEL SHALL BE BASE BID. 16. ACCEPTABLE ALTERNATE MANUFACTURERS: AAON, CARRIER, DAIKIN, TRANE, YORK.

EQUIP. TAG ABB. NO. LOCATION CC 1 AHU-3A-1 CC 2 AHU-3A-2 CC 3 AHU-6B-1 0 NOTES: 1. REFER TO EQUIPMENT SCHEDULE REFERENCED UNDER "LOCATION" FOR FURTHER INFORMATION.

			GRILLES, REGISTERS, A	AN								
EQUIP. TAG	MFR	MODEL	TYPE									
А	TITUS	OMNI	PLAQUE DIFFUSER									
В	TITUS	PAR	RETURN GRILLE									
С	TITUS	350	EXHAUST GRILLE									
NOTES:												
1.	CONTRACTOR SHALL	VERIFY BORDE	R TYPE INCLUDING FRAME, FLANGE, AND SE	ECUI								
2.	COLOR AND FINISH SHALL BE SELECTED BY ARCHITECT. UNITS INSTALLED IN EXPOS											
3.	SURFACE MOUNTED	FLANGED FRAM	E WITH SCREW FASTENING.									
4.	LAY-IN FRAME.											
5.	MANUFACTURER PRO	OVIDED OPPOSE	D BLADE DAMPER, ACCESSIBLE THROUGH	FAC								
6.	RAPID MOUNT FRAM	E.										
7.	ADJUSTABLE AIR SC	OOP. AIR SCOOF	P TO BE PAINTED BLACK.									
8.	SCHEDULED MANUFA	ACTURER SHALL	BE BASE BID.									
	MANUEACTURER PR		. PLENUM NECK SIZE TO MATCH DUCT SIZE,	, RE								

EQUIP.	TAG		
ABB.	NO.	SERVICE	LC
CU	1	AC-1	SERVICE L
CU	2	AC-4 & AC-5	SECTION 105
CU	3	FCU-3	200 L
NOTES:			
1.	ΜΑΝΙ	JFACTURER PROV	VIDED 1 YEAR V
2.	MAN	JFACTURER CERT	TIFIED START-U
3.	ECM	CONDENSER FAN	IS WITH HEAD F
4.	HOT	GAS BYPASS	
5.	VERT	ICAL DISCHARGE	
6.	SING	LE POINT POWER	
7.	NON-	FUSED DISCONNE	ECT.
8.	FACT	ORY MOUNTED A	ND WIRED 120V
9.	FACT	ORY MOUNTED 1	20V CONVENIE
10.	UL LI	STED.	
11.	SCHE	EDULED MANUFAC	TURER AND M
12.	ADDI	TIONAL ACCEPTA	BLE MANUFACT

2. PANEL DEFLECTION SHALL NOT EXCEED L/240 AT 125% OF DESIGN STATIC PRESSURE, MAXIMUM 5 INCHES OF POSITIVE OR 6 INCHES OF NEGATIVE STATIC PRESSURE. DEFLECTION SHALL BE MEASURED AT THE PANEL MIDPOINT. 3. CASING LEAKAGE RATE SHALL NOT EXCEED 0.50 CFM PER SQUARE FOOT OF CASING SURFACE AREA AT ADESIGN STATIC PRESSURE UP TO A MAXIMUM OF 5 INCHES POSITIVE PRESSURE SECTIONS AND -6 INCHES IN NEGATIVE PRESSURE SECTIONS.

4. MULTI-SLOPED STAINLESS STEEL DRAIN PANS UNDER ANY COIL WITH EXPECTED SUPPLY WATER TEMPERATURE BELOW 70°F. COILS STACKED VERTICALLY SHALL BE PROVIDED WITH INTERMEDIATE DRAIN PANS.

								HY	DRON		OILS (H	IC)					
		GENER	AL						PH	YSICA	<u>L</u>						
SERVICE	MFR	MODEL	OPERATING WEIGHT (LBS)	NUMBER OF COILS	CFM	FLUID TYPE	FIN LENGTH (IN)	FIN HEIGHT (IN)	ROWS	FPI	FIN TYPE	FIN THICKNESS (IN.)	EAT DB/WB (°F)	LAT DB/WB (°F)	EWT (°F)	LWT (°F)	TOTAL CA (MBH)
COOLING COIL	CARRIER	28MC		1	13800	30% PG			6	14	SINE WAVE	0.0042	80	67	44	54	472
COOLING COIL	CARRIER	28MC		1	18300	30% PG			6	14	SINE WAVE	0.0042	80	67	44	54	627
COOLING COIL	CARRIER	28MC		1	13845	30% PG			6	14	SINE WAVE	0.0042	80	67	44	54	473

2. MULTI-SLOPED STAINLESS STEEL DRAIN PANS UNDER ANY COIL WITH EXPECTED SUPPLY WATER TEMPERATURE BELOW 70°F. COILS STACKED VERTICALLY SHALL BE PROVIDED WITH INTERMEDIATE DRAIN PANS.

NOTES:

ELECTRIC HEATING COIL (EHC)

											• •	•							
EQUIP	. TAG				GENE	RAL						PERFC	ORMANCE			E	LECTRICA	L	
ABB.	NO.	LOCATION	MFR	UNIT SIZE	CFM	MIN AIRFLOW (CFM)	FACE AREA (SQ.FT.)	SUB CIRCUITS	# OF STAGES	KW	EAT (°F)	LAT (°F)	TOTAL CAP. (MBH)	FACE VELOCITY (FPM)	APD (IN. WC)	VOLTS	ΗZ	PHASE	NOTES
EHC	1	AHU-3A-1	CARRIER	30W	13800	5082	14.52	4	VERNIER	149	60	93.5	508.5	950.4	0.05	480	60	3	SEE BELOW
EHC	2	AHU-3A-2	CARRIER	36W	18300	6545	18.7	4	VERNIER	200	60	93.9	682.6	978.6	0.05	480	60	3	SEE BELOW
EHC	3	AHU-6B-1	CARRIER	30W	13845	5082	14.52	4	VERNIER	149	80	93.4	508.5	953.5	0.05	480	60	3	SEE BELOW
NOTES:																			

1. UNIT MOUNTED THERMOSTAT PROVIDED BY MANUFACTURER. 2. LOCAL DISCONNECT PROVIDED BY MANUFACTURER.

AND DIFFUSERS MATERIAL SIZE MAX. NC NOTES STEEL 24x24 STEEL 24x24 STEEL SEE PLAN CURING METHOD IN EACH APPLICATION; REFER TO PLANS. OSED DUCT LOCATIONS TO BE PAINT READY. ACE OF DEVICE.

REFER TO PLANS.

2.	PROVIDE 14" HIGH PREFABRICATED, INSULATED, ROOF CURB WITH COUNTERFLASHING CURB CAP.
3	

3. ALUMINIMUM BIRD SCREEN. 4. MOTORIZED BACKDRAFT DAMPER SHIPPED LOOSE TO BE INSTALLED BY MC AND WIRED BY EC. PROVIDE TRANSFORMER AS REQUIRED.

5. MOTOR COVER/BELT GUARD.

1. FACTORY MOUNTED AND WIRED DISCONNECT SWITCH.

6. PROVIDE 1 SPARE SET OF BELTS FOR OWNER'S ATTIC STOCK.

7. VIRBRATION ISOLATION KIT FURNISHED LOOSE BY MANUFACTURER TO BE INSTALLED BY MC. 8. NEMA PREMIUM EFFICIENCY MOTOR WITH SHAFT GROUNDING RING.

9. ECM FAN WITH SINGLE 0-10V CONTROLLER FACTORY MOUNTED ON FAN.

10. FAN SHALL BE CONTROLLED BY SPACE TEMPERATURE SENSOR/THERMOSTAT FURNISHED AND WIRED BY BASC.

11. FAN SHALL BE CONTROLLED BY TIME CLOCK, FURNISHED AND INSTALLED BY EC.

							Al	R C	COOLED	CONDE	ENSIN	G UNITS	(Cl	U)													
		GEN	IERAL						COMPRE	SSOR(S)			FA	N(S)						PERFOR	RMANCE			ELECT	RICAL		
RVICE	LOCATION	MFR	MODEL	OPERATING WEIGHT (LBS)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	скт	QTY TONS	TYPE	CHARGE (LBS.)	TYPE	QTY	CFM (EACH)	FLA (EACH)	EAT (°F)	TOTAL CAPACITY (MBH)	EER	SEER	REFRIG. TYPE	SUCTION LINE SIZE (IN)	LIQUID LINE SIZE (IN)	HOT GAS LINE SIZE (IN)	 VOLTS	HZ F		OTES
\C-1	SERVICE LEVEL CORRIDOR	CARRIER	38VMB036HDS3-1	220	15.75	35.5	52.25	Α	1 3	ROTARY	8.6+	PROPELLER	2	4100	1.2		36	12.1	19.2	R410A	5/8	3/8	N/A	208/230	60	1	
& AC-5	SECTION 105 ICE CREAM ROOF	CARRIER	38VMA072HDS5-1	659	31.1	35.5	64.375	А	1 6	SCROLL	37.5+	PROPELLER	2	7650	-		72			R410A	7/8	3/8	N/A	208/230	60	1	
CU-3	200 LEVEL ROOF	CARRIER						А	7.5	ROTARY		PROPELLER					90			R410A		3/8	N/A	208/230	60	1	

PROVIDED 1 YEAR WARRANTY ON ENTIRE UNIT AND 5 YEAR PARTS ONLY COMPRESSOR WARRANTY.

CERTIFIED START-UP FANS WITH HEAD PRESSURE CONTROL.

WER.

ONNECT. ED AND WIRED 120V CONVENIENCE OUTLET. POWERED FROM LINE SIDE OF DISCONNECT SWITCH.

ED 120V CONVENIENCE OUTLET FOR FIELD WIRING.

UFACTURER AND MODEL SHALL BE BASE BID. PTABLE MANUFACTURERS: AAON, CARRIER, YORK, DAIKIN, LENNOX, LIEBERT, LG, MITSUBISHI, TRANE.

							HYI	DRONI				S (FCU)									
EQUIP.	TAG				G	GENERAL								PERFORMANCE					ELE	ECTRIC	AL	
ABB.	NO.	LOCATION	SERVICE	MFR	MODEL	TYPE	OPERATING WEIGHT (LBS)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	AIRFLOW (CFM)	ESP (IN. WC)	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	CHW FLOW (GPM)	FILTERS	VOLTS	нz	PHASE	NOTES
FCU	1	COMMAND CENTER	COMMAND CENTER	CARRIER	42DHA	HORIZONTAL DUCTED	108	37.5	37	21.5	1200	0.3	38	29	70		8	MERV 13	3 115	60	1	
FCU	2	BARDS LOBBY	BARDS LOBBY	CARRIER	42DHA	HORIZONTAL DUCTED	108	37.5	37	21.5	1200	0.3	38	29	70		8	MERV 13	3 115	60	1	
<u>NOTES:</u>																						
1.	CAPA	CITIES ARE BASED ON	I HIGH FAN SPEED.																			
2.	MAN	JFACTURER PROVIDED	24/7 PROGRAMMABLE	THERMOST	ΓΑΤ																	
3.	BAC	IET CARD																				
4.	DISC	ONNECT SWITCH.																				

5. PROVIDE (1) EXTRA SET OF FILTERS FOR OWNER'S STOCK. 6. ACCEPTABLE ALTERNATE MANUFACTURERS: DAIKIN, TRANE, YORK.

								DX FAN (COIL U	NITS	(AC)										
EQUIP.	TAG					GENERAL								PE	RFORMANCE				ELEC	TRICAL	
ABB.	NO.	LOCATION	SERVICE	MFR	MODEL	ТҮРЕ	REFRIGERANT TYPE	OPERATING WEIGHT (LBS)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	AIRFLOW (CFM)	ESP (IN. WC)	TOTAL COOLING CAPACITY (MBH)	SENSIBLE COOLING CAPACITY (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	FILTERS	VOLTS	HZ PHAS	
AC	1	IT ROOM	DATA CENTER COOLING	CARRIER	40VMW030	DUCTLESS CASSETTE	R-410A	38	10	47	13.5	770	0	30	18.9	75			208	60 1	
AC	2	HYDROTHERAPY	DEHUMIDIFICATION	DAIKIN	FXAQ24MVJU	DUCTLESS CASSETTE	R-410A	31					0						208	60 1	
AC	3	HYDROTHERAPY	DEHUMIDIFICATION	DAIKIN	FXHQ36MVJU	DUCTLESS CASSETTE	R-410A	90					0						208	60 1	
AC	4	ICE CREAM VENDOR	SPACE COOLING	CARRIER	40VMW030	DUCTLESS CASSETTE	R-410A	38	10	47	13.5	770	0	30	18.9	72			208	60 1	
AC	5	ICE CREAM VENDOR	SPACE COOLING	CARRIER	40VMW030	DUCTLESS CASSETTE	R-410A	38	10	47	13.5	770	0	30	18.9	72			208	60 1	
NOTES:	1																				
1.	CAPA	ACITIES ARE BASED ON	HIGH FAN SPEED.																		
2.	MAN	JFACTURER PROVIDED 2	24/7 PROGRAMMABLE THER	MOSTAT																	
3.	FLAR	ED CONNECTIONS ARE	NOT ALLOWED FOR CHICAG	O INSTALLA	TIONS. ALL JOIN	ITS SHALL BE BRAZED.															
4																					

- 4. BACNET CARD 5. DISCONNECT SWITCH.
- 6. CONDENSTATE PUMP.
- 7. PROVIDE (1) EXTRA SET OF FILTERS FOR OWNER'S STOCK. 8. ACCEPTABLE ALTERNATE MANUFACTURERS: LIEBERT, LG, MITSUBISHI, SAMSUNG.

	PERFORM	MANCE					
TOTAL CAP. (MBH)	SENS. CAP. (MBH)	FACE VELOCITY (FPM)	APD (IN. WC)	GPM	FLUID VELOCITY (FPS)	WPD (FT)	NOTES
472	356	455	0.73	100	3	7.1	ALL
627	472	499	0.84	132.5	3.4	9.9	ALL
473	357	456	0.73	100	3	7.1	ALL

						EX	HAUS	T FANS (E	F)										
EQUI	P. TAG		G	SENERAL							FAN					MOTOR			
ABB.	NO.	SERVICE	LOCATION	MFR	MODEL	TYPE	DRIVE	DAMPER SIZE (IN.)	CFM	SP (IN. WC)	FRPM	SONE	BHP	RPM	HP	VOLTS	HZ	PHASE	NOTES
RF	1B-1	AHU-1B-1	LEVY WAREHOUSE 1.18.10	GREENHECK	BSQ-240	INLINE	BELT	N/A	6210	0.5	752	16	1.29	1800	1.5	I			
EF	TR-A1	TRASH CHUTE	ROOF SECTION	GREENHECK	USF-	UTILITY SET	DIRECT	14x16	2000	1.4	1,910	17.2	0.87	1910	1	460	60	3	1-4,7-9,11,12
EF	2-44-1	SECTION 154 CONCESSIONS	CONCESSIONS 2.44.01	GREENHECK	BDF-80	INLINE	BELT	N/A	1000	1.5	1,766	15.9	0.5	1800	0.75	115	60	1	1,5-8,10,12
NOTES																			

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		KEY PLAN	1
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M4.01

ISSUED FOR BID PRELIMINARY - NOT FOR CONSTRUCTION

I. GENERAL

- A. THIS CONTRACTOR SHALL REVIEW THE ENTIRE SET OF CONTRACT DOCUMENTS, INCLUDING, BUT NOT LIMITED TO, ALL ELECTRICAL AND MECHANICAL DRAWINGS. AS WELL AS ALL SPECIFICATIONS AND INSTRUCTIONS TO BIDDERS. THIS CONTRACTOR SHALL VISIT THE SITE AND MAKE A DETAILED INSPECTION OF THE SPECIFIED WORK TO DEVELOP KNOWLEDGE OF ALL CONDITIONS PERTINENT TO THE COMPLETION OF HIS WORK. THIS CONTRACTOR SHALL FULLY COORDINATE HIS WORK WITH THE WORK PERFORMED BY OTHER TRADES AND/OR CONTRACTORS, AND SHALL MAKE SUCH FIELD ADJUSTMENTS AS ARE REQUIRED TO ACCOMMODATE FIELD CONDITIONS. ALL OF THE ABOVE SHALL BE INCLUDED IN THE SCOPE OF WORK AT NO ADDITIONAL COST TO OWNER.
- B. SHOULD THIS CONTRACTOR FIND DISCREPANCIES IN, OR OMISSIONS FROM, THE DRAWINGS, SPECIFICATIONS OR OTHER DOCUMENTS, OR DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THOSE REPRESENTED IN THE DRAWINGS, OR CONFLICTS BETWEEN HIS WORK AND THAT OF OTHER TRADES, OR BE IN DOUBT AS TO THE MEANING OF ANY CONTRACT DOCUMENTS, THIS CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND THE ENGINEER IN WRITING, AND SHALL OBTAIN CLARIFICATION PRIOR TO SUBMITTING ANY BID. LACK OF SUCH NOTIFICATION SHALL BE CONSTRUED AS THIS CONTRACTOR'S REPRESENTATION THAT NO DISCREPANCIES OR CONFLICTS EXIST. ADDITIONAL COMPENSATION WILL NOT BE GRANTED AFTER AWARD OF CONTRACT FOR ANY WORK REQUIRED TO COMPLY WITH THIS REQUIREMENT.
- C. THE DRAWINGS INDICATE DIAGRAMMATICALLY THE INTENT, REQUIREMENTS FOR, AND LOCATION OF, THE WORK INCLUDED UNDER THIS CONTRACT. ALL WORK REQUIRED TO EFFECT THE INDICATED DESIGN, INCLUDING DETAILS NOT SHOWN BUT WHOSE INCLUSION WOULD BE DEEMED A REQUIREMENT BY A KNOWLEDGEABLE TRADESMAN, ENGINEER OR TECHNICIAN, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- D. IT IS THE INTENT OF THESE DOCUMENTS THAT THE CONTRACTOR PROVIDE ALL LABOR, MATERIAL, EQUIPMENT AND TOOLS FOR THE COMPLETE INSTALLATION OF ALL WORK SHOWN ON THE PLANS AND/OR DESCRIBED HEREIN, INCLUDING ALL DEVICES, CONTROLS AND APPURTENANCES REQUIRED TO SET THE NEW SYSTEMS INTO OPERATION, UNLESS OTHERWISE NOTED.
- E. THIS CONTRACTOR SHALL VERIFY ALL MOUNTING, ARRANGEMENTS, HEIGHTS AND LOCATIONS PRIOR TO ROUGH-IN. ANY MENTION OF A SPECIFIC MOUNTING ARRANGEMENT, WEIGHT OR LOCATION SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO VERIFY SPECIFIC REQUIREMENTS AND BASE HIS WORK ON THEM. THE SAME CARE SHALL BE TAKEN WITH RESPECT TO INFORMATION FURNISHED BY THIS CONTRACTOR TO HIS SUBCONTRACTORS OR TO OTHER CONTRACTORS EMPLOYED BY THE OWNER ON THIS PROJECT. THIS CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR ANY CHANGE ORDERS NECESSITATED BY INACCURATE OR INCORRECT INFORMATION FURNISHED TO OTHER CONTRACTORS, NO ADDITIONS TO THE CONTRACT AMOUNT WILL BE PERMITTED FOR ITEMS INSTALLED IN WRONG LOCATIONS OR IN CONFLICT WITH OTHER WORK.
- F. THIS CONTRACTOR SHALL PAY ALL PERMIT FEES, PLAN REVIEW FEES, LICENSE FEES AND INSPECTIONS APPLICABLE TO HIS WORK, AND SUCH COSTS SHALL BE INCLUDED IN HIS BASE BID UNLESS OTHERWISE NOTED.
- THE WORKMEN IN ALL PHASES OF WORK, AND SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL SAFETY LAWS, INCLUDING THE REQUIREMENTS OF OSHA. HE SHALL ALSO PROVIDE ALL NECESSARY SIGNS, LIGHTS AND BARRICADES REQUIRED FOR THE SAFETY OF ALL OTHER PERSONS WHO MIGHT COME IN CONTACT WITH THE CONSTRUCTION BEING PERFORMED UNDER THIS CONTRACT.
- H. ALL PUBLIC AND PRIVATE PROPERTY DAMAGED AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT SHALL BE REPAIRED AND REPLACED BY THIS CONTRACTOR, TO THE SATISFACTION OF REGULATIONS AND AUTHORITIES HAVING JURISDICTION. I. UPON COMPLETION OF THE WORK. THE CONTRACTOR SHALL CHECK THE ENTIRE WORK AREA.
- AND SHALL CLEAN CONSTRUCTION DUST AND DEBRIS OFF ALL SURFACES. EQUIPMENT AND DEVICES. THIS CONTRACTOR SHALL REMOVE SURPLUS AND DEMOLISHED MATERIALS AND RUBBISH FROM THE PROPERTY AND LEAVE THE WORK AREA IN A NEAT AND CLEAN CONDITION. CONTRACTORS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ANY CARTONS, PACKING MATERIALS DEBRIS, AND SO ON, THAT HAVE BEEN BROUGHT TO THE SITE UNDER THIS CONTRACT. THIS REQUIREMENT APPLIES BOTH TO DEBRIS FROM EQUIPMENT AND WORK PROVIDED BY THIS CONTRACTOR AND TO DEBRIS ASSOCIATED WITH EQUIPMENT FURNISHED BY THE OWNER FOR INSTALLATION UNDER THIS CONTRACT.
- J. THE MECHANICAL CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH THE BUILDING WNER'S REPRESENTATIVE REGARDING BUILDING RULES AND REGULATIONS. INCLUDIN WORKING HOURS, REFUSE DISPOSAL, SECURITY, INTERRUPTIONS OF BUILDING UTILITIES OR FUNCTIONS, OWNERSHIP OF SALVAGED MATERIALS, AND ANY OTHER ITEMS DEEMED TO BE OF MUTUAL INTEREST
- K. IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO STORE HIS MATERIALS IN A MANNER THAT WILL MAINTAIN AN ORDERLY CLEAN APPEARANCE. IF STORED ON SITE IN OPEN OR UNPROTECTED AREAS, ALL EQUIPMENT AND MATERIAL SHALL BE KEPT OFF THE GROUND BY MEANS OF PALLETS OR RACKS, AND COVERED WITH TARPAULINS. EQUIPMENT AND MATERIAL, IF LEFT OUT IN THE OPEN AND DAMAGED. SHALL BE REPAINTED OR OTHERWISE REFURBISHED AT THE DISCRETION OF THE BUILDING OWNER'S REPRESENTATIVE. EQUIPMENT AND MATERIAL IS SUBJECT TO REJECTION AND REPLACEMENT IF, IN THE OPINION OF THE ENGINEER OR MANUFACTURER, THE EQUIPMENT HAS DETERIORATED OR BEEN DAMAGED TO THE EXTENT THAT ITS IMMEDIATE USE IS QUESTIONABLE, OR THAT ITS NORMAL LIFE EXPECTANCY HAS BEEN CURTAILED.
- L. PROVIDE ALL HOLES, SLEEVES, CUTTING, PATCHING, AND CAULKING FOR INSTALLATION OF THIS WORK. CAULKING SHALL CONFORM TO THE FIRE RATING OF THE WALLS. SEAL ALL PENETRATIONS THROUGH BLOCK WALLS.
- M. EXISTING SYSTEMS TO BE SHUT DOWN A MINIMUM AMOUNT OF TIME. SHUTDOWN TO BE COORDINATED ON THE JOB SITE.
- N. THIS CONTRACTOR SHALL BE PROPERLY LICENSED, BONDED AND INSURED AND CAPABLE OF PERFORMING QUALITY WORKMANSHIP ON THIS PROJECT. O. REFER TO SHEET M0.1 FOR ADDITIONAL DEMOLITION NOTES AND GENERAL NOTES.
- II. SHOP DRAWINGS, SUBMITTALS, AND AS-BUILTS A. SHOP DRAWINGS, PRODUCT DATA, AND/OR SAMPLES SHALL BE SUBMITTED FOR ALL EQUIPMENT AS SPECIFIED OR SCHEDULED. SHOP DRAWING PLANS SHALL BE 1/4" SCALE AND SHALL INDICATE LAYOUT OF ALL EQUIPMENT, DUCTS, DIFFUSERS, BOXES, PIPING, THERMOSTATS, AND ANY OTHER RELATED MECHANICAL ITEMS. SHOP DRAWING PLANS SHALL INCLUDE ALL DUCT AND PIPE SIZES, CFM, ETC.
- B. SHOULD CONDITIONS NECESSITATE ANY REARRANGEMENTS, OR IF CONDUIT OR PIPING CAN BE RUN TO BETTER ADVANTAGE. THIS CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL SHOP DRAWINGS SHOWING SUCH CHANGES BEFORE PROCEEDING WITH THE WORK
- C. THE CONTRACTOR SHALL, UPON BEING AWARDED THE CONTRACT, SUBMIT ELECTRONIC COPIES OF THE MANUFACTURER'S SUBMITTALS FOR ALL EQUIPMENT TO BE FURNISHED UNDER THIS CONTRACT. THE CONTRACTOR SHALL PROCEED WITH THE PROCUREMENT AND INSTALLATION OF EQUIPMENT ONLY AFTER RECEIVING APPROVED SUBMITTALS RELATIVE TO EACH ITEM.
- D. THE CONTRACTOR SHALL FURNISH AS-BUILT DRAWINGS TO THE ENGINEER & OWNER BEFORE FINAL PAYMENT WILL BE ISSUED. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED IN REPRODUCIBLE FORM, AND AS AN ELECTRONIC FILE ON DISK (AUTOCAD 2004 OR LATER), AND AS THREE BLUELINE COPIES.
- E. THIS CONTRACTOR SHALL, DURING THE COURSE OF CONSTRUCTION. COLLECT AND COMPILE A COMPLETE BROCHURE OF ALL EQUIPMENT FURNISHED AND INSTALLED ON THIS PROJECT. THIS BROCHURE SHALL INCLUDE OPERATIONAL AND MAINTENANCE INSTRUCTIONS, PARTS LISTS, SUBMITTALS AND DESCRIPTIVE LITERATURE, ALL AS FURNISHED BY THE EQUIPMENT MANUFACTURER. CONTRACTOR SHALL FURNISH OWNER WITH THREE INSTRUCTION MANUALS IN BOUND FORM CONTAINING THIS DATA FOR ALL EQUIPMENT AND APPARATUS. MANUALS SHALL BE EDITED TO BE PRODUCT SPECIFIC FOR PRODUCTS ACTUALLY INSTALLED ON THE PROJECT.

III. REGULATIONS AND CODES

A. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN CONFORMANCE WITH ALL GOVERNING NATIONAL, STATE AND LOCAL CODES HAVING JURISDICTION. B. ALL EQUIPMENT FURNISHED, AND ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE IN STRICT COMPLIANCE WITH CURRENT APPLICABLE STANDARDS AS SET FORTH BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), UNDERWRITERS LABORATORIES (UL), THE AMERICAN GAS ASSOCIATION (AGA). THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME), THE AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING

ASSOCIATION, INC. (SMACNA), AND OTHER NATIONAL STANDARDS WHERE APPLICABLE. IV. MATERIALS AND EQUIPMENT

- A. ALL EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE NEW, UNLESS OTHERWISE STATED HEREIN, OF BEST QUALITY NORMALLY USED FOR THE PURPOSE IN GOOD COMMERCIAL PRACTICE. AND FREE FROM DEFECTS.
- B. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
- C. THIS CONTRACTOR IS REQUIRED TO BID AS SPECIFIED. NO MATERIAL OR EQUIPMENT SUBSTITUTIONS WILL BE CONSIDERED AFTER THE AWARD OF CONTRACT. THIS CONTRACTOR SHALL, IF HE DESIRES TO SUBSTITUTE OTHER THAN SPECIFIED MATERIAL OR EQUIPMENT, SUBMIT IN ALTERNATE PROPOSAL FORM WITH HIS BID, A LIST OF SUCH ITEMS INDICATING ITEM, MANUFACTURER, MODEL NUMBER AND THAT AMOUNT TO BE ADDED TO OR DEDUCTED FROM THE BASE BID. EACH SUCH MATERIAL OR EQUIPMENT SUBSTITUTION ITEM SHALL BE LISTED SEPARATELY IN ORDER THAT PROPER CONSIDERATION MAY BE GIVEN. IN ANY EVENT,
- D. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING THE PURCHASE, DELIVERY, RECEIVING, UNLOADING, UNCRATING, STORING, SETTING IN PLACE AND PROTECTING OF ALL NEW EQUIPMENT FURNISHED BY HIM OR TO HIM BY THE OWNER, AND SHALL SECURE SUCH EQUIPMENT FROM DAMAGE BY VANDALISM AND WEATHER DURING CONSTRUCTION AND UNTIL TIME OF FINAL ACCEPTANCE BY THE OWNER.
- E. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL STEEL MEMBERS, SLEEVES AND SHIMS REQUIRED TO LEVEL AND SUPPORT EQUIPMENT AND EQUIPMENT SUPPORTS.
- F. ALL EQUIPMENT NOISE LEVELS SHALL NOT EXCEED 55 DB AT THE LOT LINE. G. ALL EQUIPMENT PROVIDED UNDER THESE SPECIFICATIONS SHALL PERFORM WITH THE LEAST POSSIBLE NOISE AND VIBRATION CONSISTENT WITH ITS DUTY. QUIETNESS OF OPERATION OF ALL EQUIPMENT IS A REQUIREMENT, ANY EQUIPMENT, AS DETERMINED BY THE BUILDING OWNER'S REPRESENTATIVE OR ENGINEER TO BE PRODUCING OBJECTIONABLE NOISE OR TRANSMITTING NOISE OR VIBRATION TO THE BUILDING SHALL BE REPAIRED OR REMOVED AND REPLACED.
- H. FURNISH AND INSTALL IDENTIFICATION LABELS ON ALL EQUIPMENT INSTALLED AS PART OF THIS PROJECT. IDENTIFICATION LABELS SHALL BE FASTENED TO EQUIPMENT CLEARLY VISIBLE. LABELS SHALL BE ENGRAVED WITH EQUIPMENT TAG, MANUFACTURER'S NAME, ADDRESS, MODEL NUMBER, AND RATING.
- . CODE RATINGS, LABELS, OR OTHER DATA WHICH ARE DIE-STAMPED OR OTHERWISE AFFIXED TO THE SURFACE OF THE EQUIPMENT SHALL BE IN A VISIBLE LOCATION. J. REPLACE FILTERS ON ALL EQUIPMENT HAVING THEM AT PROJECT COMPLETION PRIOR TO
- V. EXISTING BUILDING MODIFICATIONS

TURNOVER.

- A. THIS CONTRACTOR SHALL NOT REMOVE OR RELOCATE ANY EXISTING ITEMS OF OWNER'S EQUIPMENT, FOUND TO BE IN THE PATH OF NEW SYSTEMS TO BE INSTALLED, WITHOUT PRIOR APPROVAL BY THE OWNER, EXCEPT AS SPECIFICALLY INDICATED ON THE DRAWINGS. IF EXISTING EQUIPMENT IS FOUND TO BE IN THE WAY OF PROPOSED PIPE ROUTING, ETC., THE OWNER'S REPRESENTATIVE SHOULD BE ADVISED, AND HE SHALL MAKE THE DECISION AS TO WHETHER OR NOT THE SPECIFIC ITEM IS TO BE REMOVED AND RETAINED, REMOVED AND DISPOSED OF, OR REMOVED AND RELOCATED.
- B. ALL CUTTING. DRILLING AND PATCHING REQUIRED FOR THE INSTALLATION OF SYSTEMS HEREIN DESCRIBED, SHALL BE PROVIDED BY THIS CONTRACTOR. STRUCTURAL MEMBERS SHALL NOT BE DISTURBED WITHOUT PRIOR APPROVAL OF THE ENGINEER. ALL AREAS DISTURBED BY WORK PERFORMED UNDER THIS CONTRACT SHALL BE NEATLY REPAIRED AND REFINISHED TO THE CONDITION OF ADJOINING SURFACES IN A MANNER SUITABLE TO THE ENGINEER. ROOF AND EXTERIOR WALLS TO REMAIN WEATHER TIGHT. INTERIOR WALLS TO MAINTAIN REQUIRED FIRE RATING.

G. THIS CONTRACTOR SHALL ESTABLISH SAFE WORKING PROCEDURES FOR THE PROTECTION OF

ENGINEERS (ASHRAE), SHEET METAL AND AIR-CONDITIONING CONTRACTORS NATIONAL

SPECIFIED MATERIALS ONLY SHALL BE PROPOSED UNDER THE BASE BID.

VI. SCOPE AND GUARANTEE

- A. THE WORK TO BE PERFORMED UNDER THIS CONTRACT SHALL INCLUDE THE INSTALLATION OF THE VENTILATING, HEATING HYDRONIC WATER, CONTROL SYSTEMS AND COMPONENTS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
- B. BY SIGNING THE CONTRACT. THIS CONTRACTOR ACKNOWLEDGES THAT HE HAS VISITED THE SITE AND ACQUAINTED HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND HE AGREES THAT HE WILL COMPLY WITH THE REQUIREMENTS AND INTENT OF ALL PERTINENT DOCUMENTS IN THE PERFORMANCE OF THE WORK.
- C. THIS CONTRACTOR SHALL GUARANTEE THAT THE COMPLETE SYSTEMS AS INSTALLED UNDER THIS CONTRACT SHALL BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF JOB ACCEPTANCE BY THE OWNER. THIS SHALL INCLUDE A GUARANTEE OF FREE CIRCULATION OF AIR AND WATER THROUGH-OUT THEIR RESPECTIVE SYSTEMS, WITHOUT LEAKS OR UNDUE NOISE. IF DEFECTS OCCUR DURING THE ONE YEAR GUARANTEE PERIOD. THIS CONTRACTOR SHALL REPAIR OR REPLACE WITH NEW EQUIPMENT, SUCH DEFECTS, AT NO EXPENSE TO THE OWNER AND TO THE SATISFACTION OF THE ENGINEER.

<u>VII. PIPING</u> A. GENERAL

- ALL NEW PIPING SHALL BE SUPPORTED BY SPRING TYPE STEEL HANGERS OR BRACKETS AT SUFFICIENT INTERVALS TO MAINTAIN A STRAIGHT LINE, BUT NOT TO EXCEED 10' SPACING ON CENTERS OF HANGERS IN ANY CASE, WITH A SEPARATE HANGER FOR EACH BRANCH. SUPPORT PIPING IN ACCORDANCE WITH MANUFACTURER'S STANDARDIZATION SOCIETY (MSS) GUIDES SP-58, 69, AND 89.
- . PIPING SUPPORT SHALL NOT BE FROM DUCTWORK, CONDUIT, OR OTHER PIPING BUT FROM THE PERMANENT BUILDING STRUCTURE OR EQUIPMENT SUPPORTS.
- 3. WHERE INSULATED PIPE IS SUPPORTED, PROVIDE SADDLES, BLOCKS OR OTHER METHOD APPROVED BY ENGINEER TO PROTECT INSULATION FROM BEING CRUSHED.
- 4. ALL PIPE SHALL BE CUT TO EXACT MEASURE. FULL LENGTHS OF PIPE SHALL BE USED. SHORT LENGTHS OF PIPING WITH COUPLINGS WILL NOT BE PERMITTED. 5. COMPLY WITH PROVISIONS OF ASME B31 SERIES "CODE FOR PRESSURE PIPING."
- 6. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF MECHANICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. COORDINATE INSTALLATION OF LARGE EQUIPMENT WITH RELATED TRADES.
- 7. INSTALL PIPING AT A SLOPE DOWNWARDS TOWARDS DRAIN VALVE LOCATIONS LOCATED WITHIN BUILDING TO ALLOW FOR COMPLETE SYSTEM DRAINING IF NECESSARY.
- 8. INSTALL COMPONENTS HAVING PRESSURE RATING EQUAL TO OR GREATER THAN SYSTEM OPERATING PRESSURE.
- 9. INSTALL EXPOSED INTERIOR AND EXTERIOR PIPING AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED, EXCEPT WHERE INDICATED.
- 10. INSTALL PIPING TO ALLOW APPLICATION OF INSULATION PLUS 1-INCH CLEARANCE AROUND INSULATION. 11. SUBJECT ALL NEW PIPING TO HYDROSTATIC PRESSURE TESTS THAT IS NOT LESS THAN 50
- PSIG AND 1.5 TIMES THE SYSTEM'S WORKING PRESSURE. TEST PRESSURE SHALL NOT EXCEED MAXIMUM PRESSURE FOR ANY VESSEL, PUMP, VALVE, OR OTHER COMPONENT IN SYSTEM UNDER TEST. PRESSURE TEST UNDER SUPERVISION OF BUILDING ENGINEER. B. BLACK STEEL PIPING AND FITTINGS
- 1. SIZE 3" AND LARGER: PIPE SHALL BE BLACK CARBON STEEL. ANSI/ASTM A-53 GRADE B, WITH BEVELED ENDS FOR WELDING.
- 2. EACH LENGTH OF PIPE SHALL BE LEGIBLY IDENTIFIED AT THE MILL BY PAINT, STENCILING, OR RAISED SYMBOLS IDENTIFYING THE MANUFACTURER AND CLASS OF PIPE.
- 3. ALL PIPE FOR THE FOLLOWING SERVICES SHALL BE SCHEDULE 40 BLACK STEEL FOR PIPING 10 INCHES TO 3 INCHES SHALL HAVE A MINIMUM WALL THICKNESS OF 0.375 INCHES FOR PIPING 12" AND LARGER a. CHILLED WATER (EXCEPT WHERE SPECIFIED COPPER)
- 5. ALL FITTINGS IN BLACK CARBON STEEL PIPING 3" AND LARGER SHALL BE SHORT OR LONG PATTERN WELDED FITTINGS OF THE SAME WALL THICKNESS AND OF THE SAME MATERIAL AS THE PIPE TO WHICH THEY ARE ATTACHED. THEY SHALL BE IDENTIFIED BY THE MANUFACTURER BY PERMANENTLY ATTACHED TAGS, IMPRINTS, OR OTHER APPROVED MEANS, INDICATING THE CLASS OF WALL THICKNESS AND MATERIAL.
- 6. LOW PRESSURE FITTINGS, FLANGES, AND UNIONS SHALL BE USED FOR THE FOLLOWING SERVICES: a. CHILLED WATER
- 7. LOW PRESSURE SCREWED FITTINGS SHALL BE BLACK CAST IRON, 125 LB. CLASS, IN ACCORDANCE WITH ANSI B 16.4 OR BLACK MALLEABLE IRON, 150 LB. CLASS IN ACCORDANCE WITH ANSI B 16.3.
- 8. LOW PRESSURE FLANGED FITTINGS SHALL BE CAST IRON, SHORT BODY, CLASS 125, BLACK, AND IN ACCORDANCE WITH ANSI B 16.1, GASKETS SHALL BE FULL FACE OF 1/8" MINIMUM THICKNESS AS HEREINAFTER SPECIFIED. FLANGE BOLTS SHALL BE HEXAGON HEAD MACHINE BOLTS WITH HEAVY SEMI-FINISHED HEXAGON HEAD NUTS, CADMIUM PLATED, HAVING DIMENSIONS IN ACCORDANCE WITH ANSI B 18.2.
- 9. WELD FITTINGS SHALL BE STEEL, STANDARD WEIGHTS, BLACK, AND IN ACCORDANCE WITH ANSI B 16.9, ANSI B 16.25, ASTM A 234, ANSI B 16.5, OR ANSI B 16.11. 10. LOW PRESSURE UNIONS SHALL BE 150 PSIG MALLEABLE IRON BRASS TO IRON SEAT GROUND JOINT UNIONS. (THE GROOVED PIPING METHOD FOR MECHANICALLY JOINING
- PIPE IS RECOGNIZED AS RELIABLE AND ECONOMICAL METHOD. HOWEVER IF YOU CHOOSE NOT TO ACCEPT THIS METHOD, MAKE SURE TO DELETE ITEM NUMBER 11) 11. FITTINGS FOR GROOVED END PIPE MAY BE USED IN LIEU OF WELDED OR FLANGED FITTINGS IN HOT WATER HEATING, CHILLED WATER, AND CONDENSER WATER PIPING 2-1/2"
- AND LARGER. FITTINGS SHALL BE COMPLETE WITH MALLEABLE IRON HOUSING, GASKET, AND BLACK STEEL BOLTS AND NUTS. a. PIPE GROOVING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S
- SPECIFICATIONS CONTAINED IN THE LATEST PUBLISHED LITERATURE. b. BEFORE ASSEMBLY OF COUPLINGS, LIGHTLY COAT PIPE ENDS AND OUTSIDE OF
- GASKETS WITH WATER SOLUBLE TYPE LUBRICANT SUCH AS SILICONE SPRY, ETC. TO FACILITATE INSTALLATION. c. MECHANICAL GROOVED COUPLINGS, INCLUDING GASKETS USED ON DRY PIPE SYSTEMS FOR FIRE PROTECTION. SHALL BE LISTED FOR DRY-PIPE SERVICE IN "U.L. FIRE PROTECTION EQUIPMENT DIRECTORY.'
- C. COPPER PIPING AND FITTINGS
- . PIPE SHALL BE HARD TEMPERED, SEAMLESS COPPER TUBING, CONFORMING TO ASTM SPECIFICATION B-88. MANUFACTURER'S NAME OR TRADEMARK AND TYPE OF TUBING SHALL BE INDENTED OR OTHERWISE IDENTIFIED AT 3'-0" INTERVALS.
- a. FITTINGS IN COPPER TUBING 2-1/2" AND SMALLER SHALL BE WROUGHT SWEAT TYPE FITTINGS MANUFACTURED OF SEAMLESS TUBING FORGED BRONZE OR BRASS ROD
- TO MEET THE STANDARDS OF ANSI/ASME B16.22. FITTINGS SHALL HAVE TUBING b. ALL FITTINGS IN COPPER TUBING 3" AND LARGER MAY BE CAST RED BRONZE SOLDER
- TYPE FITTINGS. MEETING THE STANDARDS OF ANSI B16.18 AND ASTM B-62. FITTINGS SHALL HAVE TUBING STOPS. c. IN ALL CASES WHERE COPPER PIPE CONNECTIONS ARE MADE TO PIPING OR AN ITEM OF EQUIPMENT OF A DISSIMILAR METAL, PROVIDE DIELECTRIC FITTINGS AS HEREIN
- SPECIFIED. 2. ALL PIPE FOR THE FOLLOWING SERVICE SHALL BE TYPE "L" COPPER. a. CHILLED WATER SUPPLY AND RETURN RUNOUTS TO FAN COIL UNITS.
- b. CONDENSATE DRAIN LINES. 3. TYPE "L" COPPER PIPE WITH WROUGHT COPPER SOLDERED FITTINGS SHALL BE USED FOR CONDENSATE DRAIN LINES.
- D. REFRIGERANT PIPING 1. PIPING: COPPER TUBING TO 7/8 INCH OD: ANSI/ASTM 280, TYPE K, ANNEALED
- 2. FITTINGS: ASME B16.22 WROUGHT COPPER / ASME B16.26 CAST COPPER
- 3. JOINTS: FLARED
- 4. JOINTS: BRAZE, AWS A5.8 BCUP SILVER/PHOSPORUS/COPPER ALLOY WITH MELTING RANGE 1190 TO 1480 °F.
- 5. UNIONS, FLANGES, AND COUPLING (2 INCHES AND SMALLER)
- a. FERROUS PIING: 150 PSIG MALLEABLE IRON, THREADED b. COPPER PIPE: BRONZE, SOLDERED JOINTS.
- 6. MOISTURE AND LIQUID INDICATORS: SINGLE PORT TYPE, UL LISTED, WITH COPPER OR BRASS BODY, FLARED OR SOLDER ENDS, SIGHT GLASS, COLOR CODED PAPER MOISTURE INDICATOR WITH REMOVABLE ELEMENT CARTRIDGE AND PLASTIC CAP; FOR MAXIMUM WORKING PRESSURE OF 500 PSIG AND MAXIMUM TEMPERATURE OF 200 DEGREES F.
- 7. VALVES: UL LISTED, GLOBE OR ANGLE PATTERN, FORGED BRASS BODY AND BONNET, PHSOPHOR BRONZE AND STAINLESS STEEL DIAPHRAGMS, RISING STEM AND HANDWHEEL. STAINLESS STEEL SPRING, NYLON SEAT DISC, SOLDER OR FLARED ENDS, WITH POSITIVE BACKSEATING, FOR MAXIMUM WORKING PRESSURE OF 500 PSIG AND MAXIMUM TEMPERATURE OF 275 DEGREES F.
- 8. PACKED ANGLE VALVES: FORGED. BRASS. OR NICKEL PLATED FORGED STEEL. FORGED BRASS SEAL CAPS WITH COPPER GASKET, RISING STEM, AND SEAT WITH BACKSEATING, MOLDED STEM PACKING, SOLDER OR FLARED ENDS, FOR MAXIMUM WORKING PRESSURE OF 500 PSIG AND MAXIMUM TEMPERATURE OF 275 DEGREES F.
- SERVICE VALVES: FORGED BRASS BODY WITH COPPER STUBS, BRASS CAPS, REMOVABLE VALVE CORE, INTEGRAL BALL CHECK VALVE, FLARED OR SOLDER ENDS, FOR MAXIMUM WORKING PRESSURE OF 500 PSIG.
- 10. FILTER DRIERS: REPLACEABLE CARTRIDGE ANGLE TYPE, SHELL: ARI 710. UL LISTED. BRASS, REMOVABLE CAP, FOR MAXIMUM WORKING PRESSURE OF 350 PSIG.
- 11. SOLENOID VALVES: AIR 760, PILOT OPERATED, COPPER OR BRASS BODY AND INTERNAL PARTS, SYNTHETIC SEAT, STAINLESS STEEL STEM AND PLUNGER ASSEMBLY, WITH FLARED SOLDER. OR THREADED ENDS. FOR MAXIMUM WORKING PRESSURE OF 500 PSIG. STEM SHALL PERMIT MANUAL OPERATION IN CASE OF COIL FAILURE.
- 12. COIL ASSEMBLY: UL LISTED, REPLACEABLE WITH MOLDED ELECTROMAGNETIC COIL, MOISTURE AND FUNGUS PROOF, WITH SURGE PROTECTOR AND COLOR CODED LEAD WIRES, INTEGRAL JUNCTION BOX. VERTICAL SUPPORTS: STEEL RISER CLAMP.

E. PIPE INSULATION

- 1. FURNISH AND INSTALL ALL NEW COOLING HYDRONIC WATER PIPING AND CONDENSATE DRAIN PIPING WITH FIBERGLASS MOLDED PIPE INSULATION APPLIED WITH AN ALL-SERVICE VAPOR BARRIER JACKET, STAPLED, AND THE SEAMS, JOINTS, AND STAPLES PAINTED WITH VAPOR PROOF MASTIC. ALL DAMAGED INSULATION (RESULTING FROM IMPLEMENTATION OF THIS PROJECT) ON EXISTING PIPING TO REMAIN SHALL BE REPAIRED. PROVIDE INSULATION ON EXISTING PIPING AS INDICATED IN THE MECHANICAL DOCUMENTS.
- MINIMUM INSULATION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND CITY OF CHICAGO CODE:
- a. CHILLED WATER PIPING: 1-1/2" THICK, 7# DENSITY FIBERGLASS PIPE INSULATED WITH VAPOR BARRIER JACKET. b. CONDENSATE DRAIN PIPING: 1" THICK, 7# DENSITY FIBERGLASS PIPE INSULATED WITH VAPOR BARRIER JACKET.
- 3. PIPE INSULATION SHALL BE APPLIED WITH ALL ADJOINING SECTIONS FIRMLY BUTTED TOGETHER AND THE LONGITUDINAL SEAM OF THE VAPOR BARRIER LAP CEMENTED WITH FOSTER NO. 85-75. END JOINTS SHALL BE SEALED WITH MINIMUM 3" WIDE FACTORY FURNISHED VAPOR BARRIER STRIPS APPLIED WITH FOSTER NO. 85-75 LAP CEMENT.

- F. REFRIGERANT PIPING INSULATION

- RESISTS MOLD AND MILDEW.
- C 177 OR ASTM C 518.
- 6. INSULATION MATERIALS SHALL HAVE A MAXIMUM WATER VAPOR TRANSMISSION OF 0.08
- 7. SADDLES SHALL BE INSTALLED UNDER ALL INSULATED LINES AT UNI-STRUT CLAMPS,
- G. VALVES
- MAINTENANCE. VALVES AS FOLLOWS:
- a. 2-PIECE MILWAUKEE #BA-100 (SHUT-OFF) b. 3-PIECE MILWAUKEE #BA-300 (BY-PASS) WORKING PRESSURE RATING OF 150 PSIG, SHALL BE AS FOLLOWS:

a. MILWAUKEE, SERIES ML

a. GATE: MILWAUKEE #1151

b. GLOBE: MILWAUKEE #590T

b. GLOBE: MILWAUKEE #2981A

b. 3" AND LARGER: SERIES 600

STAINLESS STEEL SPRINGS.

SPRING LOADED TYPE.

SCREEN

INSTALLATION.

I. PIPE LABELING

J. VALVE IDENTIFICATION

VIII. DUCTWORK

a. 0" THROUGH 29" 24 GA

b. 30" THROUGH 54" 22 GA

c. 55" THROUGH 84" 20 GA

d. 85" AND OVER 18 GA

A. GENERAL

a. EACH SHUTOFF VALVE.

a. CHILLED WATER: 0-100 °F

H. PIPING SPECIALTIES

FOLLOWS:

4. ALL FITTINGS, VALVES, STRAINERS, TRAPS, ETC., IN PIPING 2-1/2"AND SMALLER SHALL BE INSULATED WITH INSULATING BAGS. MATCH EXISTING FROM PREVIOUS PHASES. 5. NEW OUTDOOR CHILLED WATER PIPING INSULATION SHALL MATCH EXISTING JACKETING.

1. INSULATION SHALL BE A FLEXIBLE, CLOSED-CELL ELASTOMERIC PIPE INSULATION: AP ARMAFLEX, AC ACCOFLEX. ADHESIVE SHALL BE ARMAFLEX 520, 520 BLACK, OR 520 BLV ADHESIVE. THE INSULATION MUST CONFORM TO ASTM C534 GRADE 1 TYPE.

2. INSULATION MATERIALS SHALL HAVE A CLOSED CELL STRUCTURE TO PREVENT MOISTURE FROM WICKING WHICH MAKES IT AN EFFICIENT INSULATION. 3. INSULATION MATERIALS SHALL BE MANUFACTURED WITHOUT THE USE OF CFC'S, HFC'S, OR HCFC'S. IT IS ALSO FORMALDEHYDE FREE, LOW VOCS, FIBER FREE, DUST FREE, AND

4. INSULATION MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF LESS THAN 25 AND A SMOKE-DEVELOPED INDEX OF LESS THAN 50 AS TESTED IN ACCORDANCE WITH ASTM E 84. IN ADDITION, THE PRODUCTS, WHEN TESTED, SHALL NOT MELT OR DRIP FLAMING PARTICLES AND THE FLAME SHALL NOT BE PROGRESSIVE.

5. INSULATION MATERIALS SHALL HAVE A MAXIMUM THERMAL CONDUCTIVITY OF 0.27 BTU-IN./H-FT²-°F AT A 75 °F MEAN TEMPERATURE AS TESTED IN ACCORDANCE WITH ASTM

PERM-INCHES WHEN TESTED IN ACCORDANCE WITH ASTM E 96.

CLEVIS HANGERS, OR LOCATIONS WHERE INSULATION MAY BE COMPRESSED. 8. ALL INSULATION EXPOSED TO SUNLIGHT OR INSTALLED OUTDOORS SHALL BE PROTECTED WITH TWO COATS OF WB ARMAFLEX FINISH OR WEATHER RESISTANT COATING

1. VALVES SHALL BE LOCATED FOR CONVENIENT ACCESS FOR OPERATION AND

2. FOR WATER SERVICE, SHUTOFF AND/OR BY-PASS, 2" AND SMALLER, SHALL BE BALL

3. BUTTERFLY VALVES FOR WATER SERVICE, SHUTOFF, 2-1/2" AND LARGER, WITH A COLD

4. HIGH-PERFORMANCE BUTTERFLY VALVES FOR WATER SERVICE, SHUTOFF, 2-1/2" AND LARGER, WITH A MAXIMUM COLD WORK PRESSURE RATING OF 285 PSIG, SHALL BE AS

a. DEZURIK WATER CONTROLS, MODEL BHP. 5. CLASS 150, GATE, GLOBE, AND CHECK VALVES 2" AND SMALLER SHALL BE AS FOLLOWS:

c. CHECK: MILWAUKEE #510T 6. CLASS 125, GATE, GLOBE, AND CHECK VALVES 2-1/2" AND LARGER SHALL BE AS FOLLOWS: a. GATE: MILWAUKEE #2885A

c. CHECK: MILWAUKEE #2974A 7. FLOW CONTROL VALVES SHALL BE GRISWOLD AUTOMATIC FLOW CONTROL VALVES.

8. CALIBRATED BALANCING VALVES SHALL BE DESIGNED TO PRESET BALANCE POINTS FOR PROPORTIONAL SYSTEM BALANCE PRIOR TO SYSTEM START UP. VALVES TO HAVE DIFFERENTIAL PRESSURE READOUT PORTS ACROSS VALVE SEAT AREA. READOUT PORTS TO BE FITTED WITH INTERNAL EPT INSERT AND CHECK VALVE. VALVES TO HAVE MEMORY STOP FEATURE TO ALLOW VALVE TO BE CLOSED FOR SERVICE AND THEN RE-OPENED TO SET POINT WITHOUT DISTURBING THE BALANCE POSITION.

9. VALVES SHOWN ON THE DRAWINGS AND SPECIFIED AS SPRING LOADED/CHECK TYPE SHALL BE EQUAL TO APCO IN ACCORDANCE WITH THE FOLLOWING: a. 2-1/2" AND SMALLER: SERIES 300

10. CHECK VALVES IN LINES DISCHARGING AGAINST PRESSURES LESS THAN 100 PSIG SHALL HAVE 125-LB SEMI-STEEL BODIES, AND FOR PRESSURE 100 PSIG OR GREATER SHALL HAVE 250 PSIG SEMI-STEEL BODIES. ALL SHALL BE COMPLETE WITH BRONZE TRIM AND

11. IN THE DISCHARGE OF BASE-MOUNTED PUMPS, PROVIDE A SPRING LOADED CHECK

12. ALL VALVES SHOWN ON THE DRAWINGS AS CHECK VALVES IN VERTICAL PIPING SHALL BE

1. PROVIDE THE FOLLOWING TYPES OF STRAINERS FOR HVAC APPLICATIONS, UNLESS NOTED OTHERWISE FOR SPECIFIC SYSTEMS:

a. SIZE 2" AND UNDER: SHALL BE SCREWED BRASS OR IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/32" STAINLESS STEEL PERFORATED b. SIZE 2-1/2" THRU 4": SHALL BE FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 3/64" STAINLESS STEEL PERFORATED SCREEN.

. SIZE 5" AND UP: SHALL BE FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/8" STAINLESS STEEL PERFORATED SCREEN. 2. THERMOMETERS SHALL BE THE BI-METAL DIAL TYPE WITH 5" DIALS. THERMOMETERS SHALL HAVE BLACK CASE, BE OF STAINLESS STEEL CONSTRUCTION, AND SHALL BE SEPARABLE SOCKET WITH BRASS WELLS. THERMOMETERS SHALL BE OF THE ADJUSTABLE

3. RANGES FOR THERMOMETERS SHALL BE AS FOLLOWS:

(ALL ANGLE) TYPE READABLE FROM THE FLOOR. SIZE STEMS AND WELLS AS REQUIRED BY

4. GAUGES SHALL BE 4-1/2" DIAL GRADE AA PHOSPHUR BRONZE BOURDON TUBE TYPE WITH STAINLESS STEEL MOVEMENT OF 1/2 OF 1% SCALE ACCURACY. 5. EACH GAUGE SHALL HAVE A SHUT-OFF COCK.

6. GAUGES IN PUMP SUCTIONS SHALL BE COMPOUND TYPE. GAUGES IN PUMP SUCTION AND DISCHARGE SHALL HAVE APPROVED DAMPENERS.

7. GAUGES SHALL HAVE SCALE RANGES TO 100% IN EXCESS OF THE OPERATING RANGE OF THE SYSTEM OF WITH THEY ARE APART.

8. PROVIDE DRAIN PANS UNDER ALL AC UNITS AND CHILLED WATER PUMPS. 9. PROVIDE DIELECTRIC UNIONS AT DISSIMILAR PIPING CONNECTIONS.

10. INSTALL DRAIN VALVES AT LOW POINTS IN MAINS, RISERS, BRANCH LINES, AND ELSEWHERE AS REQUIRED FOR SYSTEM DRAINAGE.

11. INSTALL AIR VENTS AT HIGH POINTS IN MAINS, RISERS, BRANCH LINES, AND ELSEWHERE AS REQUIRED FOR SYSTEM VENTING. 12. PROVIDE CLEANING PORTS WITH VALVES AT CONVENIENT LOCATIONS TO FACILITATE

CLEANING OF ALL NEW PIPING.

1. FURNISH AND INSTALL "SETON" OR SIMILAR IDENTIFICATION LABELS AND LABELING MATERIALS FOR ALL NEW PIPING AS SHOWN ON THE DRAWINGS. LABELS SHALL IDENTIFY THE DIRECTION OF FLOW AND THE TYPE OF SERVICE. 2. PROVIDE PIPE LABELS AT LOCATIONS BELOW

b. BOTH SIDES OF EACH FULL HEIGHT WALL PENETRATION.

c. EVERY 20'-0" OF RUN MINIMUM. d. CHANGE IN PIPING DIRECTION.

3. CONTRACTOR SHALL SUBMIT FOR APPROVAL, PRIOR TO INSTALLATION, THREE (3) SAMPLES OF EACH PIPE LABEL AND PIPE LABELING MATERIALS.

4. LABELS SHALL BE SUITABLE FOR APPLICATIONS. 5. LABEL WIDTH SHALL NOT BE LESS THAN 2"

1. FURNISH AND INSTALL TAGS FOR ALL NEW AND EXISTING CONTROL VALVES RELATED TO THE MECHANICAL SYSTEM SPECIFIED HEREIN AND AS SHOWN ON ACCOMPANYING DRAWINGS. REFER TO DETAILS SHEET FOR ADDITIONAL INFORMATION AND GRAPHICS. 2. FURNISH AND INSTALL TAGS FOR ALL NEW ISOLATION VALVES 2" AND LARGER.

3. VALVE TAGS SHALL HAVE UNIQUE #'S AND SHALL BE COORDINATED WITH THESE DRAWINGS, THE ENGINEER, AND OWNER.

4. VALVE TAGS SHALL BE BRASS MATERIAL AND SHALL BE FASTENED WITH A STURDY CHAIN. 5. CONTRACTOR SHALL SUBMIT FOR APPROVAL, PRIOR TO INSTALLATION, A LIST OF TAG#'S ALONG WITH A SAMPLE OF VALVE TAG.

6. VALVE TAG NUMBERS SHALL BE INDICATED ON THE AS-BUILT DRAWINGS.

1. IN GENERAL, THE COMPLETE SHEET METAL DUCTWORK SYSTEMS FURNISHED UNDER THIS CONTRACT. SHALL BE CONSTRUCTED AND INSTALLED IN STRICT CONFORMANCE WITH THE STANDARDS AS SET FORTH IN THE "DUCT MANUAL AND SHEET METAL CONSTRUCTION FOR VENTILATING AND AIR-CONDITIONING SYSTEMS" AS PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA). ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEETS OF MILD STEEL.

2. METAL GAUGES FOR USE IN DUCTWORK SHALL CONFORM TO THE FOLLOWING MAXIMUM DUCT SIZE METAL GAUGE (U.S. STD.):

3. NEW SUPPLY AIR DUCTWORK SHALL HAVE A PRESSURE CLASS RATING OF 3-INCH W.G. AND A SMACNA LEAKAGE CLASS OF 6. NEW SUPPLY AIR DUCTWORK DOWN STREAM OF THE FAN COIL SHALL HAVE A PRESSURE CLASS RATING OF 2-INCH W.G. AND A SMACNA LEAKAGE CLASS OF 6. NEW RETURN AND EXHAUST AIR DUCTWORK SHALL HAVE A PRESSURE CLASS RATING OF 2-INCHES W.G. AND A SMACNA LEAKAGE CLASS OF 6. ACCESS DOORS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS AND DETAILS.

OR WHERE REQUIRED BY THE INSTALLATION, TO FACILITATE PROPER ACCESS, MAINTENANCE AND INSPECTION OF THE SYSTEM. ALL DUCT ACCESS DOORS SHALL BE HINGED, GASKETED, AND PROVIDED WITH SASH TYPE LOCKING DEVICES. 5. ALL NEW DUCT TURNS, ELBOWS, ETC., SHALL BE INSTALLED WITH TURNING VANES OR

MINIMUM 1-1/2 RADIUS ELBOWS.

- 6. RADIUS ELBOWS, 18" AND LARGER, SHALL BE PROVIDED WITH TURNING BLADES AND 1/3 AND 1/2 THE WIDTH OF THE DUCT FROM THE INSIDE RADIUS. TURNING VANES SHALL BE PROVIDED WITH HEMMED EDGES.
- 7. SQUARE ELBOWS SHALL BE USED ONLY WHERE INDICATED OR WHERE REQUIRED TO FIT CONSTRUCTION AND ONLY ON LOW PRESSURE SYSTEMS. PROVIDE ALL SQUARE ELBOWS WITH TURNING VANES.
- 8. DUCTWORK SHALL COMPLY WITH ALL FIRE AND SMOKE STOPPING, PROOFING AND DAMPERING.
- 9. ALL DUCT SIZES SHOWN ON PLANS SHALL BE INSIDE CLEAR DIMENSIONS.
- 10. UPON COMPLETION OF THE INSTALLATION OF DUCTWORK, CLEAN ENTIRE SYSTEM OF RUBBISH, PLASTER, DIRT, ETC.
- 11. PROTECT DUCTWORK FROM THE ELEMENTS AND FOREIGN MATERIAL, AND COMPLY WITH INTERMEDIATE DUCT CLEANLINESS LEVEL IN ACCORDANCE WITH SMACNA'S "DUCT CLEANLINESS FOR NEW CONSTRUCTION GUIDELINES".
- B. DUCTWORK SUPPORTS AND CONNECTIONS 1. DUCT SECTION CONNECTIONS AND INTERMEDIATE REINFORCING SHALL CONFORM TO THE ABOVE-NOTED MANUAL.
- 2. SEAL DUCTS TO THE FOLLOWING SEAL CLASSES ACCORDING TO THE "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" AS PUBLISHED BY SMACNA.
- a. SUPPLY AIR DUCTS: SEAL CLASS A b. RETURN AIR DUCTS: SEAL CLASS A c. EXHAUST AIR DUCTS: SEAL CLASS C
- d. OUTDOOR AIR DUCTS: SEAL CLASS C
- 3. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL181B.L DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.
- 4. THIS CONTRACTOR SHALL INSTALL FLEXIBLE DUCT CONNECTIONS BETWEEN EACH PIECE OF EQUIPMENT HAVING A FAN. AND ITS SUPPLY. RETURN, AND EXHAUST DUCTWORK. CONNECTIONS WHEN COMPLETED SHALL BE AIRTIGHT, AND SHALL BE INSTALLED IN AN APPROVED MANNER. FLEXIBLE CONNECTIONS SHALL BE NEOPRENE MATERIAL, TO INSURE AGAINST TRANSMISSION OF VIBRATION FROM THE FAN TO THE DUCTWORK.
- C. DUCTWORK INSULATION AND LINING 1. DUCT INSULATION AND LINING SHALL MATCH EXISTING.
- ALL INSULATION AND RELATED MATERIALS SHALL HAVE A FLAME-SPREAD INDEX OF 25 OR LESS, AND A SMOKE DEVELOPED INDEX OF 50 OR LESS, AS DETERMINED BY TESTING IDENTICAL PRODUCTS PER ASTM E 84. BY A TESTING AND INSPECTING AGENCY ACCEPTABLE TO THE AUTHORITIES HAVING JURISDICTION. FACTORY LABEL PRODUCT WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AND INSPECTING AGENCY.
- 3. FURNISH AND INSTALL DUCT INSULATION IN ACCORDANCE WITH THE FOLLOWING SCHEDULE PER MANUFACTURER'S INSTRUCTIONS. PROVIDE PRODUCT SUBMITTAL ON ALL INSULATION INSTALLED AS PART OF THIS PROJECT. a. MATCH EXISTING DUCT INSULATION AND LINING.
- 4. DUCT LINING. WHERE INDICATED AND TO MATCH EXISTING. AN/OR AS HEREINAFTER SPECIFIED SHALL BE EQUAL TO JOHNS MANVILLE 1" THICK PERMACOTE LINACOUSTIC FIBERGLASS DUCT LINER WITH FACTORY APPLIED EDGE COATING. THE LINER SHALL MEET THE LIFE SAFETY STANDARDS AS ESTABLISHED BY NFPA 90A AND 90B. THE DUCT LINER SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1071, WITH AN NRC NOT LESS THAN 0.70 AS TESTED PER ASTM C423 USING A TYPE "A" MOUNTING AND A THERMAL CONDUCTIVITY NO HIGHER THAN 0.25 AT 75°F MEAN TEMPERATURE.
- 5. ALL PORTIONS OF DUCT DESIGNED TO RECEIVE DUCT LINER SHALL BE COMPLETELY COVERED WITH DUCT LINER. THE SMOOTH, BLACK COATED MAT SURFACES OF THE DUCT LINER SHALL FACE THE AIR STREAM. ALL DUCT LINER SHALL BE CUT TO ENSURE TIGHT, OVERLAPPED CORNER JOINTS.
- 6. DUCT LINING SHALL BE ADHERED TO THE SHEET METAL WITH FULL COVERAGE OF AN APPROVED ADHESIVE, AND ALL EXPOSED LEADING EDGES AND TRANSVERSE JOINTS SHALL BE NEATLY BUTTED WITHOUT GAPS AND BE COATED WITH AN EDGE COATING.
- 7. THE DUCT LINING SHALL MEET SMACNA GUIDELINES AND BE SECURED PER MANUFACTURER'S RECOMMENDATIONS.
- 8. ALL DUCT WRAP SHALL BE INSTALLED WITH VAPOR BARRIER JACKET, KRAFT PAPER REINFORCED WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. SECURE WITH PRESSURE SENSITIVE TAPE. D. DUCTWORK ACCESSORIES
- 1. ALL SUPPLY, RETURN AND EXHAUST AIR REGISTERS, DIFFUSERS, TROFFERS, GRILLES, ETC. SHALL BE OF MODELS INDICATED, OR APPROVED EQUIVALENT UNITS.
- 2. EACH SHEET METAL DUCT TEE AND BRANCH TAKE OFF FITTING SHALL BE EQUIPPED WITH A LOCKING TYPE MANUAL VOLUME DAMPER SUITABLE FOR PROPER BALANCING. EACH SUPPLY, RETURN AND EXHAUST AIR REGISTER, DIFFUSER, TROFFER, GRILLE, ETC. SHALL BE DIRECTLY SERVED BY DUCTWORK WHICH INCLUDES A LOCKING TYPE MANUAL VOLUME DAMPER SUITABLE FOR PROPER BALANCING. MANUAL VOLUME DAMPER SHALL BE "RUSKIN" OR APPROVED EQUIVALENT WITH MINIMUM 20 GAUGE GALVANIZED STEEL BLADES AND FRAME AND SYNTHETIC BEARINGS.
- 3. FLEXIBLE DUCTWORK SHALL BE INSULATED, MEET THE REQUIREMENTS OF UL 181 AND NFPA 90A, SHALL BE SUITABLE FOR DUCT STATIC PRESSURES OF A MINIMUM OF +1.0" W.C. LENGTHS SHALL NOT EXCEED 5'-0". E. ACCESS DOORS
- 1. PROVIDE ACCESS PANELS IN ALL DUCTS ADJACENT TO AUTOMATIC DAMPERS, AT FIRE DAMPERS, AT SMOKE DAMPERS, AND AT REHEAT COILS.
- 2. ACCESS PANELS IN DUCTWORK SHALL BE OF 22 GAUGE GALVANIZED SHEET METAL WITH NEOPRENE GASKETS. PANELS IN INSULATED DUCTWORK, SHALL HAVE 1" THICK FIBERGLASS INSULATION BETWEEN TWO THICKNESS OF SHEET METAL. THE AIRSIDE SHEET METAL ON INSULATED PANELS SHALL BE WELDED OR MECHANICALLY LOCKED POSITION. PANELS UP TO 15" SHALL BE PROVIDE WITH TWO CAM LATCHES, ONE ON EACH SIDE. PANEL OVER 15" SHALL BE PROVIDE WITH FOUR CAM LATCHES, TWO ON EACH SIDE. ALL PANELS SHALL BE OF SUFFICIENT SIZE FOR EASY ACCESS TO AND THE SERVICING OF DAMPERS, DAMPER MOTORS, COILS, ETC.

F. FIRE DAMPERS

- 1. PROVIDE FIRE DAMPERS IN ALL TRANSFER OPENINGS IN WALLS WITH FIRE RATINGS OF (1) HOUR OR GREATER.
- 2. IN UN-SPRINKLED BUILDINGS, PROVIDE MINIMUM 1-1/2 HOUR DYNAMIC RATED FIRE DAMPERS IN ALL DUCTWORK OR TRANSFER OPENINGS PENETRATING ANY FULL HEIGHT
- DEMISING WALL REGARDLESS OF WALL FIRE RATING. 3. FIRE DAMPERS SHALL BE FUSIBLE LINK CURTAIN TYPE AND SHALL BE UL LABELED AND
- INSTALLED IN ACCORDANCE WITH UL STANDARD 555 AND NFPA 90A. 4. PROVIDE TYPE C FRAMES IN ALL SUPPLY DUCTS. PROVIDE TYPE B FRAMES IN ALL
- EXHAUST DUCTWORK AND IN ALL TRANSFER OR UN-DUCTED OPENINGS. PROVIDE 1-1/2 HOUR DAMPERS IN ALL RATED WALLS GREATER THAN 1 HOUR AND LESS THAN 3 HOURS. PROVIDE 3 HOUR RATED DAMPERS IN ALL RATED WALLS 3 HOURS OR GREATER.
- G. TYPE 1 KITCHEN EXHAUST DUCT CONSTRUCTION 1. CONSTRUCT KITCHEN EXHAUST DUCTWORK FOR TYPE I KITCHEN HOODS FROM 16 GAUGE BLACK IRON DUCTWORK, WITH BUTT WELDED SEAMS AND JOINTS, OR FACTORY BUILT
- COMMERCIAL KITCHEN GREASE DUCTS LISTED AND LABELED IN ACCORDANCE WITH UL 1978. 2. KITCHEN EXHAUST DUCTWORK SHALL BE FREE OF TURNING VANES, DAMPERS, OR ANY
- OTHER OBSTRUCTION IN THE EXHAUST AIR PATH. 3. INSTALL WITH CODE REQUIRED CLEARANCES AND SUFFICIENT SPACE TO ALLOW FOR INSTALLATION OF INSULATION.
- 4. INSTALL HORIZONTAL SECTIONS WITH MINIMUM 1/4" PER FOOT PITCH TOWARD KITCHEN HOOD OR GREATER AS REQUIRED BY CODE, PROVIDE RATED ACCESS PANELS ON THE SIDE OF DUCTWORK AT INTERVALS NO GREATER THAN 20' AT HORIZONTAL RUNS AND WHERE REQUIRED FOR PROPER MAINTENANCE.
- INSULATE TYPE 1 GREASE DUCTWORK WITH UL LISTED, FIRE-RATED BLANKET INSULATION BY FYREWRAP OR 3M. INSTALL PER MANUFACTURER'S REQUIREMENTS TO MEET 0-INCH CLEARANCE TO COMBUSTIBLES FOR GREASE DUCT INSTALLATIONS IN ACCORDANCE WITH A NATIONALLY RECOGNIZED STANDARD.

IX. CHEMICAL TREATMENT & CLEANING

- A. ALL GREASE, DIRT, OIL, AND METALLIC OXIDES SHALL BE REMOVED FROM EACH CLOSED RE-CIRCULATING SYSTEM. EQUIPMENT SHALL BE PROVIDED TO METER THE WATER, MIX AND INJECT THE CLEANING SOLUTION INTO THE SYSTEM. MECHANICAL CONTRACTOR SHALL INFORM WATER TREATMENT CONTRACTOR OF ALL SYSTEM MATERIALS OF CONSTRUCTION, TO INSURE CHEMICAL CLEANER COMPATIBILITY. A CLEANING AGENT SHALL BE CIRCULATED. WETTING ALL SURFACES AND FLUSHED FROM THE SYSTEM AT COMPLETION.
- B. CHEMICAL TREATMENT SHALL CONSIST OF A NON-CHROMATE CORROSION INHIBITOR FOR THE PROTECTION OF BOTH FERROUS AND NON-FERROUS METALS. INHIBITOR SHALL BE COMPATIBLE WITH PROPYLENE AND ETHYLENE GLYCOL TYPES OF ANTIFREEZES, AND SHALL NOT BE DETRIMENTAL TO NON-METALLIC MATERIALS SUCH AS PUMP PACKING AND VALVE
- MECHANICAL CONTRACTOR SHALL COORDINATE WITH OWNER'S CHEMICAL TREATMENT CONTRACTOR.
- X. ELECTRICAL WORK

SEALS.

- A. ALL POWER WIRING FOR THE MECHANICAL SYSTEM HEREIN SPECIFIED. SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNDER THE MECHANICAL CONTRACTOR'S CONTRACT.
- B. ALL ELECTRICAL WORK UNDER THIS CONTRACT SHALL BE DONE IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE CITY OF CHICAGO, FEDERAL, STATE, OR ANY APPLICABLE OR INSPECTING AUTHORITY. THE WORK UNDER THIS CONTRACT SHALL INCLUDE ANY REQUIRED PERMITS AND INSPECTION FEES.
- C. THE ELECTRICAL CONTRACTOR (EC) SHALL VISIT THE SITE AND BE FULLY APPRAISED OF ALL ASPECTS OF THE REQUIRED UNDER THIS CONTRACT. THE EC SHALL NOTIFY THE ENGINEER IN WRITING OF ANY PORTION OF THE WORK HEREIN THAT CANNOT BE INSTALLED, FURNISHED, OR IN COMPLIANCE WITH THE WORK UNDER THIS CONTRACT.
- ALL PANEL BOARDS FURNISHED SHALL BE MAIN CIRCUIT BREAKER OR MLO, COPPER BUS WITH BOLT-ON STYLE BREAKERS RATED AT 22KA I/C.
- E. ALL INDOOR CONDUIT SHALL BE TYPE "EMT" WITH GLAND (COMPRESSION) TYPE CONNECTORS AND COUPLINGS.
- F. ALL OUTDOOR CONDUIT SHALL BE TYPE "IMC" WITH THREADED COUPLINGS.
- G. FINAL CONNECTION TO ALL MOTORS AND MACHINERY SHALL BE VIA A MIN. 2'-0"LENGTH OF FLEXIBLE CONDUIT. H. EACH PIECE OF MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL HAVE A
- LOCAL DISCONNECT (SQUARE D CLASS 2510, HEAVY DUTY SWITCH, OR SIMILAR MAY BE NECESSARY.
- I. VERIFY THAT THERE IS A GFI SERVICE RECEPTACLE WITHIN 25'-0" OF EQUIPMENT REQUIRING SERVICE.
- RELOCATE OR FURNISH AND INSTALL NEW LIGHT FIXTURES THAT MAY BE REQUIRED TO FACILITATE INSTALLATION AND FUTURE SERVICING OF THE MECHANICAL EQUIPMENT UNDER THIS CONTRACT.

K. PRIOR TO OPERATING OR FINAL CONNECTION OF ANY WIRED DEVICE, EACH CABLE RUN (NEW OR EXITING) SHALL BE MEGGER TESTED WITH NOT LESS THAN A 1000 VOLT MEGGER. ANY CABLE NOT SHOWN TO BE "CLEAN" SHALL BE REPLACED PRIOR TO ENERGIZING. ALL CABLE SHALL BE STRANDED COPPER, 600 VOLT, TYPE "XHHW" (WET) OR "THHN" (DRY).

THE EC SHALL VERIFY ROTATION OF EACH MOTOR AND MEASURE THE RUNNING AMPERAGE OF EACH MOTOR, OR EQUIPMENT INSTALLED UNDER THIS CONTRACT AND COMPARE WITH THE NAMEPLATE RATING.

M. THE EC SHALL WARRANTY ANY MATERIAL AND LABOR FURNISHED UNDER THIS CONTRACT FOR NOT LESS THAN ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.

XI. MOTORS AND STARTERS

OPERATING CONDITION.

A. ALL MOTORS FOR EQUIPMENT FURNISHED AND INSTALLED UNDER THIS CONTRACT SHALL BE PROVIDED BY THIS CONTRACTOR, AND SHALL BEBALDOR, MARATHON, GENERAL ELECTRIC, TOSHIBA OR US.EACH MOTOR SHALL HAVE STARTING TORQUE CHARACTERISTIC SUITABLE FOR THE EQUIPMENT SERVED. ALL MOTORS FOR AIR HANDLING UNIT AND VENTILATING FAN UNIT SERVICE SHALL BE SELECTED FOR QUIET OPERATION. NOMINAL MOTOR VOLTAGES INCLUDE 120, 208, 230, 277, AND 460 VOLTS, AND EACH MOTOR SUPPLIED UNDER THIS CONTRACT SHALL BE CHECKED FOR PROPER ROTATION AFTER ELECTRICAL CONNECTION HAS BEEN COMPLETED. ALL MOTORS SHALL BE RATED FOR 1.15 SERVICE FACTOR. OPEN DRIP-PROOF OR TEFC AS REQUIRED.

B. ALL MOTORS FOR EQUIPMENT FURNISHED AND INSTALLED UNDER THIS CONTRACT SHALL BE PREMIUM EFFICIENCY AS DETERMINED BY NEMA STANDARD MG1 AND ACCORDING TO TABLES 12-12 AND 12-13 ACCORDINGLY.

C. ALL MOTORS FURNISHED FOR USE ON VARIABLE FREQUENCY DRIVES (VFD'S) SHALL BE RATED FOR A MINIMUM OF 4 TO 1 TURNDOWN WHEN USED IN A VARIABLE TORQUE APPLICATION. COMPLY WITH NEMA MG1 PART 31 REQUIREMENTS FOR THERMALLY PROTECTED MOTORS WITH MINIMUM CLASS F OR H INSULATION RATED AT CLASS B TEMPERATURE RISE.

D. ALL FVNR MOTOR STARTERS SHALL BE COMBINATION TYPE WITH A FUSED LINE SIDE DISCONNECT. EACH STARTER SHALL BE NEMA RATED AND SHALL HAVE 120 VOLT CONTROL WITH INTEGRAL CONTROL TRANSFORMER, AND DOOR MOUNTED RUN & STOP PILOT LITES. AND HAND-OFF-AUTO SELECTOR SWITCH SHALL BE CUTLER-HAMMER, SQUARE D, ALLEN-BRADLEY. OR SIEMENS.

. MOTORS THAT ARE NOT INSTALLED WITHIN THE LINE OF SIGHT OF THE MOTOR STARTERS OR VFDS WITH INTEGRAL DISCONNECTS SERVING THEM SHALL HAVE A LOCAL DISCONNECTING MFANS

F. EACH VFD DRIVE MOTOR THAT REQUIRES A LOCAL DISCONNECT SHALL BE EQUIPPED WITH AN AUXILIARY CONTACT THAT SHALL BE WIRED INTO THE STOP CIRCUIT OF THE DRIVE.

XII. SYSTEM START-UP, TESTING, ADJUSTING AND BALANCING A. UPON COMPLETION OF THE SYSTEMS INSTALLATION, AND PRIOR TO ACCEPTANCE BY THE ENGINEER AND OWNER, THIS CONTRACTOR SHALL MAKE GENERAL OPERATING TESTS TO DEMONSTRATE THAT ALL EQUIPMENT AND SYSTEMS ARE IN PROPER WORKING ORDER, AND ARE FUNCTIONING IN CONFORMANCE WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.

B. BEFORE OPERATING ANY ROTATING EQUIPMENT, THE ROTATION AND LUBRICATION SHALL BE CHECKED AND THE PROPER QUANTITIES OF OIL AND GREASE SHALL BE ADDED AS REQUIRED FOR CORRECT OPERATION. EACH PART OF THE SYSTEM SHALL BE ADJUSTED TO INSURE PROPER FUNCTIONING OF ALL CONTROLS, PROPER AIR DISTRIBUTION, ELIMINATION OF DRAFTS, NOISE AND VIBRATION, AND THE ENTIRE SYSTEM SHALL BE LEFT IN FIRST-CLASS

C. THIS CONTRACTOR SHALL FURNISH ALL EQUIPMENT AND PERSONNEL REQUIRED FOR THE COMPLETE AND COMPREHENSIVE TESTING, ADJUSTING, AND BALANCING OF THE SYSTEMS INSTALLED UNDER THIS CONTRACT AND TO THE EXTENT REQUIRED BY THE SEQUENCE OF OPERATION. THE OWNER AND ENGINEER SHALL BE NOTIFIED WHEN THE TESTS ARE TO TAKE PLACE, IN ORDER THAT HE OR HIS AUTHORIZED REPRESENTATIVE MAY BE IN ATTENDANCE IF DEEMED NECESSARY.

. THIS CONTRACTOR TO RETURN EXISTING HEATING/COOLING SYSTEM TO EXISTING OPERATING CONDITION INCLUDING BUT NOT LIMITED TO THE REFILL AND PURGE OF ALL AIR AS PART OF HEATING/COOLING SYSTEM START-UP

E. A CERTIFIED TEST AND BALANCE CONTRACTOR (TABC) SHALL BE RESPONSIBLE FOR BALANCING ALL NEW PIPING SYSTEMS TO THE EXTENT REQUIRED BY THESE DRAWINGS AND THE SEQUENCE OF OPERATION AND AS RELATED TO THE SPECIFIED WORK. SUCH BALANCING SHALL BE PERFORMED BY A MEMBER OF THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), WHO SHALL SUBMIT THREE (3) COPIES OF THEIR NEBB CERTIFICATE PRIOR TO BALANCING AND THE BALANCING REPORT TO THE ENGINEER FOR APPROVAL. THE SCOPE OF WORK FOR THE TABC SHALL INCLUDE ALL AIR SUPPLY MAINS AND ALL WATER SUPPLY AND RETURN MAINS, BRANCHES AND TERMINAL UNITS INSTALLED AS A PART OF THIS CONTRACT. ALL BALANCING WORK SHALL CONFORM TO NEBB STANDARDS AND SHALL BE REPORTED ON NEBB STANDARD FORMS. THE BALANCING CONTRACTOR SHALL IDENTIFY EACH AIR AND WATER DEVICE BY LOCATION, TYPE AND SIZE, AND SHALL TEST AND ADJUST EACH AIR AND WATER DEVICE TO WITHIN 10% OF DESIGN. THE SCOPE OF WORK FOR THE TABC IS DESCRIBED IN THE FOLLOWING PARAGRAPHS.

F. THE TABC CONTRACTOR SHALL BE KEPT INFORMED DURING THE CONSTRUCTION OF THE PROJECT OF ANY MAJOR CHANGES MADE TO THE HVAC SYSTEM. TABC CONTRACTOR SHALL BE PROVIDED WITH ONE (1) SET OF SHOP DRAWINGS ON ALL EQUIPMENT WHICH THEY WILL BE REQUIRED TO WORK ON WHEN BALANCING THE HVAC SYSTEM.

G. THE TABC CONTRACTOR SHALL BE REQUIRED TO WORK CLOSELY WITH THE MECHANICAL CONTRACTOR AND ENGINEER IN ORDER TO ENSURE A PROPER INSTALLATION.

H. THIS CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL, TO INSTRUCT THE OWNER OR HIS REPRESENTATIVE, IN THE PROPER OPERATION OF THE SYSTEMS INSTALLED UNDER THIS CONTRACT, FOR ONE FULL DAY DURING THE HEATING SEASON. I. THIS CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR FUNCTIONAL TESTING OF

EQUIPMENT AND CONTROLS INSTALLED AS PART OF THIS PROJECT. THIS CONTRACTOR SHALL CORRECT DEFICIENCIES FOUND DURING FUNCTIONAL TESTING TO THE ACCEPTANCE OF THE ENGINEER.

J. THE FINAL TEST RESULTS SHALL BE TABULATED AND FOUR (4) CERTIFIED COPIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. TWO (2) CERTIFIED COPIES SHALL BE SUBMITTED TO THE BUILDING OWNER'S REPRESENTATIVE NO LATER THAN THIRTY (30) DAYS AFTER TENANT MOVE-IN. ALL EQUIPMENT SHOWN IN BALANCING REPORT SHALL HAVE AN EQUIPMENT ID TAG WHICH SHALL CORRESPOND TO TAG SHOWN ON MECHANICAL AS-BUILT DRAWINS.G K. AIR TESTING AND BALANCING

1. BALANCE EACH AIR SUPPLY AND EXHAUST SYSTEM TO WITH 10% OF QUANTITY SHOWN ON DRAWINGS.

2. BELTS AND SHEAVE CHANGES REQUIRED TO MEET SPECIFIED AIR VOLUMES SHALL BE DONE AT NO ADDITIONAL COST

3. RECORD AMP DRAW FOR AC AND FAN COIL UNITS AND VERIFY UNIT CAPACITY. 4. RECORD DISCHARGE AIR TEMPERATURE AT UNIT.

5. RECORD THE "AS BALANCED" STATE OF THE SYSTEM ON REPORT FORMS FOR ALL TERMINALS AND DUCT APPARATUS.

6. VERIFY THE ACTION OF ALL FAN CONTROL DAMPERS, SHUT DOWN CONTROLS, AND

7. PREPARE THE REQUIRED REPORT FORMS AND SUBMIT AS REQUIRED.

8. TEST RESULTING GLYCOL PERCENTAGE AND ADJUST AS NECESSARY. J. HYDRONIC SYSTEM TESTING AND BALANCING

AIRFLOW SAFETY CONTROLS.

1. CHECK TO SEE THAT ALL NECESSARY ELECTRICAL WIRING, TEMPERATURE CONTROL SYSTEMS, ALL RELATED HYDRONIC PIPING CIRCUITS AND ALL RELATED DUCT SYSTEMS ARE FUNCTIONAL AND THAT ANY NECESSARY COMPENSATION FOR SEASONAL EFFECTS HAVE BEEN MADE.

2. DETERMINE THAT ALL HYDRONIC SYSTEMS HAVE BEEN CLEANED, FLUSHED, RE-FILLED AND VENTED AS REQUIRED.

3. BALANCE ALL EQUIPMENT WITH CHILLED WATER FLOW TO THE GPM QUANTITY SHOWN ON THE DRAWINGS AND SPECIFIED IN THE EQUIPMENT SCHEDULE.

4. AFTER ALL TAB WORK HAS BEEN COMPLETED AND THE SYSTEMS ARE OPERATING WITHIN PLUS OR MINUS 10% OF DESIGN FLOW, MARK OR SCORE ALL BALANCING COCKS, GAUGES, AND THERMOMETERS AT FINAL SET POINTS AND/OR RANGE OF OPERATION. 5. VERIFY THE ACTION OF ALL WATER FLOW SAFETY SHUT DOWN CONTROLS

6. PREPARE ALL REPORT FORMS AND SUBMIT REQUIRED.

XIII. AUTOMATIC TEMPERATURE CONTROL SYSTEM

A. GENERAL

1. THE CONTROLS CONTRACTOR SHALL BE THE CONTROLS ENGINEER FOR THIS PROJECT. RESPONSIBLE FOR DESIGN AND ENGINEERING OF ALL CONTROL SYSTEMS TO OPERATE AS DESCRIBED IN THE SEQUENCE OF OPERATION, TO CONFORM WITH THE GOVERNING BUILDING CODES, AND OPERATE IN A MANNER CONSISTENT WITH KNOWN GOOD CONTROLS ENGINEERING PRACTICE.

2. THE BASC / CONTROLS ENGINEER SHALL IDENTIFY ANY POTENTIAL CONDITIONS THAT COULD BE CONSTRUED TO DEVIATE FROM GOOD CONTROLS ENGINEERING PRACTICE PRIOR TO BIDDING AND INCLUDE ALL ENGINEERING AND INSTALLATION WORK REQUIRED TO MAKE ALL HVAC SYSTEMS COMPLETE AND OPERATIONAL, IN CONFORMANCE WITH GOOD CONTROLS ENGINEERING PRACTICE, PRIOR TO SUBMITTING HIS BID.

3. THE DRAWINGS AND DOCUMENTS PREPARED FOR THIS PROJECT ARE DIAGRAMMATIC AND THE SUCCESSEUL BASC MUST INCLUDE ALL EQUIPMENT, MATERIALS, LABOR, AND RELATED WORK AS REQUIRED TO COMPLETE THE PROJECT OUTLINED HEREIN. THE BASC SHALL PROVIDE A COMPLETE SUBMITTAL PACKAGE FOR ALL HARDWARE DEVICES. SEQUENCE OF OPERATION WITH PROPOSED SET POINTS, ADJUSTABILITY, CONTROL DRAWINGS, AND PROGRAMMING TEXT BLOCKS FOR REVIEW AND APPROVAL BY ELARA ENERGY SERVICES PRIOR TO PURCHASING AND INSTALLATION OF THE SAME.

4. THE BASC SHALL PROVIDE ALL CONTROL COMPONENTS, WIRING, INTERLOCKS, ELECTRICAL POWER, AND ALL OTHER DEVICES REQUIRED TO MAKE ALL HVAC EQUIPMENT INSTALLED UNDER THIS PROJECT COMPLETE AND FULLY OPERATIONAL PER THE SEQUENCE OF OPERATION AND AS REQUIRED FOR SAFE AND ACCURATE CONTROL. 5. THE BASC SHALL PROVIDE ALL CONTROL VALVES AND ACTUATORS TO THE MECHANICAL

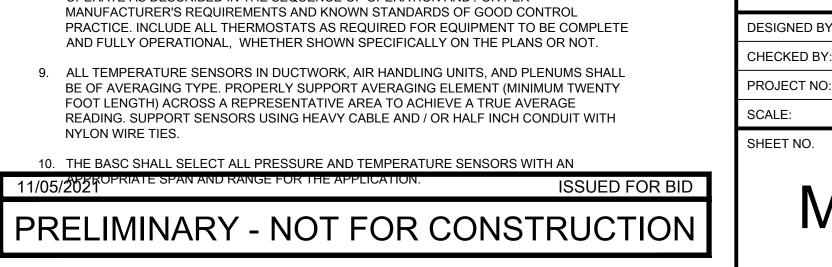
CONTRACTOR FOR INSTALLATION. THE BASC SHALL DIRECT THE MECHANICAL CONTRACTOR AS TO THE PROPER LOCATION AND ORIENTATION OF ALL DEVICES TO ACHIEVE A PROPER AND CORRECT CONTROL SEQUENCE.

6. ANY CONTROLS NO LONGER NECESSARY TO ACHIEVE THE SEQUENCES OF OPERATION ARE TO BE DEMOLISHED AND REMOVED. 7. PRIOR TO DISCONNECTING AND REMOVING ANY EXISTING CONTROLLERS, THE BASC SHALL VERIFY THAT REMOVAL WILL NOT NEGATIVELY IMPACT THE OPERATION OF EXISTING CONTROLLERS AND SYSTEMS OUTSIDE THE SCOPE OF THE PROJECT.

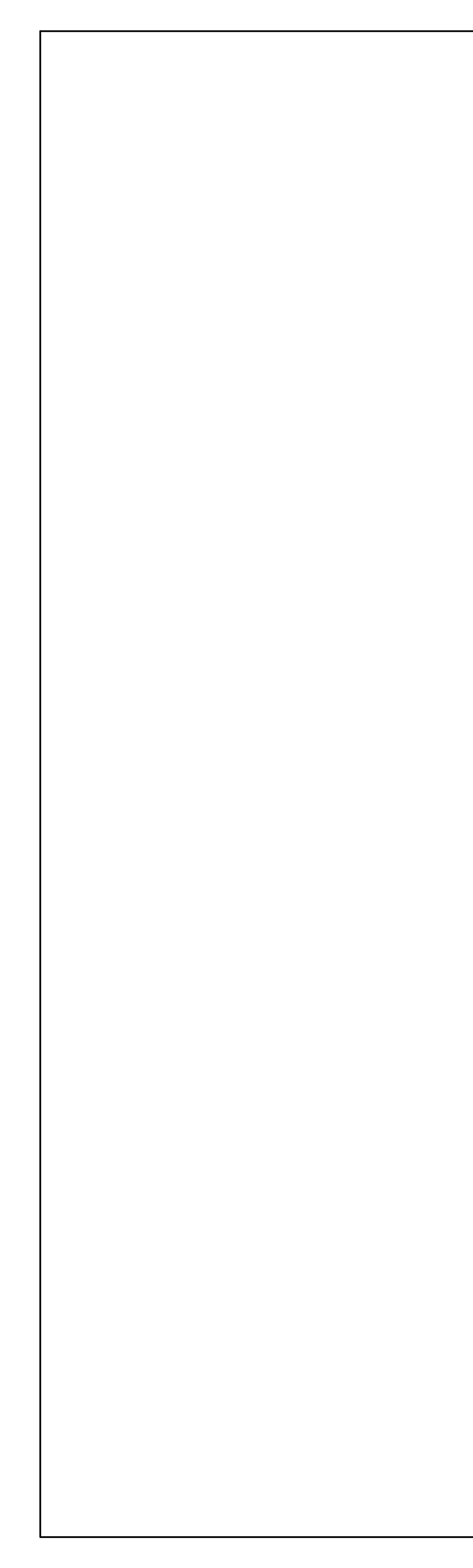
8. THE BASC SHALL PROVIDE THERMOSTATS FOR ALL CONTROLLED EQUIPMENT TO OPERATE AS DESCRIBED IN THE SEQUENCE OF OPERATION AND / OR PER MANUFACTURER'S REQUIREMENTS AND KNOWN STANDARDS OF GOOD CONTROL PRACTICE. INCLUDE ALL THERMOSTATS AS REQUIRED FOR EQUIPMENT TO BE COMPLETE AND FULLY OPERATIONAL, WHETHER SHOWN SPECIFICALLY ON THE PLANS OR NOT.

9. ALL TEMPERATURE SENSORS IN DUCTWORK, AIR HANDLING UNITS, AND PLENUMS SHALL BE OF AVERAGING TYPE. PROPERLY SUPPORT AVERAGING ELEMENT (MINIMUM TWENTY FOOT LENGTH) ACROSS A REPRESENTATIVE AREA TO ACHIEVE A TRUE AVERAGE READING. SUPPORT SENSORS USING HEAVY CABLE AND / OR HALF INCH CONDUIT WITH NYLON WIRE TIES.

10. THE BASC SHALL SELECT ALL PRESSURE AND TEMPERATURE SENSORS WITH AN



So N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
ILLINOIS SPORTS FACILITIES AUTHORITY
KEY PLAN
ISSUE/REVISION:
REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
333 W 35TH STREET, CHICAGO, ILLINOIS 60616
DRAWING TITLE: MECHANICAL SPECIFICATIONS
DESIGNED BY:DACHECKED BY:MSPROJECT NO:21276SCALE:NO SCALESHEET NO.
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- 10. THE BASC SHALL SELECT ALL PRESSURE AND TEMPERATURE SENSORS WITH AN APPROPRIATE SPAN AND RANGE FOR THE APPLICATION.
- 11. ALL TEMPERATURE AND PRESSURE SENSORS SHALL BE INSTALLED IN LOCATIONS SUCH THAT THEY DO NOT MAKE FALSE READINGS. BASC SHALL REVIEW THE PLANS AND IDENTIFY ANY SUCH POTENTIAL CAUSES FOR FALSE READINGS AND NOTIFY THE ENGINEER IN WRITING THAT THESE SHOULD BE RELOCATED PRIOR TO ROUGH-IN AND CONTROLS INSTALLATION. THE BASC SHALL RELOCATE ANY SENSORS INSTALLED IN IMPROPER LOCATIONS AND GIVING FALSE READINGS AND HIS OWN EXPENSE. CONDITIONS TO BE AWARE OF INCLUDE, BUT ARE NOT LIMITED TO, LOCATIONS OF THERMOSTATS BEHIND DOORS, OUTDOOR AIR SENSORS NEAR EXHAUST OPENINGS, STATIC PRESSURE SENSORS IN TURBULENT LOCATIONS, THERMOSTATS INSTALLED ADJACENT TO HEAT SOURCES SUCH AS COFFEE POTS, COMPUTERS, VENDING MACHINES, AND OTHER APPLIANCES, ETC.
- 12. THE BASC SHALL FURNISH AND INSTALL MANUAL RESET SAFETY DEVICES FOR ANY AND ALL CONDITIONS THAT COULD DAMAGE THE EQUIPMENT AND / OR REPRESENT A THREAT TO HUMAN SAFETY. ALL WATER COILS SHALL BE PROTECTED BY AN AVERAGING ELEMENT FREEZE-STAT WITH A NON-ADJUSTABLE 40°F SET POINT, MANUAL RESET, AND HARDWIRED INTERLOCK TO SHUT DOWN THE ASSOCIATED FAN ANY TIME THE TEMPERATURE ACROSS ANY 12" LENGTH OF THE AVERAGING ELEMENT FALLS BELOW 40°F. FREEZE-STATS SHALL BE INSTALLED DOWNSTREAM OF ALL WATER COILS.
- 13. ALL UNUSED HOLES IN EXISTING AND NEW CONTROL PANELS ARE TO BE CAPPED. 14. RE-USE OF EXISTING CONTROL CONDUIT, RACEWAYS, AND WIRING ACCEPTABLE IF COMPATIBLE WITH NEW SYSTEM AND IF THE CONTRACTOR INCLUDES IN THE PROJECT WARRANTY.
- 15. THE BASC IS RESPONSIBLE FOR ALL LOW VOLTAGE CONTROL WIRING, POWER WIRING, AND CONDUIT ASSOCIATED WITH ALL CONTROL VALVES, ACTUATORS, CONTROLLERS, ETC., BEING INSTALLED AS A PART OF THIS PROJECT.
- 16. THE BASC MAY RE-USE ANY EXISTING RELAYS, CURRENT SENSING RELAYS, AND CURRENT TRANSDUCERS PROVIDED THEY ARE COMPATIBLE WITH THE NEW CONTROLLERS. ALL HARD WIRED CONTROL POINTS ARE TO BE MAPPED TO THE SYSTEM GRAPHICS FOR EASY VIEWING BY BUILDING STAFF. ANY CONDUIT, WIRING, SENSORS, OR SWITCHES THAT ARE RE-USED BY THE BASC ARE TO BE TESTED PRIOR TO USE AND INCLUDED IN THE PROJECT WARRANTY.
- 17. WIRING IN OCCUPIED AREAS OF THE BUILDING SHALL BE CONCEALED IN WALL AND ABOVE CEILINGS. EXPOSED WIRING AND CONDUIT IS NOT ACCEPTABLE IN OCCUPIED AREAS.
- 18. CONTRACTOR SHALL OBTAIN POWER FOR THE NEW DDC CONTROL SYSTEM FROM THE NEAREST SOURCE.
- 19. THE BASC SHALL INCLUDE ADEQUATE TIME IN HIS BID FOR COMPLETE COMMISSIONING OF THE MECHANICAL SYSTEMS, ON SITE IN COORDINATION WITH THE MECHANICAL CONTRACTOR AND OTHER TRADES AS REQUIRED TO MAKE ALL EQUIPMENT COMPLETE AND FULLY OPERATIONAL.
- 20. REFER TO SCHEMATICS, SCHEDULES, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- B. SCOPE OF WORK
- 1. ALL WORK ASSOCIATED WITH THIS PROJECT SHALL BE INCORPORATED INTO THE EXISTING SIEMENS BUILDING AUTOMATION SYSTEM CURRENTLY IN OPERATION WITHIN GUARANTEED RATE FIELD. THE SCOPE OF WORK SHALL BE AS FOLLOWS FOR EACH COMPONENT ASSOCIATED WITH THIS PROJECT. ALL CONTROL ITEMS INDICATED BELOW SHALL BE PROVIDED IN GRAPHIC FORM ON THE BUILDING BAS SYSTEM.
- 2. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 3. THE FOLLOWING SHALL BE A TYPICAL POINTS LIST FOR A FAN COIL UNIT:
- AO-1: MODULATING CHILLED WATER VALVE CONTROL AI-1: FAN COIL DISCHARGE AIR TEMPERATURE DI-1: OCCUPIED WALL SWITCH
- FAN COMMAND ON/OFF DO-1: DO-2: ELECTRIC HEAT COIL COMMAND ON/OFF
- COMM: THERMOSTAT
- 3. THE FOLLOWING SHALL BE A TYPICAL POINTS LIST FOR AN AIR HANDLING UNIT: AO-1: MODULATING CHILLED WATER VALVE CONTROL AI-2: RETURN AIR TEMPERATURE
- AI-1: DISCHARGE AIR TEMPERATURE
- DO-1: FAN COMMAND ON/OFF COMM: THERMOSTAT
- 4. FCU-1 IN ISFA CONFERENCE ROOM SHALL HAVE OUTDOOR AIR DUCTWORK AND ASSOCIATED MOTORIZED DAMPER INSTALLED. OA DAMPER SHALL ONLY OPEN TO CFM INDICATED AFTER PROOF OF FCU OPERATION.
- 5. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL SMOKE AND/OR HEAT DETECTORS IN AIR SUPPLY SYSTEM OVER 2000 CFM. AN ADDRESSABLE FIRE ALARM RELAY SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR . BAS CONTRACTOR SHALL PICK UP SIGNAL FROM RELAY AND PROVIDE A PROGRAM TO STOP SUPPLY FAN INTERLOCKED WITH THE SYSTEM SENSING FIRE OR SMOKE. DDC PROGRAM SHALL ALSO SHOW FIRE IN UNIT ALARM AT TIME OF SHUT DOWN.
- XIV. MECHANICAL / ELECTRICAL SCOPE OF WORK (FAN COIL UNITS)
- A. GENERAL NOTES FOR STORAGE AND REPLACEMENT FOR ALL FAN COIL UNITS, AIR HANDLING UNITS, FANS, AND RELATED EQUIPMENT
- 1. ALL CEILING OR ABOVE CEILING MOUNTED COMPONENTS REMOVED DURING DEMOLITION, INCLUDING BUT NOT LIMITED TO CEILING TILES, SUPPORT STRUCTURE, LIGHT FIXTURES, DUCT WORK, DIFFUSERS, GRILLES, FIRE ALARM DEVICES, AND SPEAKERS SHALL BE STORED FOR RE-INSTALLATION.
- 2. ALL FIRE PROTECTION DEVICES IN MOUNTED IN CEILING OR ABOVE CEILING, INCLUDING BUT NOT LIMITED TO, SPRINKLER HEADS, PIPING, SUPPORTS, ETC., SHALL BE REMOVED, STORED, AND RE-INSTALLED.
- 3. ALL DUCT WORK CONNECTIONS TO FANS AND FAN COILS THAT IS DISCONNECTED OR REMOVED TO PERMIT THE INSTALLATION OF NEW EQUIPMENT SHALL BE STORED OR REPLACED AT THE TIME OF INSTALLATION OF THE NEW UNITS.
- 4. ALL DUCTWORK REMOVED TO PERMIT DEMOLITION AND STORED FOR RE-INSTALLATION
- SHALL BE CLEANED PRIOR TO INSTALLATION OR REPLACEMENT. 5. EQUIPMENT OR COMPONENTS REMOVED DURING THE DEMOLITION PHASE AND FOUND TO
- BE DAMAGED OR UNSUITABLE FOR RE-INSTALLATION SHALL BE REPLACED WITH EQUIVALENT ITEMS TO MATCH THOSE REMOVED.
- 6. ALL EQUIPMENT OR COMPONENTS REMOVED AND STORED SHALL BE LABELED, INDICATING LOCATION, SERVICE, ROOM NUMBER, AND SYSTEM.
- 7. ALL MATERIALS SHALL BE STORED ON SITE AND PROTECTED FROM DAMAGE OR LOSS. SEE SPECIFICATIONS.
- B. CHILLED WATER FAN COIL GENERAL DEMOLITION
- 1. REMOVE CEILING TILE AND SUPPORT SYSTEM LOCATED UNDER UNIT AND DUCTWORK.
- 2. REMOVE LIGHTING, WIRE, AND CONDUIT LOCATED UNDER UNIT AND DUCTWORK. LIGHTING TO BE RE-USED.
- UNIT AND DUCTWORK.

- 3. REMOVE FIRE PROTECTION PIPING, SPRINKLER HEADS, AND SUPPORTS LOCATED UNDER

- 4. REMOVE ALL SPEAKERS, GRILLES, DIFFUSERS, OR RELATED COMPONENTS UNDER UNIT
- AND DUCTWORK.
- 5. RELOCATE MOVABLE EQUIPMENT AND MATERIALS UNDER UNIT AND DUCTWORK.
- C. CHILLED WATER FAN COIL DEMOLITION
- 1. REMOVE CHILLED WATER PIPING, INSULATION, VALVES, GAUGES, AND THERMOMETERS.
- REMOVE UNIT PIPING BACK TO MAIN OR BRANCH Y.
- 2. REMOVE CONDENSATE DRAIN PIPING AND INSULATION.
- 3. DISCONNECT ELECTRIC HEATING COIL CONDUIT AND WIRING TO PERMIT REMOVAL OF FAN
- COIL.

CONDUIT, AND COMPONENTS TO BE RE-USED.

D. CHILLED WATER FAN COIL - GENERAL CONSTRUCTION NOTES

COMPONENTS.

UNIT AND DUCTWORK.

UNIT AND DUCTWORK.

CONNECTIONS.

E. CHILLED WATER FAN COIL - CONSTRUCTION

EXISTING INSULATED DUCTWORK.

FROM MAIN OR BRANCH PIPING.

10. PROVIDE TESTING AND BALANCING OF UNIT.

12. PROVIDE RETURN AIR FILTER GRILLE.

ISOLATION VALVES.

11. PROVIDE SECONDARY DRAIN PAIN WHERE INDICATED.

RE-USED.

RE-USED.

- CONNECTIONS.

7. DISCONNECT ALL TEMPERATURE CONTROL, WIRING, SENSORS, AND RELATED

6. DISCONNECT AND REMOVE ELECTRICAL POWER WIRING FROM FCU. EXISTING WIRING,

8. DISCONNECT EXISTING DISCONNECT SWITCH SERVING FAN COIL UNIT. SWITCH TO BE

9. REMOVE FAN COIL UNIT, HANGERS, SUPPORTS, AND RELATED COMPONENTS NOT BEING

1. PROVIDE FIRE PROTECTION PIPING, SPRINKLER HEADS, AND SUPPORTS LOCATED UNDER

2. PROVIDE THE RE-INSTALLATION OF LIGHTING, WIRE, AND CONDUIT LOCATED UNDER THE

3. PROVIDE CEILING TILE AND SUPPORT SYSTEM LOCATED UNDER UNIT AND DUCTWORK.

2. PROVIDE ALL TEMPERATURE CONTROL, WIRING, SENSORS, AND RELATED COMPONENTS.

1. PROVIDE FAN COIL UNIT, HANGERS, SUPPORTS, AND RELATED COMPONENTS.

5. PROVIDE DUCTWORK CONNECTIONS FOR SUPPLY DUCTWORK AND FLEXIBLE

8. PROVIDE CONDENSATE DRAIN PIPING, INSULATION, HANGERS, AND SUPPORTS.

9. PROVIDE LABELING OF UNIT, VFD PANELS, PIPING, AND VALVE TAGS.

F. CHILLED WATER BRANCH PIPING ISOLATION VALVES AND PIPING DRAIN DOWN.

6. PROVIDE DUCT INSULATION FOR ALL NEW DUCTWORK AND DUCT CONNECTIONS TO

7. PROVIDE CHILLED WATER PIPING, VALVES, GAUGES, THERMOMETERS, AND INSULATION

1. PROVIDE DRAIN DOWN OF CHILLED WATER SYSTEMS TO PERMIT THE INSTALLATION OF

3. PROVIDE ELECTRICAL POWER, WIRING, CONDUIT, AND COMPONENTS.

4. PROVIDE RE-CONNECTION OF ELECTRIC HEATING COIL FOR FAN COIL.

- 5. REMOVE DUCT INSULATION REQUIRED FOR INSTALLATION OF NEW UNIT AND DUCT

- 4. DISCONNECT AND REMOVE DUCTWORK AND FLEXIBLE CONNECTIONS.

2. REMOVE PIPING INSULATION TO PERMIT THE INSTALLATION OF ISOLATION VALVES. 3. REMOVE CEILING TILES, LIGHTING, CONDUIT, FIRE PROTECTION PIPING, AND HEADS TO PERMIT THE INSTALLATION OF ISOLATION VALVES.

4. PROVIDE ISOLATION VALVES FOR SUPPLY AND RETURN PIPING AT MAIN RISER OR BRANCH TO PERMIT REPLACEMENT OF FAN COIL UNIT. 5. PROVIDE HOLDING TANK OR TRUCK FOR CHILLED WATER DRAIN DOWN AND RETENTION

DURING FAN COIL REMOVAL AND REPLACEMENT. (TANK OR TRUCK CAPACITY TO BE DETERMINED BASED ON DRAIN DOWN REQUIRED).

6. PROVIDE TESTING OF CHILLED WATER FOR GLYCOL CONTENT, REFILLING OF SYSTEM AND MAKE UP OF GLYCOL AS REQUIRED TO ACHIEVE 30% CONCENTRATION. 7. PROVIDE THE RE-INSTALLATION OF CEILING, LIGHTING, FIRE PROTECTION, CONDUIT, AND PIPING.

So N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
ILLEINDES SEPORTS FACELETIES AUTHORETY
KEY PLAN
ISSUE/REVISION:
REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
PROJECT:
GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE:
MECHANICAL SPECIFICATIONS
DESIGNED BY: DA
CHECKED BY:MSPROJECT NO:21276SCALE:NO SCALE
SHEET NO.
M5.02

11/05/2021		ISSUEI	D FOR BID
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	AMPERE	JB	JUNCTION BOX
ABV	ABOVE	KEC	KITCHEN EQUIPMENT CONTRACTOR
AC	ALTERNATING CURRENT	KO	KNOCKOUT
ACL	ACROSS THE LINE	KS	KEYED SWITCH
ACT AD	ACOUSTICAL CEILING TILE ACCESS DOOR	KVA	KILOVOLT-AMPERE
ADA	AMERICANS WITH DISABILITIES ACT	KW	KILOWATT
ADJ	ADJUSTABLE	KWH	KILOWATT-HOUR
AFF	ABOVE FINISHED FLOOR	L#	LINE
AFCI	ARC FAULT CIRCUIT INTERRUPTER	LCD	LIQUID CRYSTAL DISPLAY
AF	AMP FUSE	LED	LIGHT EMITTING DIODE
AHJ	AUTHORITY HAVING JURISDICTION	LS	LOUD SPEAKER
AIC	AMPERES INTERRUPTING CAPACITY	LTG	LIGHTING
AIEE	AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS	LV	LOW VOLTAGE
AL	ALUMINUM	MAG	MAGNETIC
ALM	ALARM	MAN	MANUAL
ALIVI ALT	ALTERNATE	MAN	MANUAL MATERIAL
ANN	ANNUNCIATOR	MAX	MAXIMUM
AS	AMP SWITCH	MC	MECHANICAL CONTRACTOR
AT	AMP TRIP	MCA	MINIMUM CIRCUIT AMPS
ATS	AUTOMATIC TRANSFER SWITCH	MCB	MAIN CIRCUIT BREAKER
AUTO	AUTOMATIC	MCC	MOTOR CONTROL CENTER
AVC	ABOVE COUNTER	MCCB	MOLDED CASE CIRCUIT BREAKER
AWG	AMERICAN WIRE GAUGE	MCM	THOUSAND CIRCULAR MILLS
BAL	BALLAST	MCS	MOLDED CASE SWITCH
BASC	BUILDING AUTOMATION SYSTEM CONTRACTOR	MECH	MECHANICAL
BGB	BUILDING GROUND BOX	MFR	MANUFACTURER
BHP	BREAK HORSEPOWER	MH	METAL HALIDE
BKR	BREAKER	MICRO	MICROWAVE
С	CONDUIT	MIN	MINIMUM
CAB	CABINET	MISC	MISCELLANEOUS
CAT	CATALOG	MOCP	MAXIMUM OVER CURRENT PROTECTION
CATV	CABLE TELEVISION	MTD	MOUNTED
C.B.	CIRCUIT BREAKER	MTR	MOTOR
CBC	CHICAGO BUILDING CODE	MTS	MANUAL TRANSFER SWITCH
CCTV			MERCURY VAPOR
CCW	COUNTERCLOCKWISE	N,NEUT	NOTIFICATION APPLIANCE CIRCUITS
CD	CANDELA	NAC	
CECO	COMMONWEALTH EDISON COMPANY	NC	NORMALLY CLOSED
CIC	CABLE IN CONDUIT	NEC	NATIONAL ELECTRICAL CODE
СКТ	CIRCUIT	NEMA	NATIONAL ELECTRICAL MANUFACTURERS'
CL	CENTER LINE	NIC	ASSOCIATION
CLG	CEILING		NOT IN CONTRACT
CLK	CLOCK	NL	NIGHT LIGHT
CLO	CLOSET	NO	NORMALLY OPENED
CLSD	CLOSED	NTS	NOT TO SCALE
COAX	COAXIAL	OCP	OVER CURRENT PROTECTION
COL	COLUMN	OL	OVERLOAD
СОМ	COMMON	OVHD	OVERHEAD
COMED	COMED COMPANY	P	POLES
CONC	CONCRETE	PA	PUBLIC ADDRESS
СТ	CURRENT TRANSFORMER	PB	PULL BOX
CU	COPPER	PE	PROFESSIONAL ENGINEER
C.U.	COEFFICIENT OF UTILIZATION	PCU	PACKAGED CONTROL UNIT
CUH	CABINET UNIT HEATER	PH	PHASE
CW	CLOCKWISE	PL	PROPERTY LINE
DB	DECIBEL	PNL	PANEL
DC	DIRECT CURRENT	PRI	PRIMARY
DEG	DEGREE	PROT.	PROTECTION OR PROTECTIVE
DEMO	DEMOLITION	PT	POTENTIAL TRANSFORMER
DN	DOWN	PTD	PAINTED
DO	DRAW OUT	PVC	POLYVINYL CHLORIDE (ELECTRIC GRADE)
DPDT	DOUBLE POLE DOUBLE THROW	PWR	POWER
DPST	DOUBLE POLE SINGLE THROW	QTY	QUANTITY
DS	DISCONNECT SWITCH	R	RESISTANCE
DT	DUST TIGHT	RC	REMOTE CONTROL
DW	DISHWASHER	RCP	REFLECTED CEILING PLAN
DWG	DRAWING	REF	REFRIGERATOR
ELARA	ELARA ENGINEERING	REV	REVERSE OR REVISION
EA	EACH	RECP	RECEPTACLE
EC	ELECTRICAL CONTRACTOR	RM	ROOM
EF	EXHAUST FAN	RMC	RIGID METAL CONDUIT (GALVANIZED)
EHD	ELECTRIC HAND DRYER	RMS	ROOT MEAN SQUARE
ELEC	ELECTRIC	RT	RAIN TIGHT
ELEV	ELEVATOR	RTG	RATING
EM	EMERGENCY	RVNR	REDUCED VOLTAGE NON-REVERSING
EMT	ELECTRIC METALLIC TUBING (THIN WALL CONDUIT)	RVR	REDUCED VOLTAGE REVERSING
ENG	ENGINEER	S	SWITCH
EP	EXPLOSION PROOF	SEC	SECONDARY
EPO	ELECTRIC POWER OFF	SC	SHORT CIRCUIT
EQ	EQUIPMENT	SCH SF	SCHEDULE SQUARE FOOT
ER# EUH	EXISTING TO RELOCATE ELECTRIC UNIT HEATER	SP	SINGLE POLE
EWC	ELECTRIC WATER COOLER	SPC	SINGLE POINT CONNECTION
EWH	ELECTRIC WALL HEATER	SPDT	SINGLE POLE DOUBLE THROW
EX	EXISTING TO REMAIN	SPEC	SPECIFICATION
EXT	EXTERIOR	SPKR	SPEAKER
F	FUSE	SPST	SINGLE POLE SINGLE THROW
FA	FIRE ALARM	SS	STAINLESS STEEL
FB	FLOOR BOX	STA	STATION
FC	FOOTCANDLE	STD	STANDARD
FDC	FIRE DEPARTMENT CONNECTION	SW	SWITCH
FDR	FEEDER	SWBD	SWITCHBOARD
FF	FINISHED FLOOR	SWGR	SWITCHGEAR
FIXT	LIGHT FIXTURE	SYM	SYMMETRICAL
FLA	FULL LOAD AMPS	SYS	SYSTEM
FLUOR	FLUORESCENT	Т	TRIP
FPB	FAN POWERED BOX	TC	TERMINAL CABINET
FS	FUSED SWITCH	TEL	TELEPHONE
FT	FEET	TEL.CL.	TELEPHONE CLOSET
FURN	FURNITURE	TEMP	TEMPORARY
FVNR	FULL VOLTAGE NON-REVERSING	TERM.	TERMINAL
FVR	FULL VOLTAGE REVERSING	TL	TWIST LOCK
FWD	FORWARD	TRF	TRANSFORMER
G,GRD	GROUND	TS	TIME SWITCH
GALV	GALVANIZED	TTC	TELEPHONE TERMINAL CABINET
GC	GENERAL CONTRACTOR	TV	TELEVISION
GEN	GENERATOR	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TYP	TYPICAL
GHW	GALVANIZED HEAVY WALL STEEL CONDUIT	UG	UNDERGROUND
H	HOT	UH	UNIT HEATER
HD	HEAVY DUTY	UL	UNDERWRITER'S LABORATORIES
HDCP	HANDICAPPED	UNG	UNGROUNDED
hgb	HOGAN GROUND BOX	UNO	UNLESS NOTED OTHERWISE
Hid	HIGH INTENSITY DISCHARGE	UPS	UNINTERRUPTIBLE POWER SUPPLY
HOA	HANDS-OFF-AUTO	V	VOLT
HP	HORSEPOWER	VA	VOLT-AMPERE
HPS	HIGH PRESSURE SODIUM	VFD	VARIABLE FREQUENCY DRIVE
HTR	HEATER	VIF	VERIFY IN FIELD
HV	HIGH VOLTAGE	VP	VAPOR PROOF
HZ	HERTZ (CYCLES/SECOND)	VT	VAPOR TIGHT
I	CURRENT	W	WATT OR WIRE (DEPENDING ON CONTEXT)
IC	INTERRUPTING CAPACITY	W/D	WASHER DRYER
IG	ISOLATED GROUND	WG	WIRE GUARD
IMC	INTERMEDIATE GRADE CONDUIT	W/O	WITHOUT
IN	INCH	WP	WEATHERPROOF
INC	INCANDESCENT	WT	WATER TIGHT
INFO	INFORMATION	X	DEMOLISH EXISTING
INSUL	INSULATION	XFMR	TRANSFORMER
ISC	INSTANTANEOUS SHORT CIRCUIT	YR	YEAR

SHEET LIST TABLE

Sheet Number	Sheet Title
E0.01	ELECTRICAL TITLE SHEET
ED1.01	ELECTRICAL DEMOLITION PLAN - CONCOURSE OVERALL
ED1.02	ELECTRICAL DEMOLITION PLANS - CONCOURSE ENLARGED PLANS
ED1.03	ELECTRICAL DEMOLITION PLAN - 100 LEVEL OVERALL
ED1.04	ELECTRICAL DEMOLITION PLANS - 100 LEVEL ENLARGED PLANS
ED1.05	ELECTRICAL DEMOLITION PLAN - 200 LEVEL OVERALL
ED1.06	ELECTRICAL DEMOLITION PLANS - 200 LEVEL ENLARGED PLANS
ED1.07	ELECTRICAL DEMOLITION PLAN - 300 LEVEL OVERALL
ED1.08	ELECTRICAL DEMOLITION PLANS - 300 LEVEL ENLARGED PLANS
ED1.09	ELECTRICAL DEMOLITION PLAN - 500 LEVEL OVERALL
ED1.10	ELECTRICAL DEMOLITION PLANS - 500 LEVEL ENLARGED PLANS
E1.01	ELECTRICAL NEW WORK PLAN - CONCOURSE LEVEL OVERALL
E1.02	ELECTRICAL NEW WORK PLANS - CONCOURSE LEVEL ENLARGED PLAN
E1.03	ELECTRICAL NEW WORK PLAN - 100 LEVEL OVERALL
E1.04	ELECTRICAL NEW WORK PLANS - 100 LEVEL ENLARGED PLANS
E1.05	ELECTRICAL NEW WORK PLAN - 200 LEVEL OVERALL
E1.06	ELECTRICAL NEW WORK PLANS - 200 LEVEL ENLARGED PLANS
E1.07	ELECTRICAL NEW WORK PLAN - 300 LEVEL OVERALL
E1.08	ELECTRICAL NEW WORK PLANS - 300 LEVEL ENLARGED PLANS
E1.09	ELECTRICAL NEW WORK PLAN - 500 LEVEL OVERALL
E1.10	ELECTRICAL NEW WORK PLANS - 500 LEVEL ENLARGED PLANS
E2.01	ELECTRICAL SCHEDULES
E3.01	ELECTRICAL SPECIFICATIONS

PROJECT GENERAL NOTES

. FURNISH AND INSTALL POWER TO ALL HVAC EQUIPMENT PER MANUFACTURER'S REQUEST. EC SHALL COORDINATE WITH MANUFACTURER FOR ALL NEW HVAC EQUIPMENT.

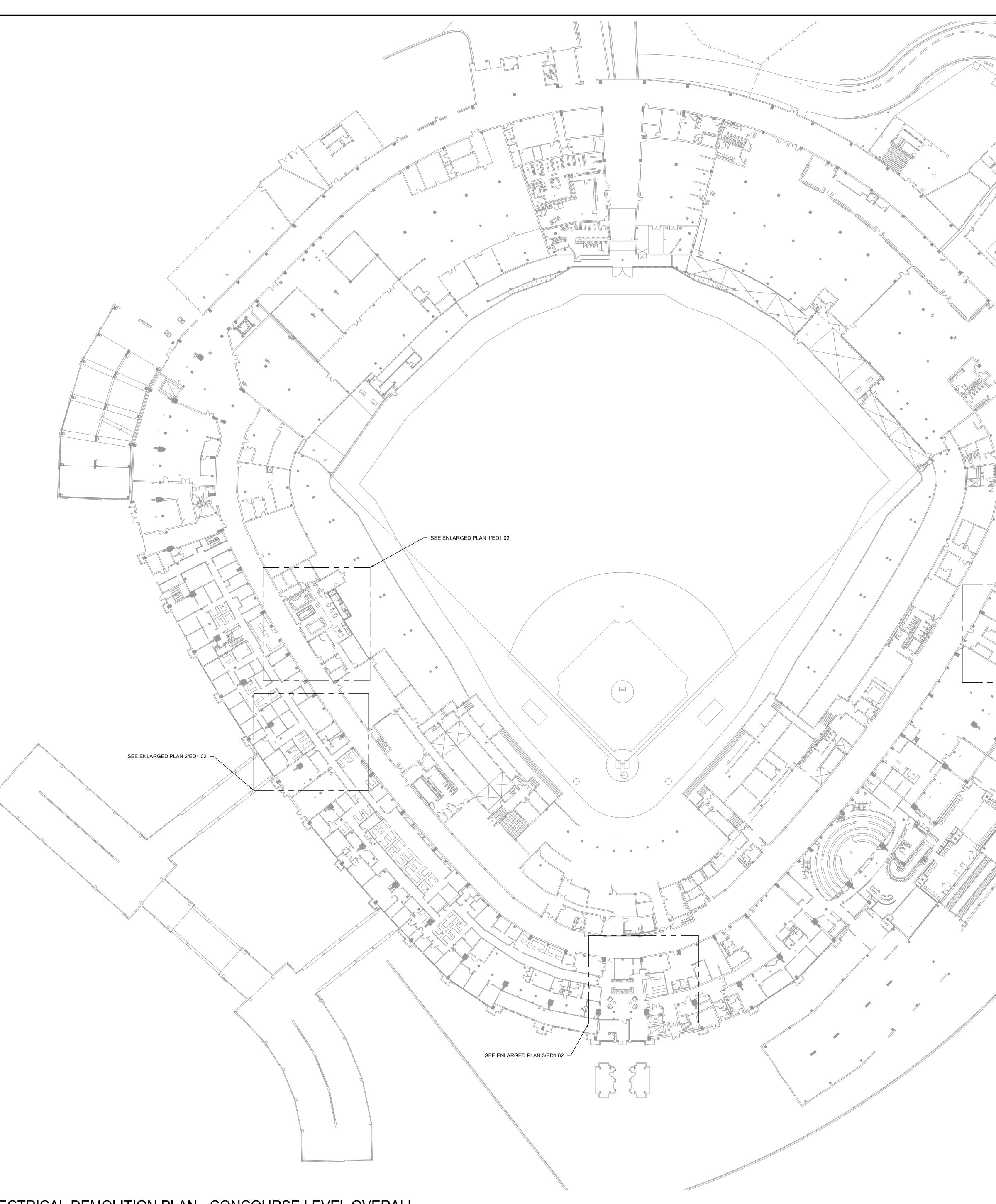
2. EC SHALL CONFIRM ALL REQUIREMENTS FOR NEW MECHANICAL EQUIPMENT AND PROVIDE THE NECESSARY ELECTRICAL EQUIPMENT REQUIRED. EC SHALL CONFIRM ALL OCPD MATCH THAT OF WHAT IS REQUIRED BY THE MANUFACTURER. EC SHALL NOTIFY ENGINEER IF ANY DISCREPANCIES ARE DISCOVERED.

NS	
D PLANS	
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	n.
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POWER SYMBOLS		
J [%]	JUNCTION BOX WITH SWITCH	
	PANELBOARD	
	DISTRIBUTION PANEL, SWITCHGEAR, OR OTHER CABINET (AS NOTED)	
T	TRANSFORMER	
HP	MOTOR ("XX" DENOTES HORSEPOWER)	
	MOTOR STARTER (FVNR)	
	NON-FUSED DISCONNECT SWITCH	
	FUSED DISCONNECT SWITCH	
	COMBINATION STARTER WITH FUSE DISCONNECT SWITCH	
<u>d</u> y	VFD WITH INTEGRAL FUSE AND DISCONNECT SWITCH	
	VFD WITH INTEGRAL CIRCUIT BREAKER	
	ELECTRICAL METER (UTILITY)	
$ \rightarrow$	CONTINUATION	
—o	UP	
└ _●	DOWN	
NOTE: NOT AL	L SYMBOLS LISTED ABOVE MAY BE USED OR APPEAR IN THESE DRAWINGS.	

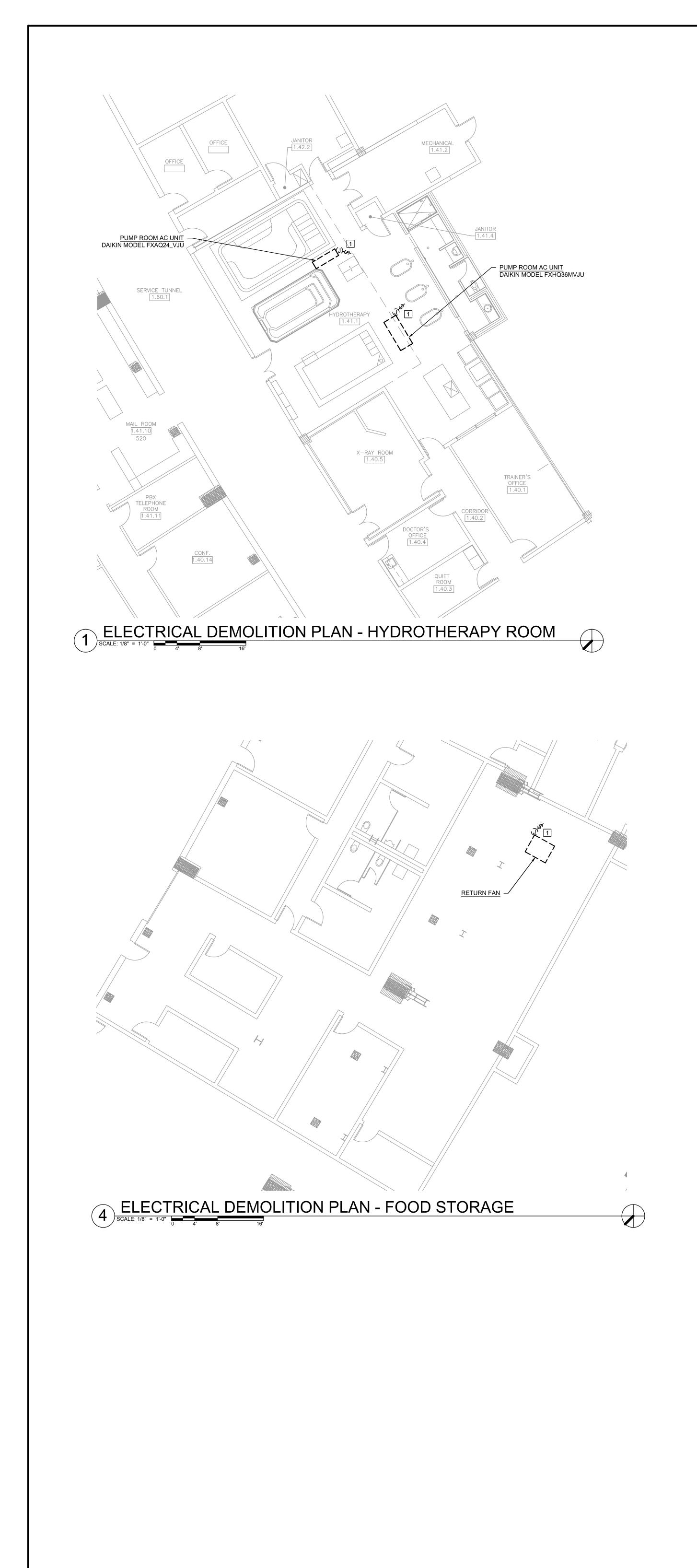
ELARA 30 N. Wolf Rd., Second Floor Hillside II. 60162
Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
ILLINOIS SPORTS FACILITIES AUTIDORITY
KEY PLAN
ISSUE/REVISION: REV. DATE DESCRIPTION
- 11/05/21 ISSUED FOR BID
PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616
CHICAGO, ILLINOIS 60616 DRAWING TITLE: ELECTRICAL TITLE SHEET
DESIGNED BY: TG
CHECKED BY:BTPROJECT NO:21276SCALE:NO SCALE
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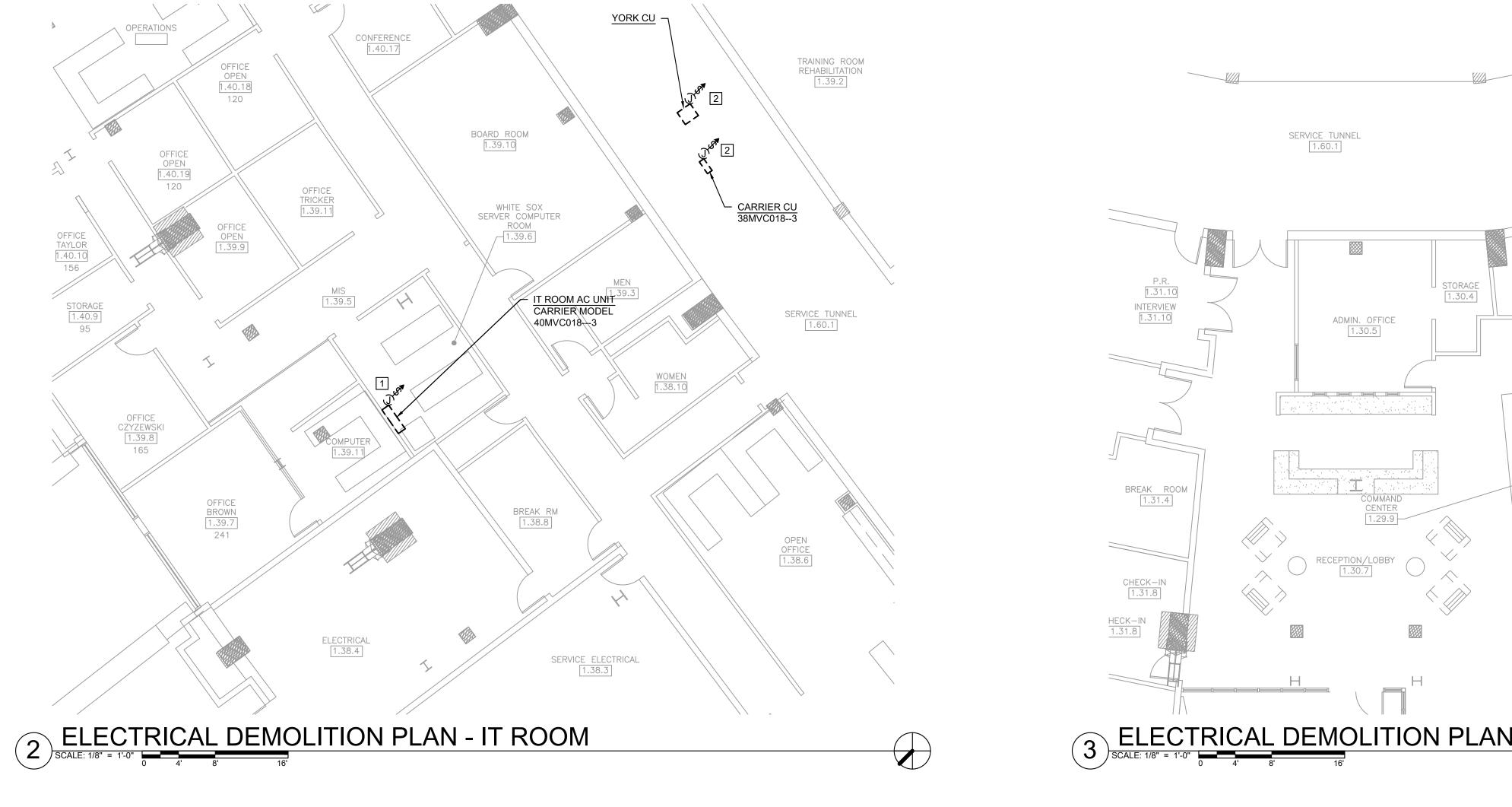
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1 ELECTRICAL DEMOLITION PLAN - CONCOURSE LEVEL OVERALL

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	`+ +	ELÂRA
	°+	30 N. Wolf Rd., Second Floor Hillside, IL 60162
	++	Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
		(708) 236-0330 FAX
		ILLINOIS SPORTS
		FACILITIES AUTHORITY
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SEE ENLARGED PLAN 4	ED1.02	
		KEY PLAN
		ISSUE/REVISION: REV. DATE DESCRIPTION
		- 11/05/21 ISSUED FOR BID
		PROJECT: GUARANTEED RATE FIELD -
		HVAC REPLACEMENT PHASE XI
	_	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
		ELECTRICAL DEMOLITION PLAN - CONCOURSE OVERALL
		DESIGNED BY: TG
		CHECKED BY:BTPROJECT NO:21276
		SCALE: 1/32" = 1'-0"
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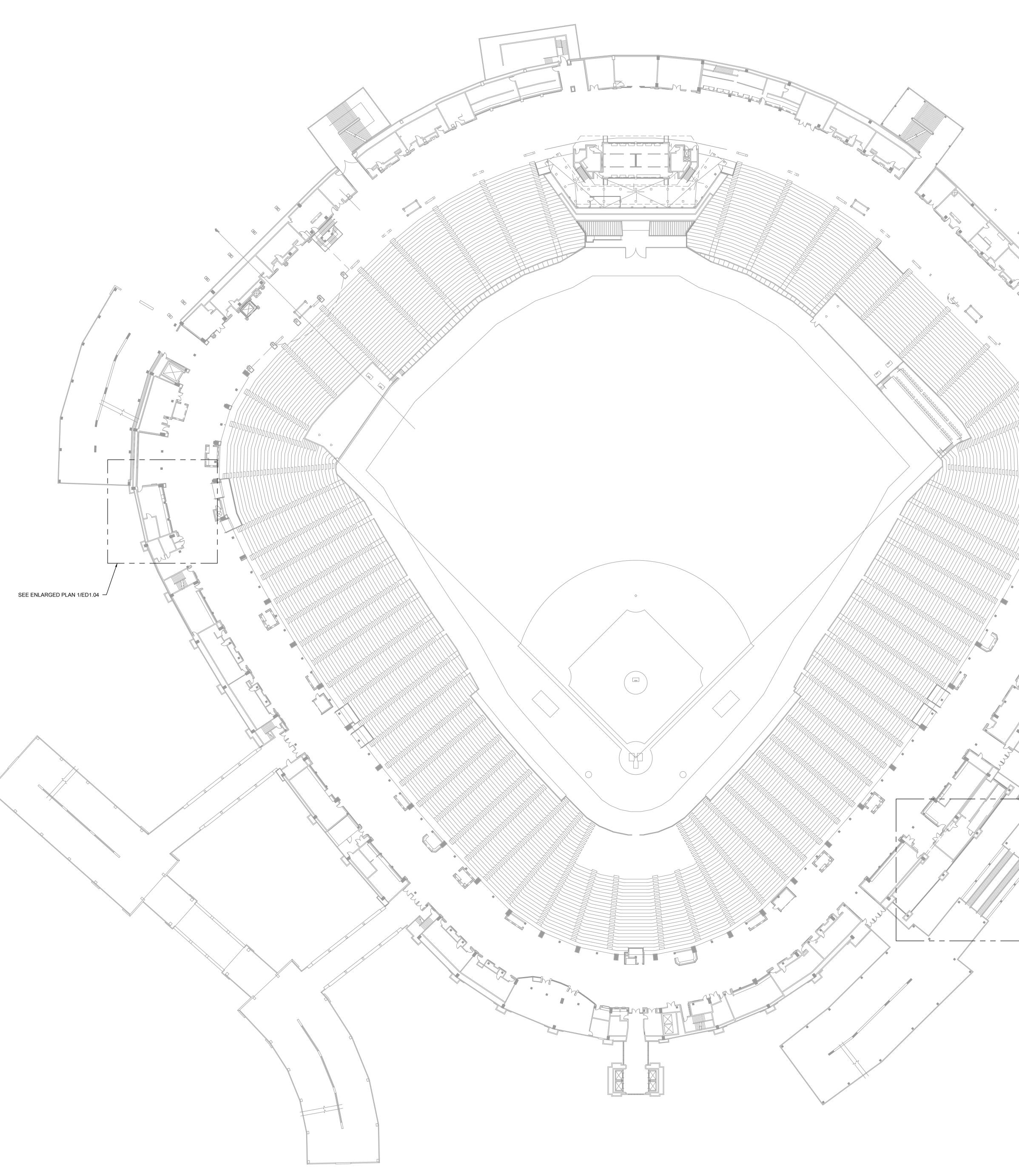




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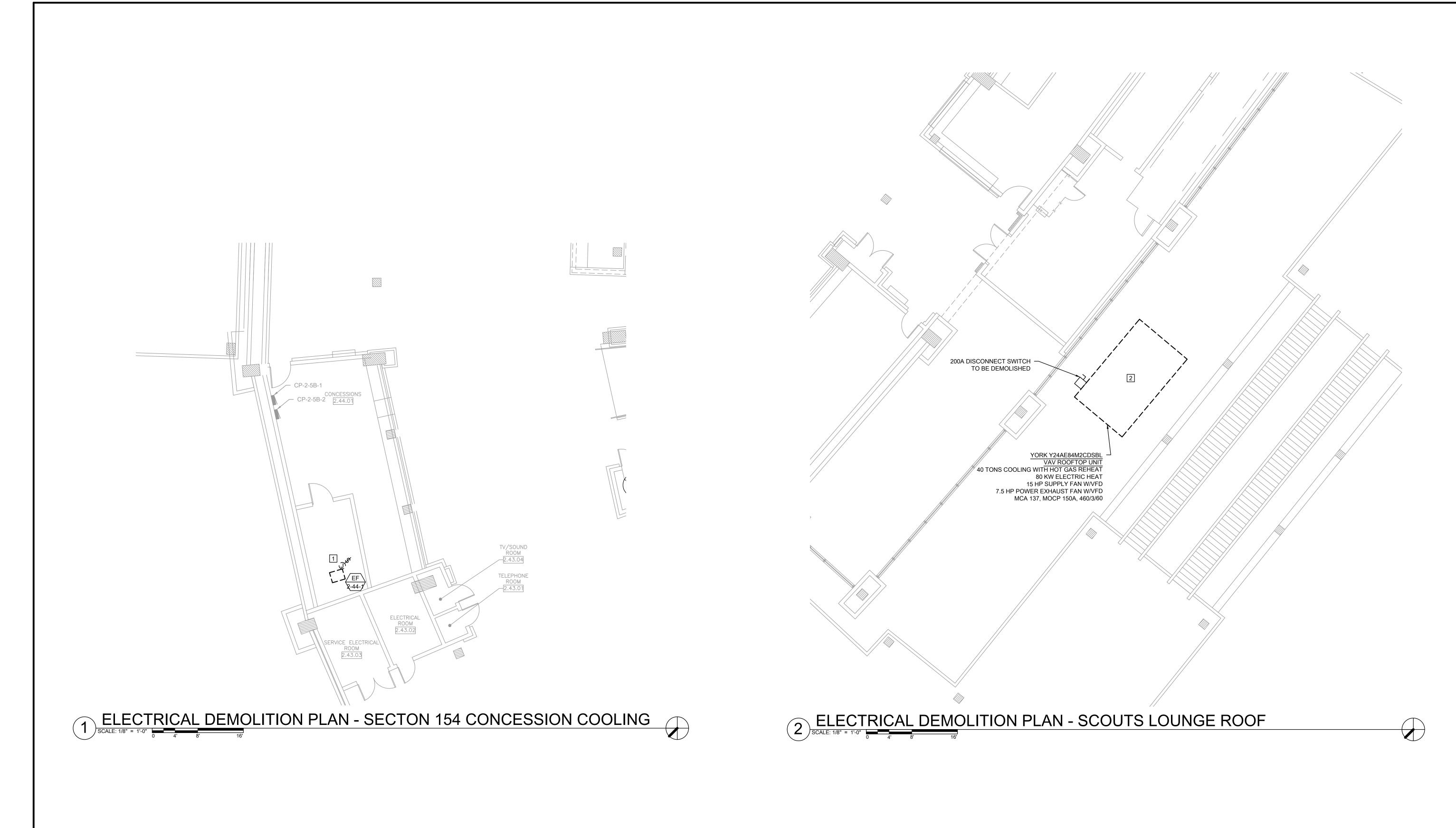
- 1. DISCONNECT AND REMOVE POWER FOR MECHANICAL EQUIPM EXISTING CONDUIT AND WIRES FOR INSTALLATION OF NEW ME
- 2. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANIC CONDUIT AND WIRES COMPLETELY FROM THE SOURCE.

SECURITY	SON. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
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WOMEN'S TOLLET 1.29.4 CORRIDOR 1.28.10 TV/SOUND 1.29.8 H	
N - COMMAND CENTER	
MECHANICAL EQUIPMENT IN THE NEW WORK.	
	KEY PLAN VIEW 1
	VIEW 2 VIEW 2 VIEW 2 VIEW 3 ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: ELECTRICAL DEMOLITION PLANS - CONCOURSE ENLARGED PLANS
5/2021 ISSUED FOR BID RELIMINARY - NOT FOR CONSTRUCTION	DESIGNED BY: TG CHECKED BY: BT PROJECT NO: 21276 SCALE: 1/8" = 1'-0" SHEET NO. ED1.02



DELECTRICAL DEMOLITION PLAN - 100 LEVEL OVERALL

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	(708) 236-0300 (708) 236-0330 FAX
	<u>L'ELLA</u> ILLINOIS SPORTS
	FACILITIES AUTIIORITY
	KEY PLAN
SEE ENLARGED PLAN 2/ED1.04	
	ISSUE/REVISION:
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
\frown	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: ELECTRICAL DEMOLITION PLAN - 100 LEVEL OVERALL
	DESIGNED BY: TG
	DESIGNED BY:TGCHECKED BY:BTPROJECT NO:21276
	SCALE: 1/32" = 1'-0" SHEET NO. 1/32" = 1'-0"
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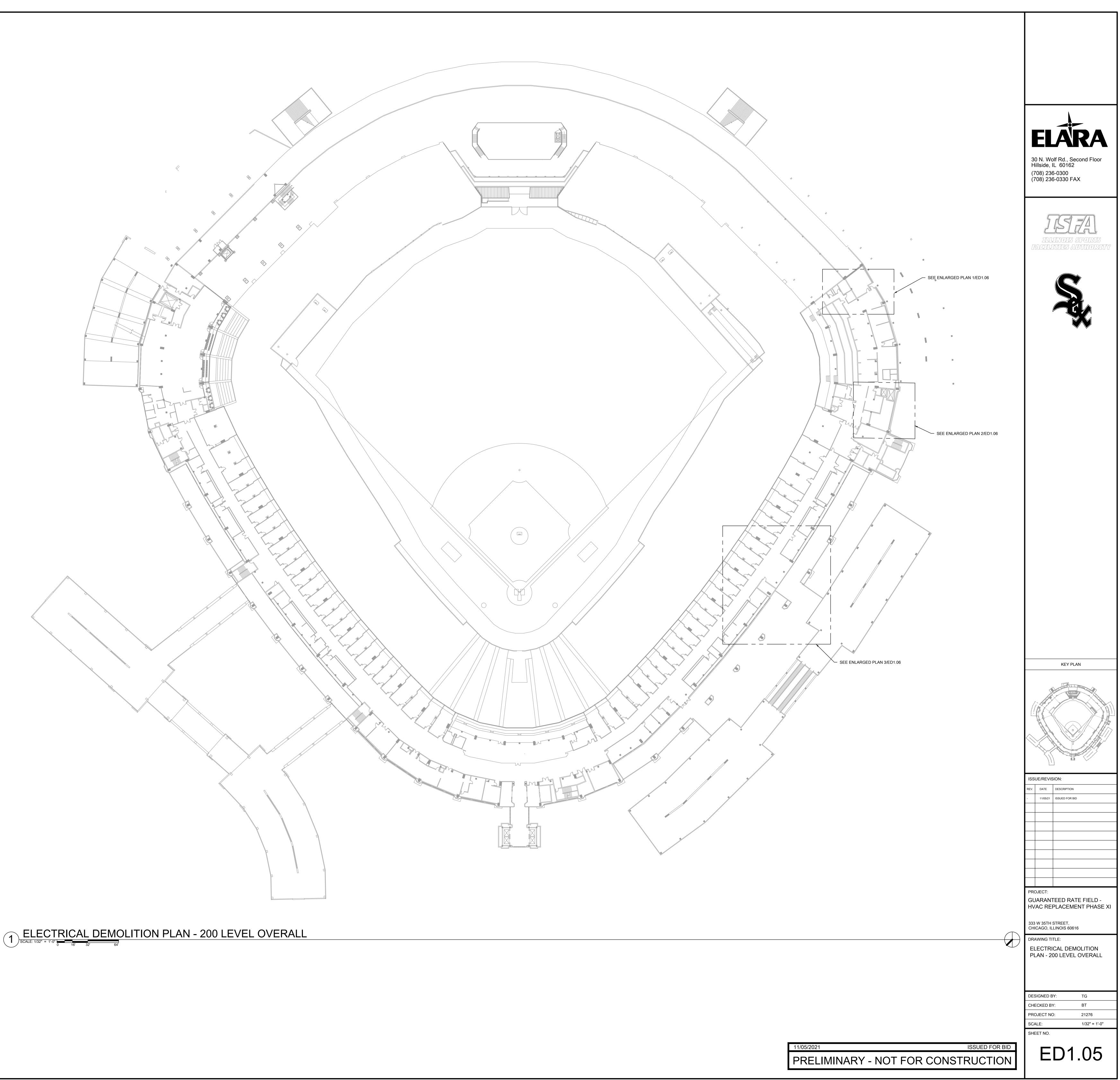


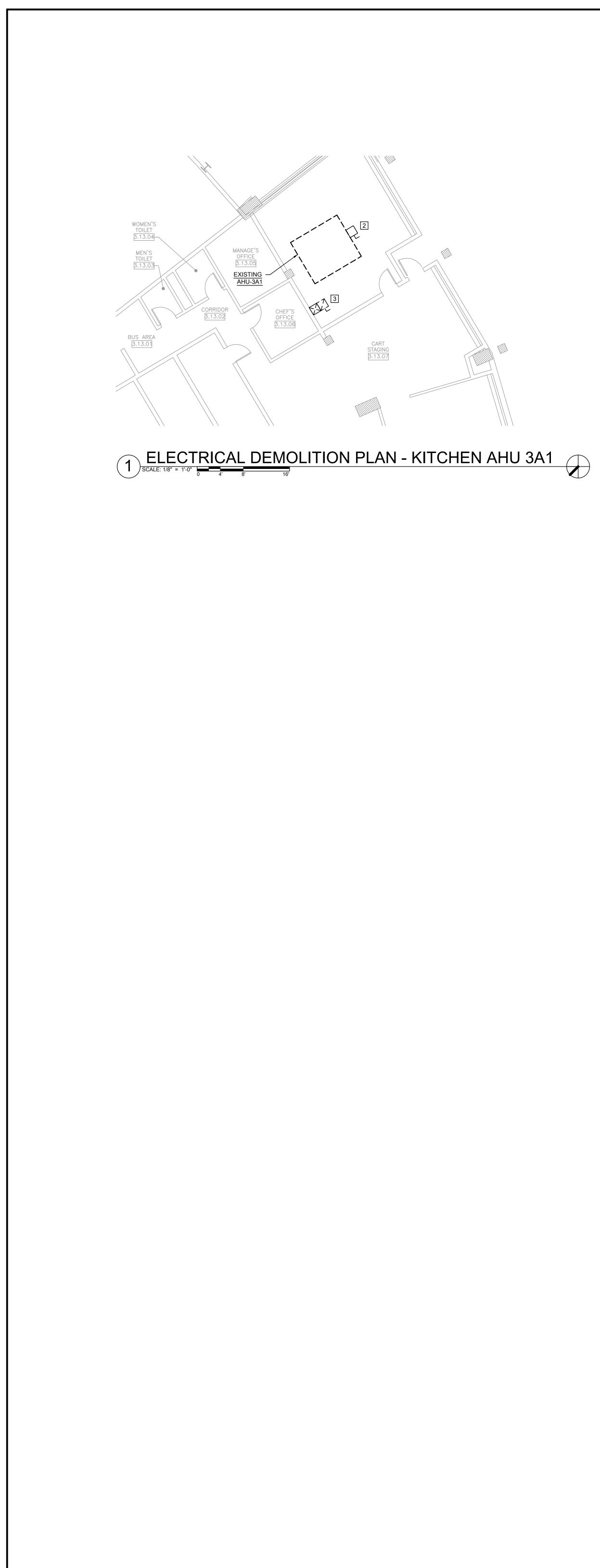
KEYED ELECTRICAL DEMOLITION SHEET NOTES # 1. DISCONNECT AND REMOVE POWER FOR MECHANICAL EQUIPMENT SHOWN. EC SHALL MAINTAIN EXISTING BRANCH CIRCUIT AND EXISTING CONDUIT AND WIRES FOR INSTALLATION OF NEW MECHANICAL EQUIPMENT IN THE NEW WORK. 2. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE EXISTING DISCONNECT SWITCH MOUNTED ON THE EXISTING ROOFTOP UNIT. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT TO THE SLAB FOR NEW ROOFTOP UNIT. REFER TO THE NEW WORK FOR MORE INFORMATION.

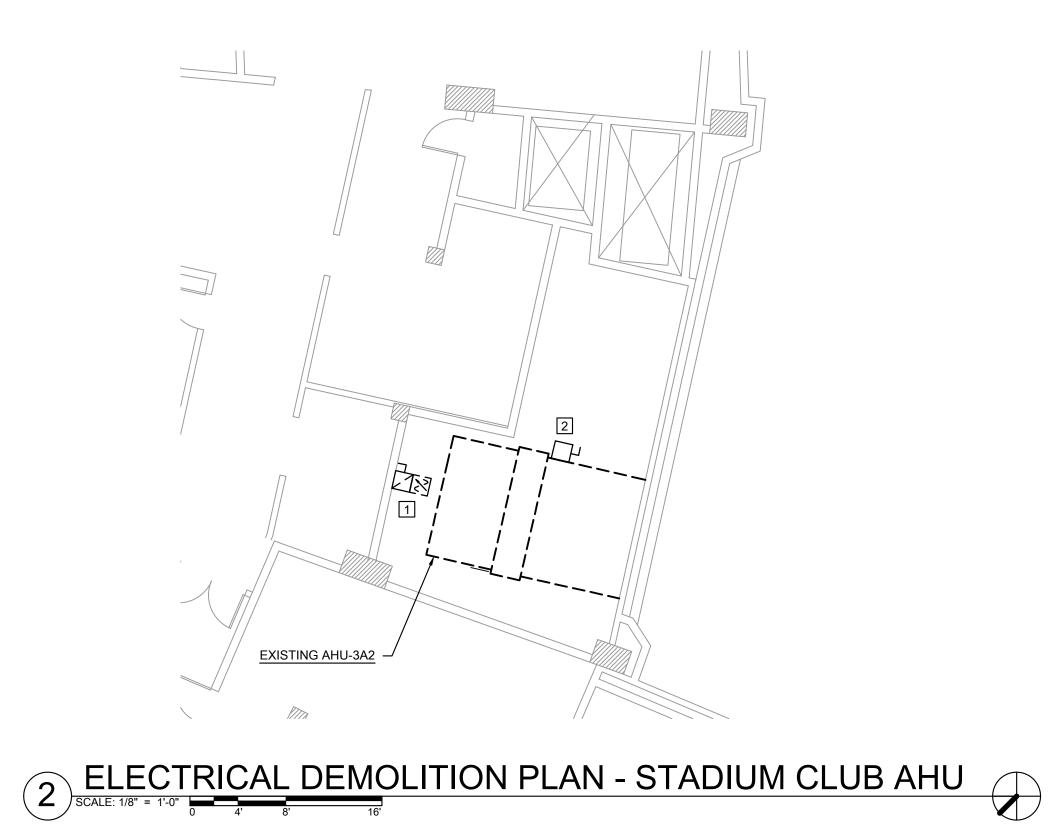


ELARA
30 N. Wolf Rd., Second Floor Hillside, IL 60162
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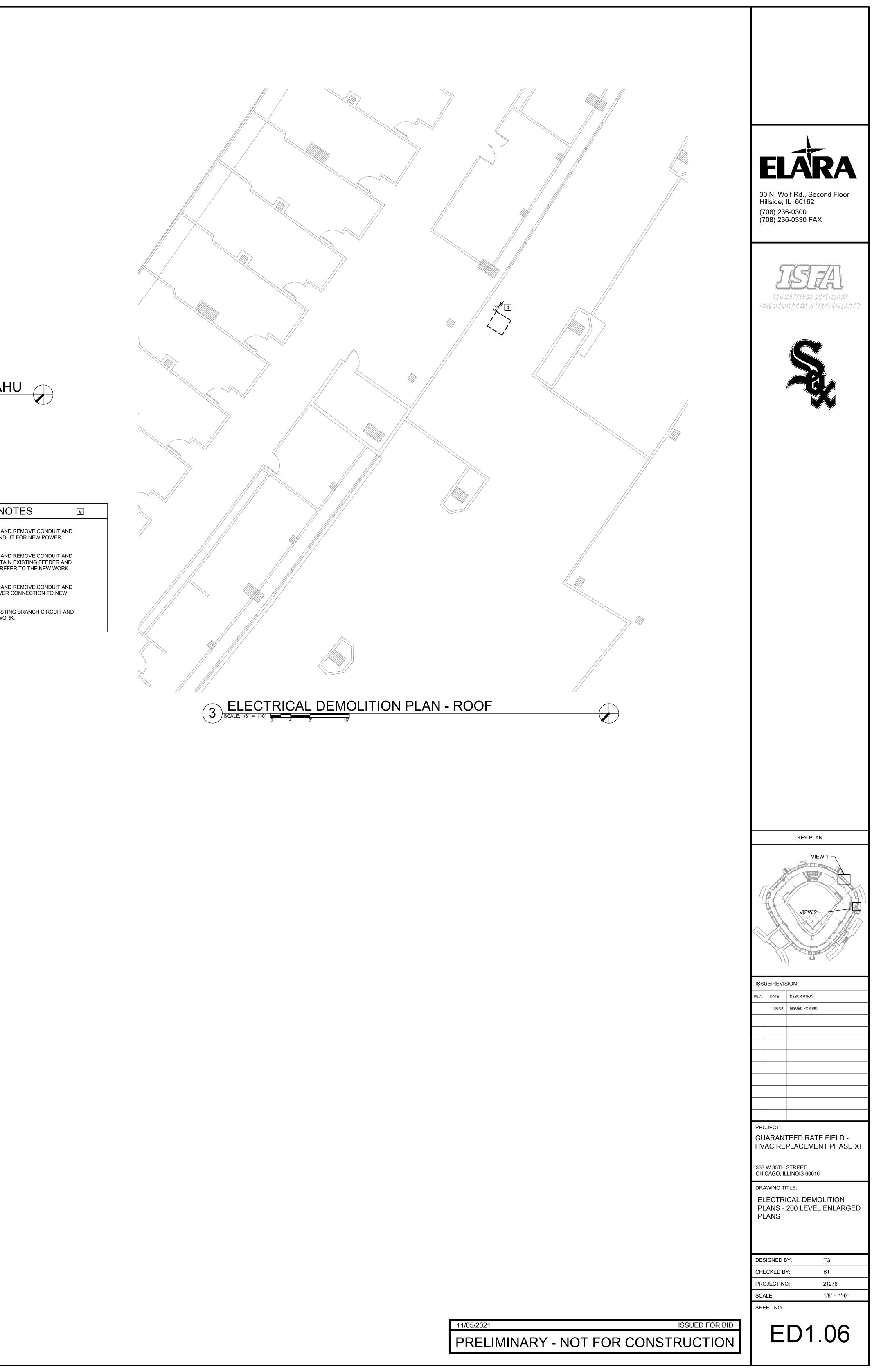


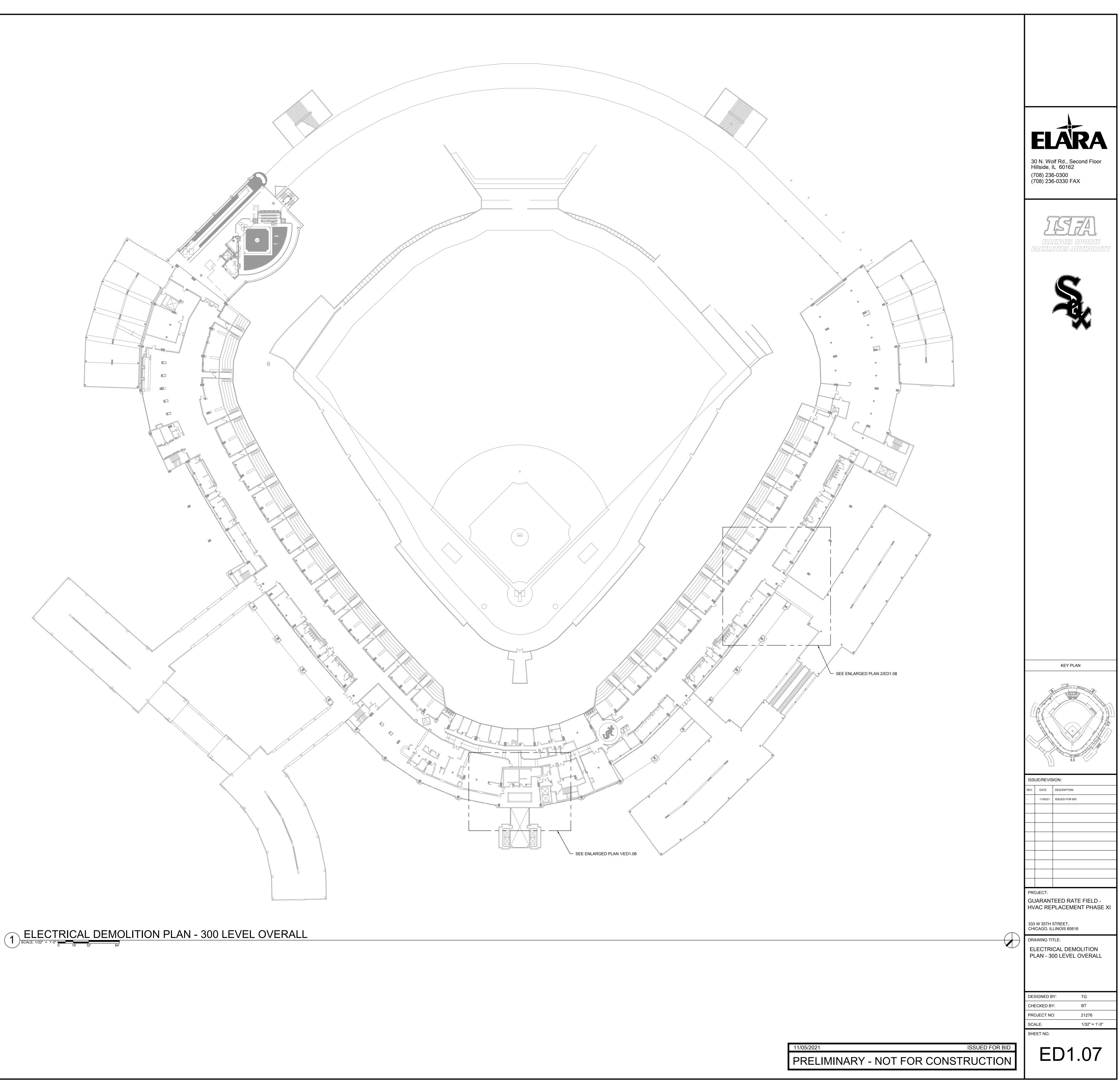


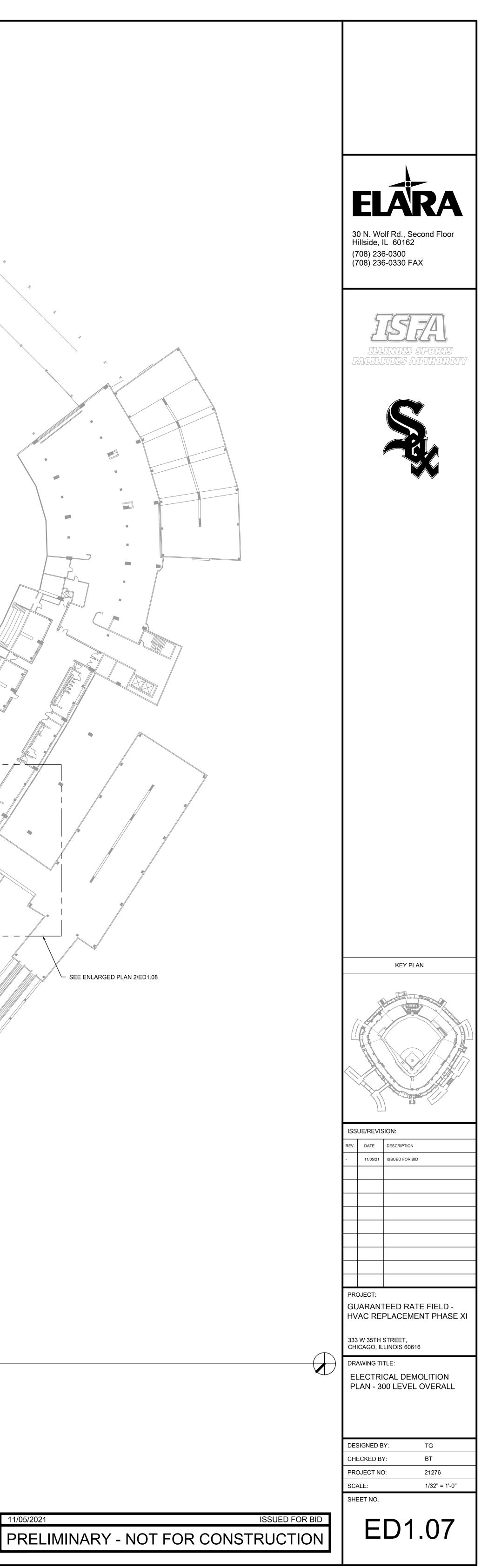


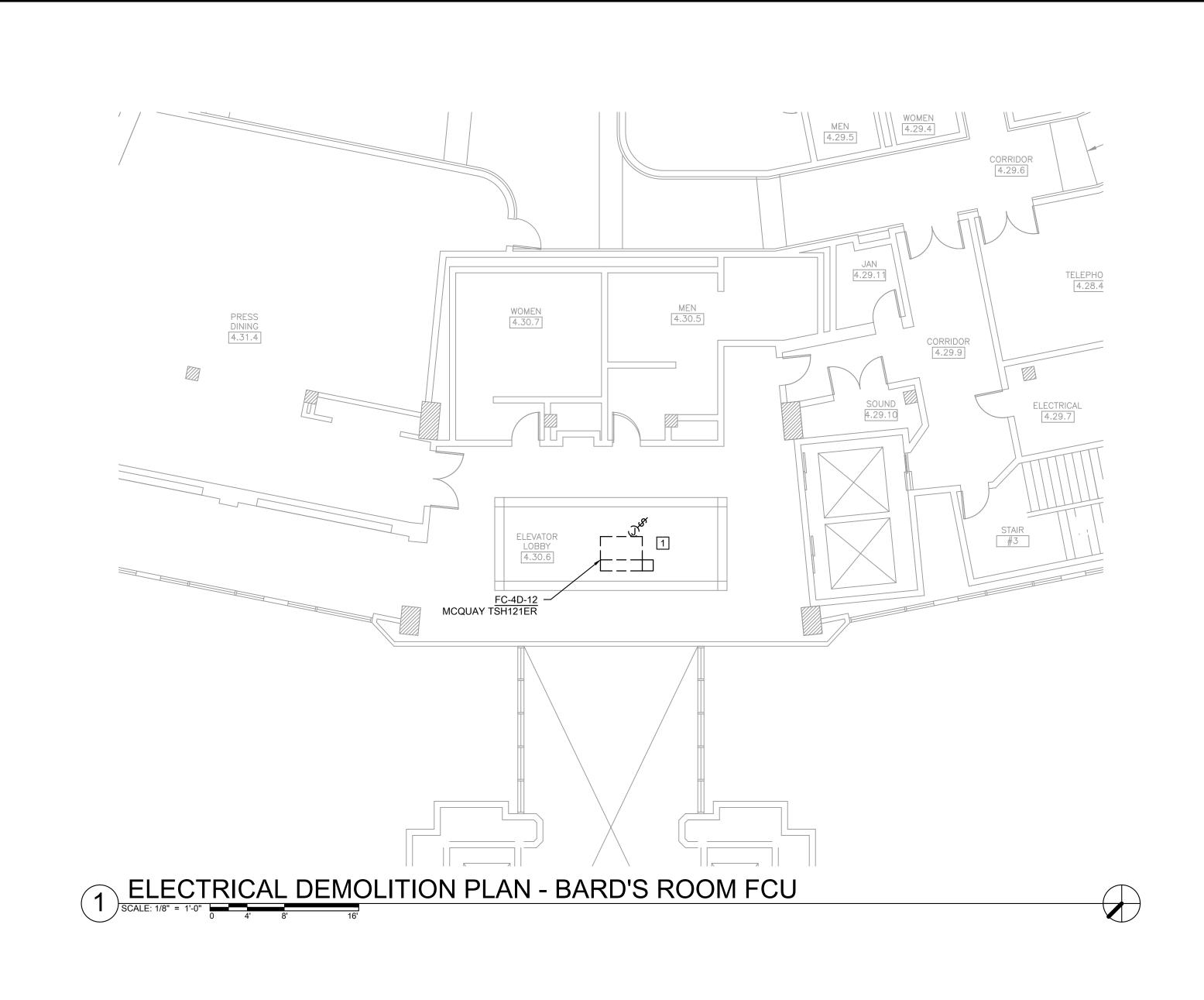
KEYED ELECTRICAL DEMOLITION SHEET NOTES

- 1. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE VARIABLE FREQUENCY DRIVE. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT FOR NEW POWER CONNECTION TO NEW VFD. REFER TO THE NEW WORK FOR MORE INFORMATION.
- 2. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE EXISTING DISCONNECT SWITCH FOR ELECTRIC HEATING COIL. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT FOR NEW POWER CONNECTION TO NEW ELECTRIC HEATING COIL DISCONNECT SWITCH. REFER TO THE NEW WORK FOR MORE INFORMATION.
- 3. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE STARTER. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT FOR NEW POWER CONNECTION TO NEW VFD. REFER TO THE NEW WORK FOR MORE INFORMATION.
- 4. DISCONNECT AND REMOVE POWER FOR MECHANICAL EQUIPMENT SHOWN. EC SHALL MAINTAIN EXISTING BRANCH CIRCUIT AND EXISTING CONDUIT AND WIRES FOR INSTALLATION OF NEW MECHANICAL EQUIPMENT IN THE NEW WORK.







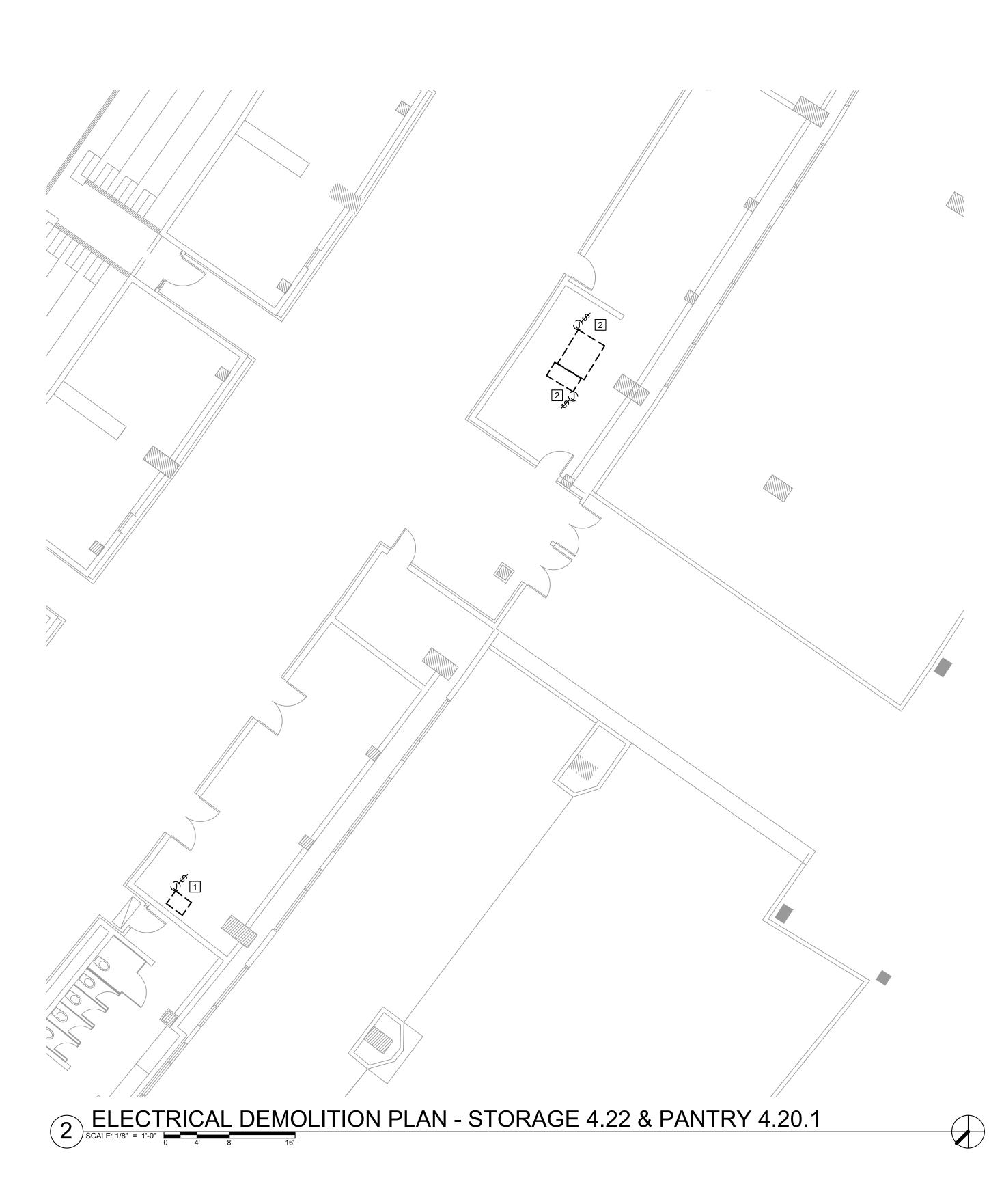


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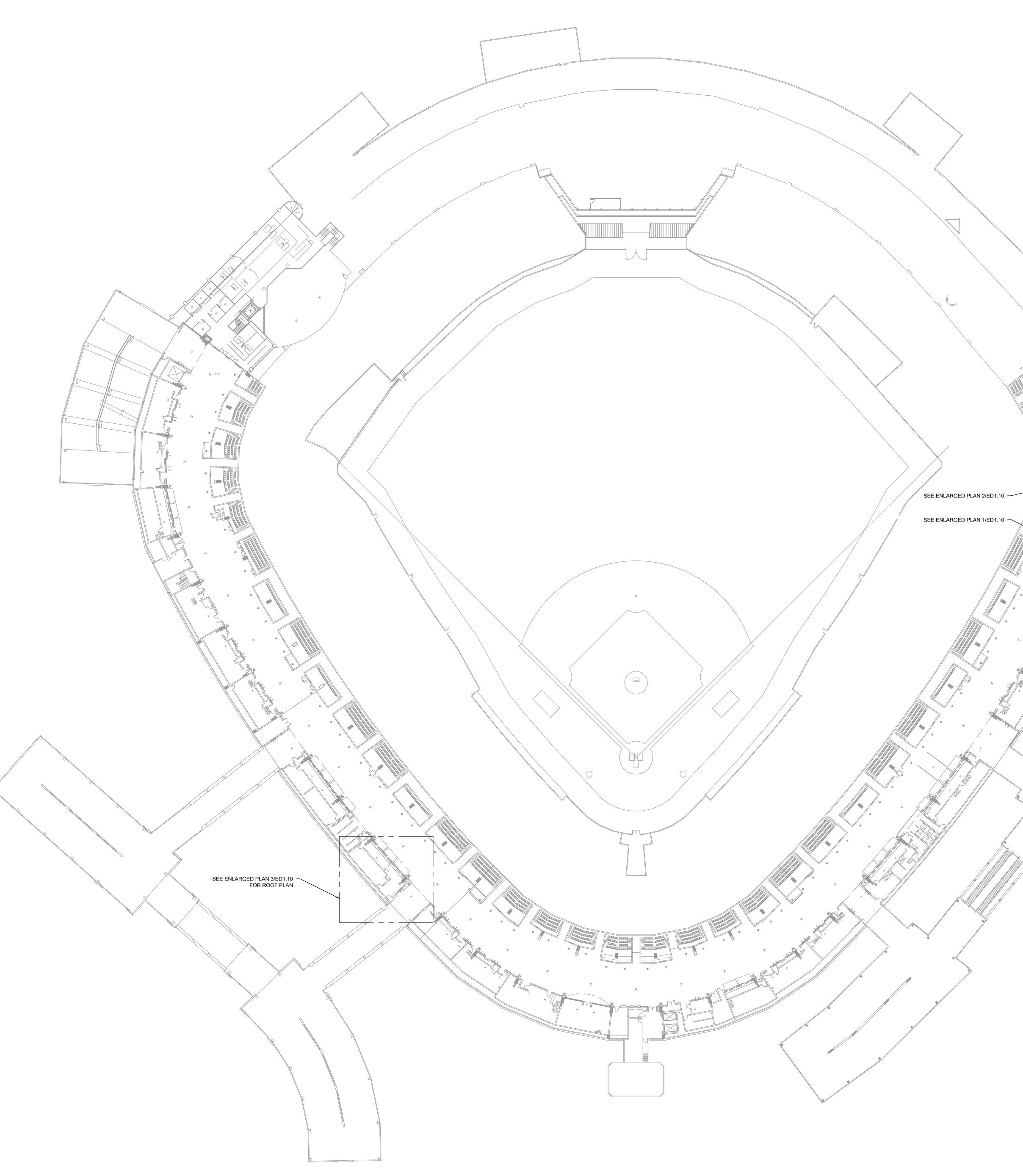
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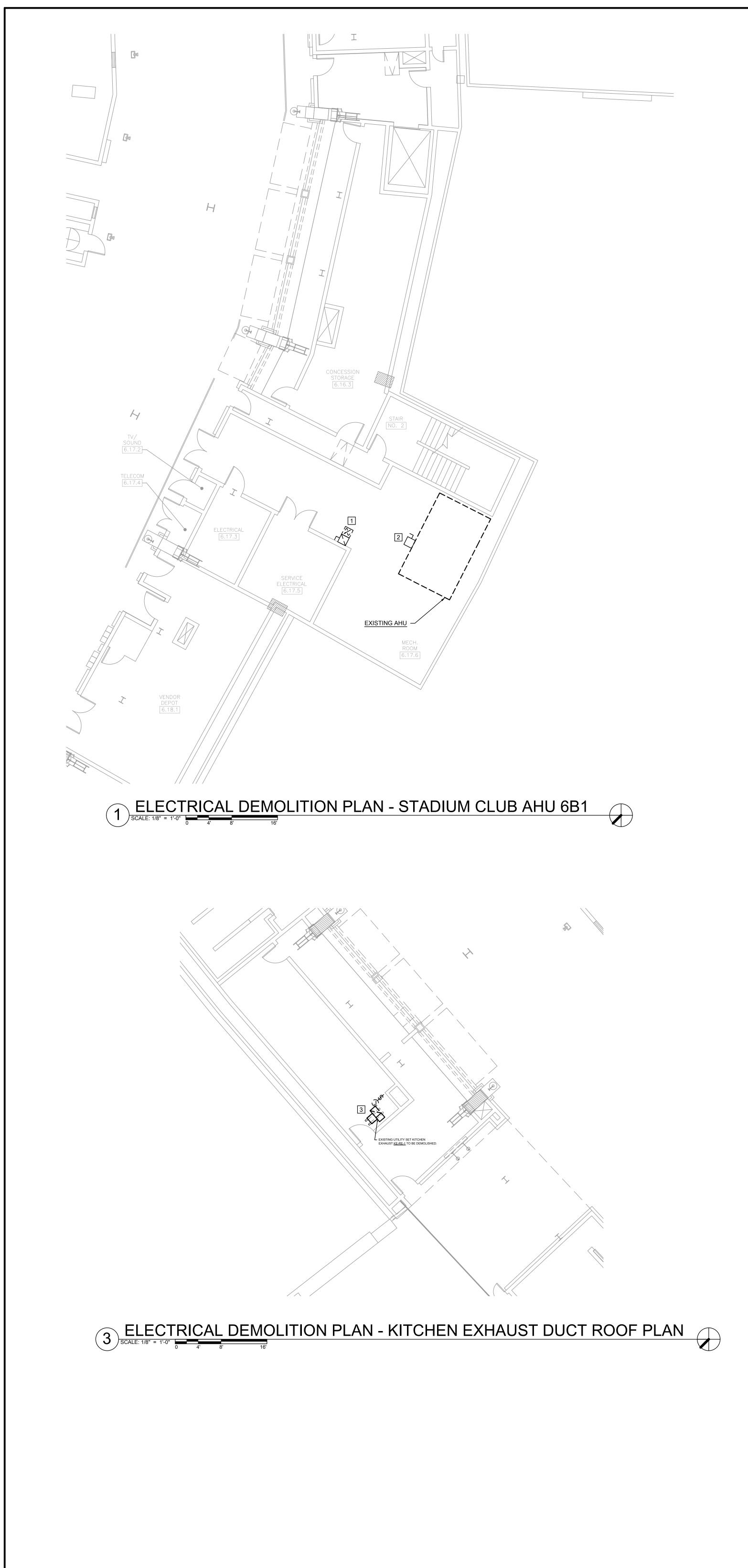
	ELÄRA
	30 N. Wolf Rd., Second Floor
	Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
	(100) 200 0000 1700
	LESTAL ILLINOIS SPORTS
	FAGILITIES AUTHORITY
	KEY PLAN
	VIEW 2
	VIEW 1
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE:
	ELECTRICAL DEMOLITION PLANS - 300 LEVEL ENLARGED
	PLANS
	DESIGNED BY: TG
	CHECKED BY:BTPROJECT NO:21276
	SCALE: 1/8" = 1'-0" SHEET NO.
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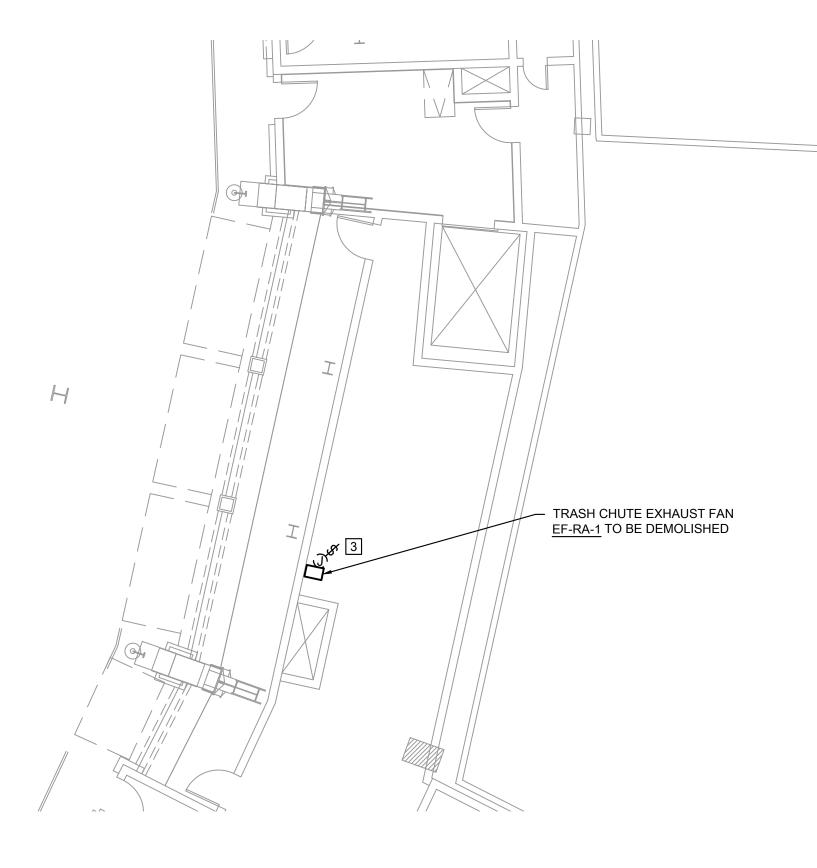
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ELECTRICAL DEMOLITION PLAN - 500 LEVEL OVERALL

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2 ELECTRICAL DEMOLITION PLAN - TRASH CHUTE EXHAUST ROOF PLAN

1. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE VARIABLE FREQUENCY DRIVE. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT FOR NEW POWER CONNECTION TO NEW VFD. REFER TO THE NEW WORK FOR MORE INFORMATION. 2. DISCONNECT AND REMOVE EXISTING POWER FOR MECHANICAL EQUIPMENT SHOWN. DISCONNECT AND REMOVE CONDUIT AND WIRES BACK TO THE EXISTING DISCONNECT SWITCH FOR ELECTRIC HEATING COIL. EC SHALL MAINTAIN EXISTING FEEDER AND CONDUIT FOR NEW POWER CONNECTION TO NEW ELECTRIC HEATING COIL DISCONNECT SWITCH. REFER TO THE NEW WORK FOR MORE INFORMATION.

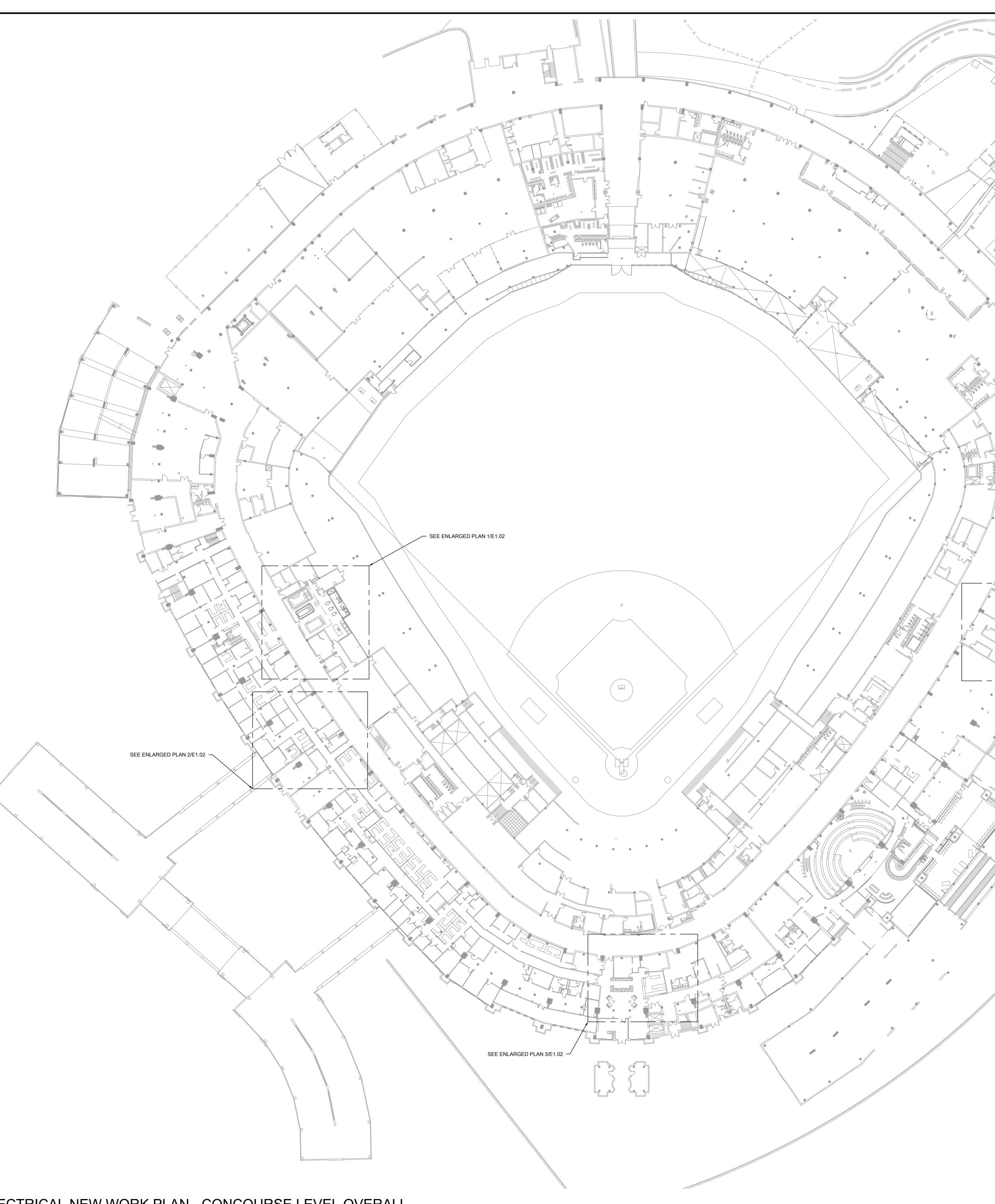
3. DISCONNECT AND REMOVE POWER FOR MECHANICAL EQUIPMENT SHOWN. EC SHALL MAINTAIN EXISTING BRANCH CIRCUIT AND EXISTING CONDUIT AND WIRES FOR INSTALLATION OF NEW MECHANICAL EQUIPMENT IN THE NEW WORK. EC SHALL DISCONNECT AND REMOVE THE EXISTING STARTER OR VFD FOR THE EXHAUST FAN, BUT MAINTAIN ALL WIRING AND CONDUIT FOR NEW VFD OR STARTER TO BE CONNECTED DURING THE NEW WORK.

KEYED ELECTRICAL DEMOLITION SHEET NOTES

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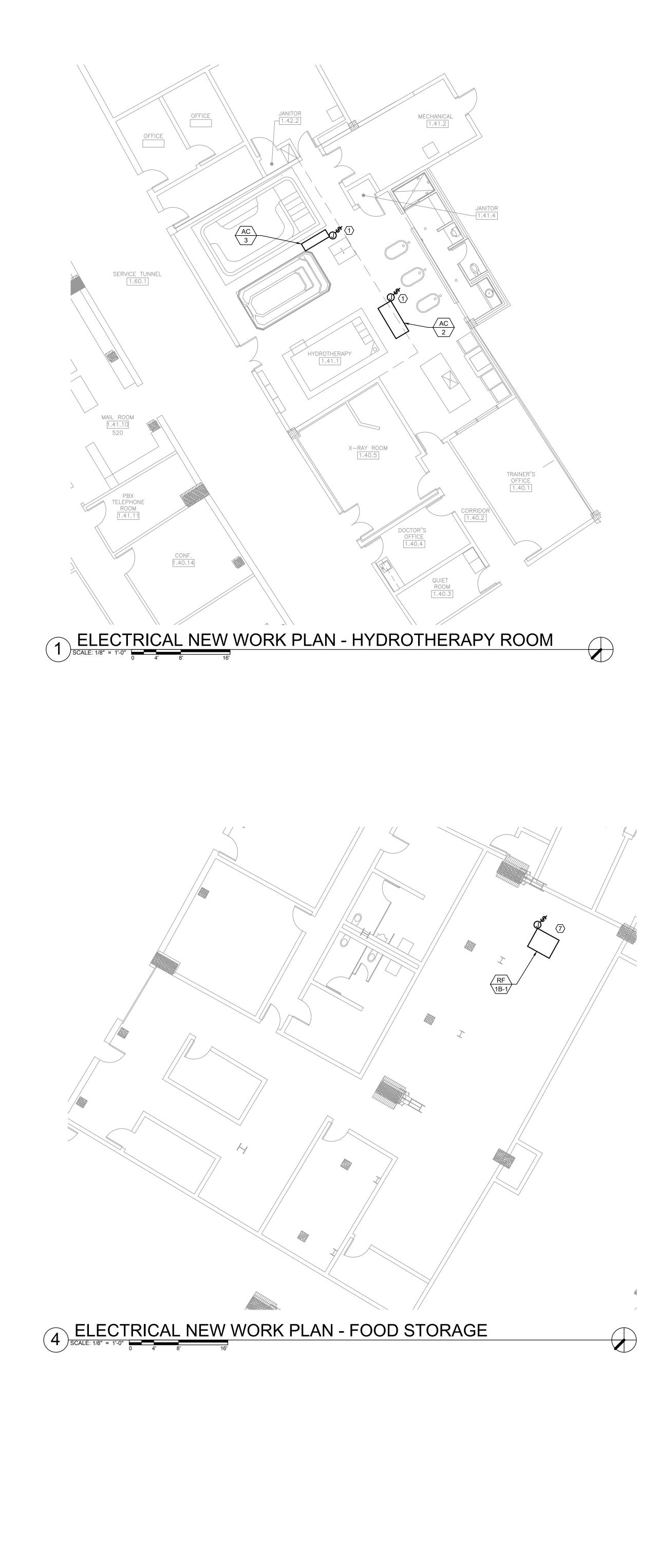
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		KEY PL	AN VIEW 2 –	
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ISS	UE/REVIS		W 3	
REV. -	DATE 11/05/21	DESCRIPTION	D	
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	GNED B		TG	
PRC			BT 21276	
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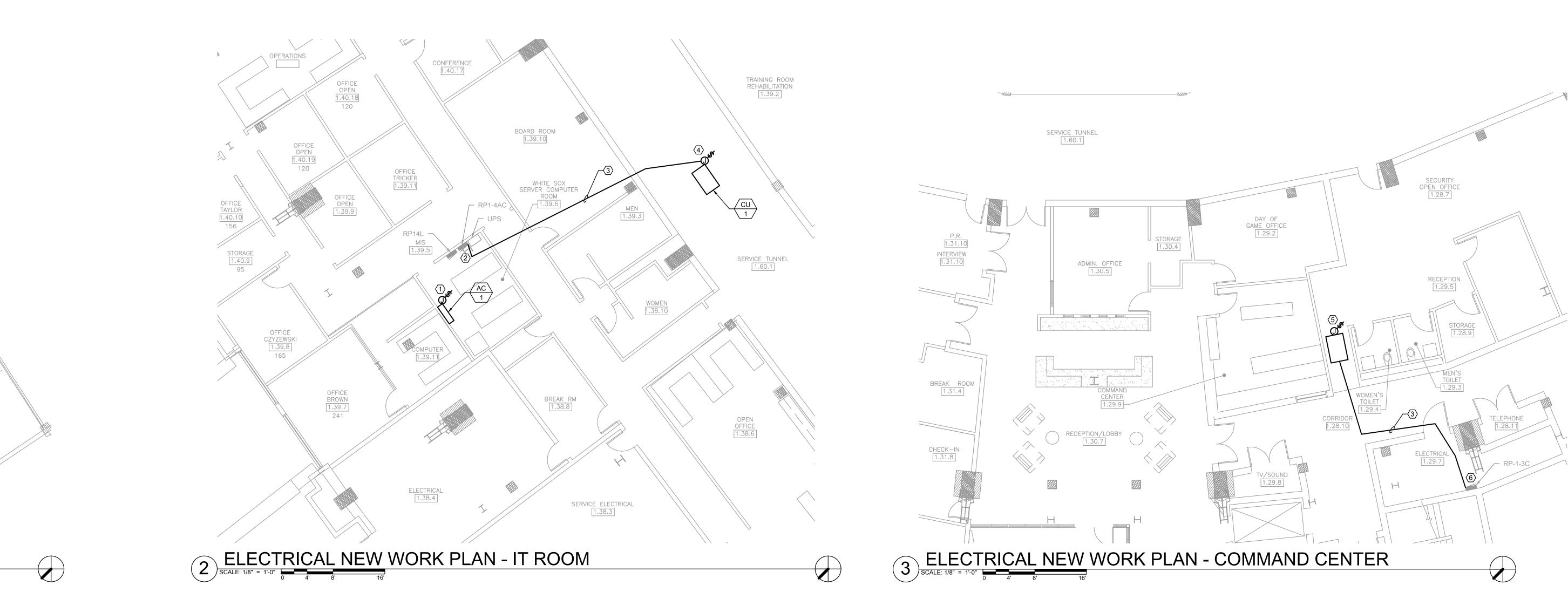
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ELIMINARY - NOT FO	R CONSTRUCTION



1 ELECTRICAL NEW WORK PLAN - CONCOURSE LEVEL OVERALL

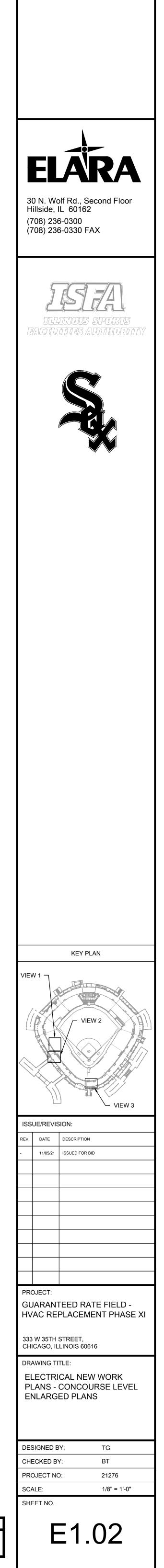
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	ELARA
	30 N. Wolf Rd., Second Floor Hillside, IL 60162
	(708) 236-0300 (708) 236-0330 FAX
	LELIZAL
	ILLINOIS SPORTS FACILITIES AUTHORITY
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SEE ENLARGED PLAN 4/E1.02	
	KEY PLAN
	ISSUE/REVISION:
	REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD -
	HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE:
	ELECTRICAL NEW WORK PLAN - CONCOURSE LEVEL
	OVERALL
	I I
	DESIGNED BY: TG
	CHECKED BY: BT
	CHECKED BY: BT PROJECT NO: 21276
2021 ISSUED FOR BID	CHECKED BY: BT PROJECT NO: 21276 SCALE: 1/32" = 1'-0" SHEET NO.
2021 ISSUED FOR BID ELIMINARY - NOT FOR CONSTRUCTION	CHECKED BY: BT PROJECT NO: 21276 SCALE: 1/32" = 1'-0"



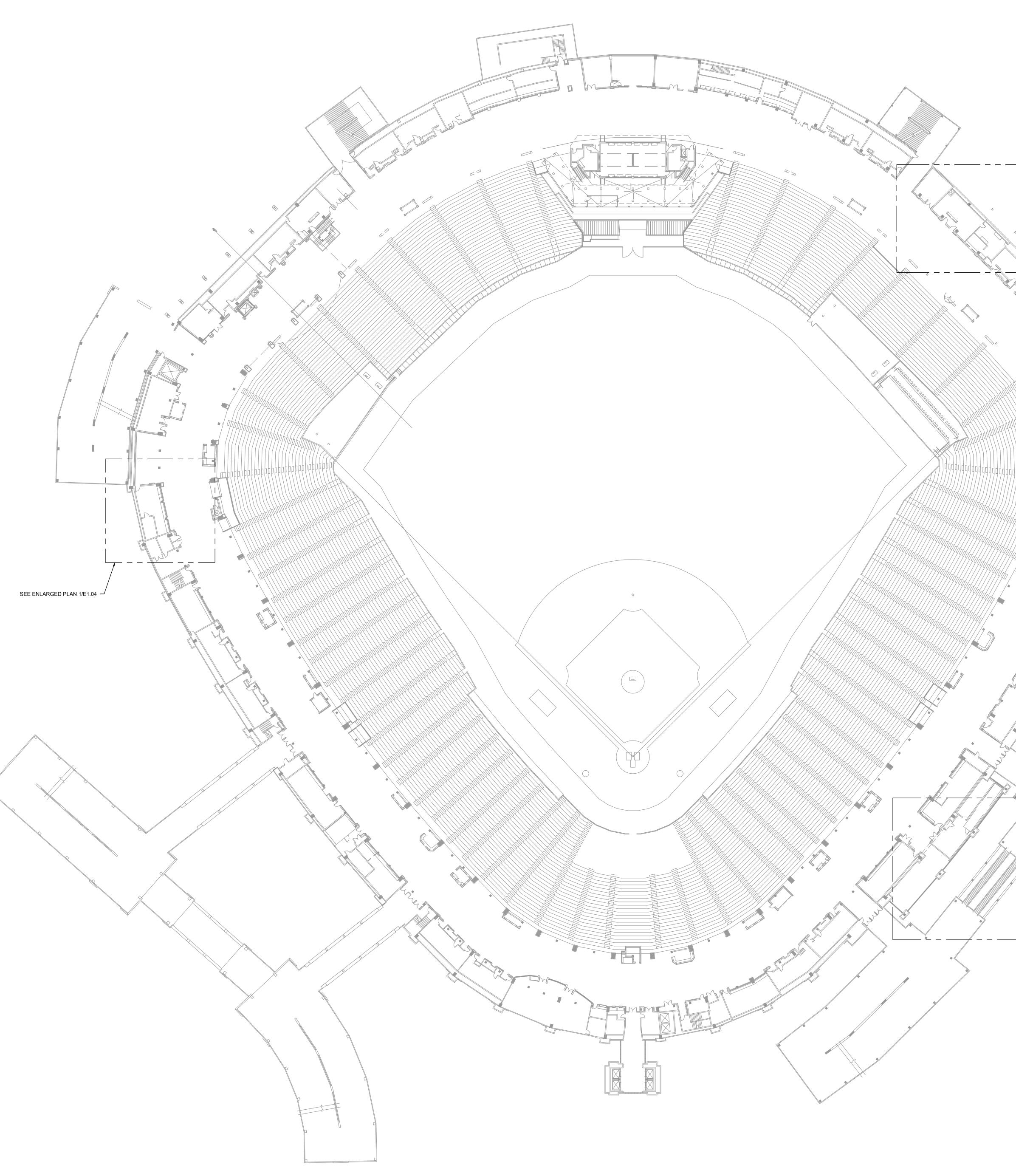


KEYED ELECTRICAL NEW WORK SHEET NOTES

- 1. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING BRANCH CIRCUIT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH FOR AIR CONDITIONING UNIT. EC SHALL EXTEND EXISTING EXISTING BRANCH CIRCUIT AND CONDUIT AS NECESSARY FOR NEW AIR CONDITIONING UNIT LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 2. FURNISH AND INSTALL NEW 30A/2P CIRCUIT BREAKER IN PANEL 'RP1-4AC.' EC SHALL MATCH NEW CIRCUIT BREAKER'S MAKE,
- MODEL, AND AIC RATING TO THE EXISTING CIRCUIT BREAKERS IN THE PANELBOARD. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 3. FURNISH AND INSTALL NEW ABOVE CEILING CONDUIT AND WIRES FOR NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL
- EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 4. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH
- AND ASSOCIATED CONDUIT AND WIRES FROM PANELBOARD 'RP1-4AC.' REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 5. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH
- AND ASSOCIATED CONDUIT AND WIRES FROM PANELBOARD 'RP-1-3C' REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 6. EC SHALL USE EXISTING SPARE CIRCUIT BREAKER #37 FOR NEW FAN COIL UNIT POWER.
- 7. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING BRANCH CIRCUIT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH FOR RETURN FAN. EC SHALL EXTEND EXISTING EXISTING BRANCH CIRCUIT AND CONDUIT AS NECESSARY FOR NEW RETURN FAN LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.

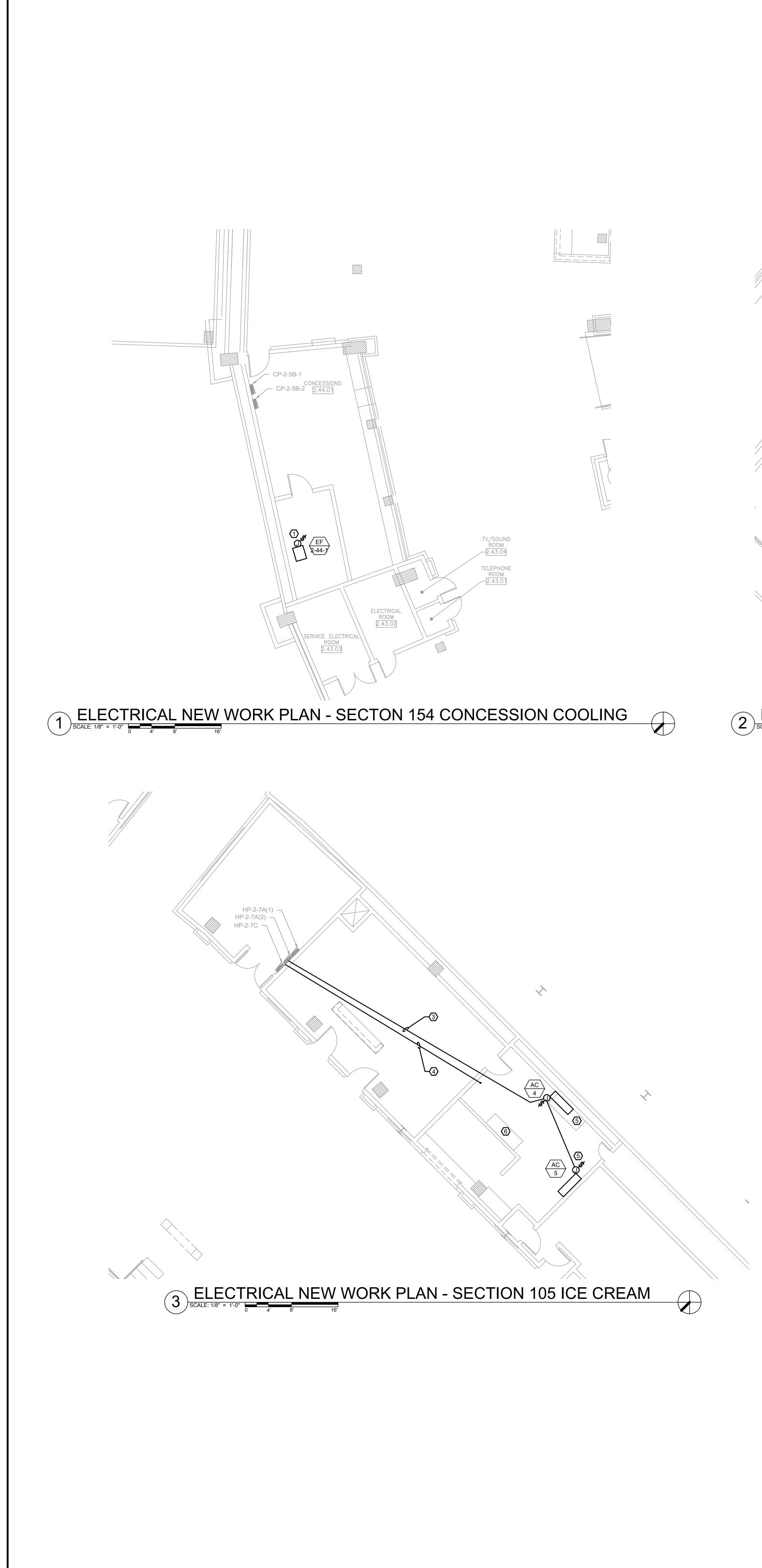


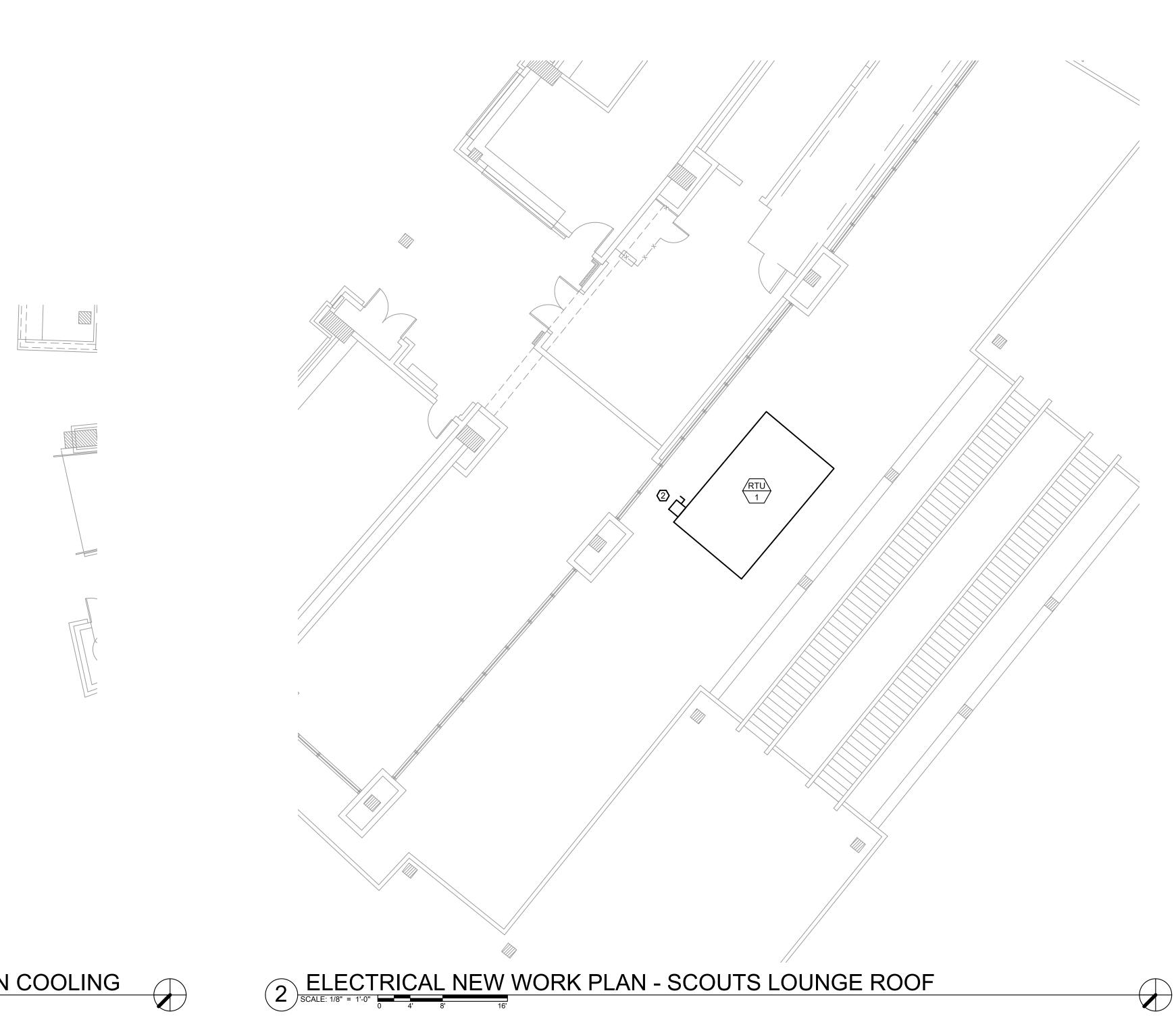
ISSUED FOR BID 11/05/2021 PRELIMINARY - NOT FOR CONSTRUCTION



1 ELECTRICAL NEW WORK PLAN - 100 LEVEL OVERALL

- SEE ENLARGED PLAN 3/E1.04	ELÄRA
	30 N. Wolf Rd., Second Floor Hillside, IL 60162
	Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
	(708) 236-0330 FAX
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	KEY PLAN
SEE ENLARGED PLAN 2/E1.04	
	ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT:
	GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
\frown	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: ELECTRICAL NEW WORK PLAN
	- 100 LEVEL OVERALL
	DESIGNED BY: TG CHECKED BY: BT
	PROJECT NO: 21276 SCALE: 1/32" = 1'-0"
	SHEET NO.
2021 ISSUED FOR BID	E1.03
ELIMINARY - NOT FOR CONSTRUCTION	



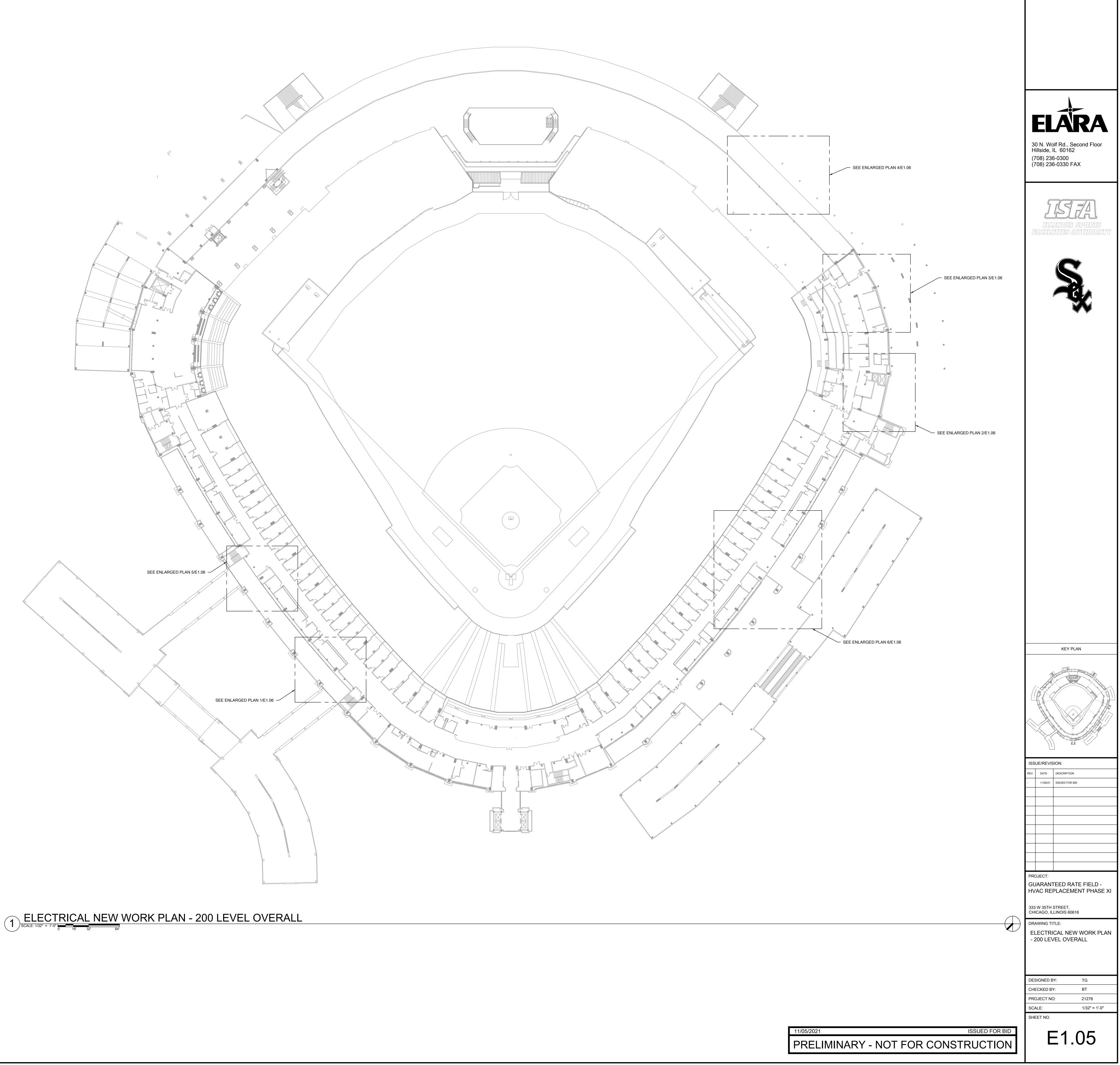


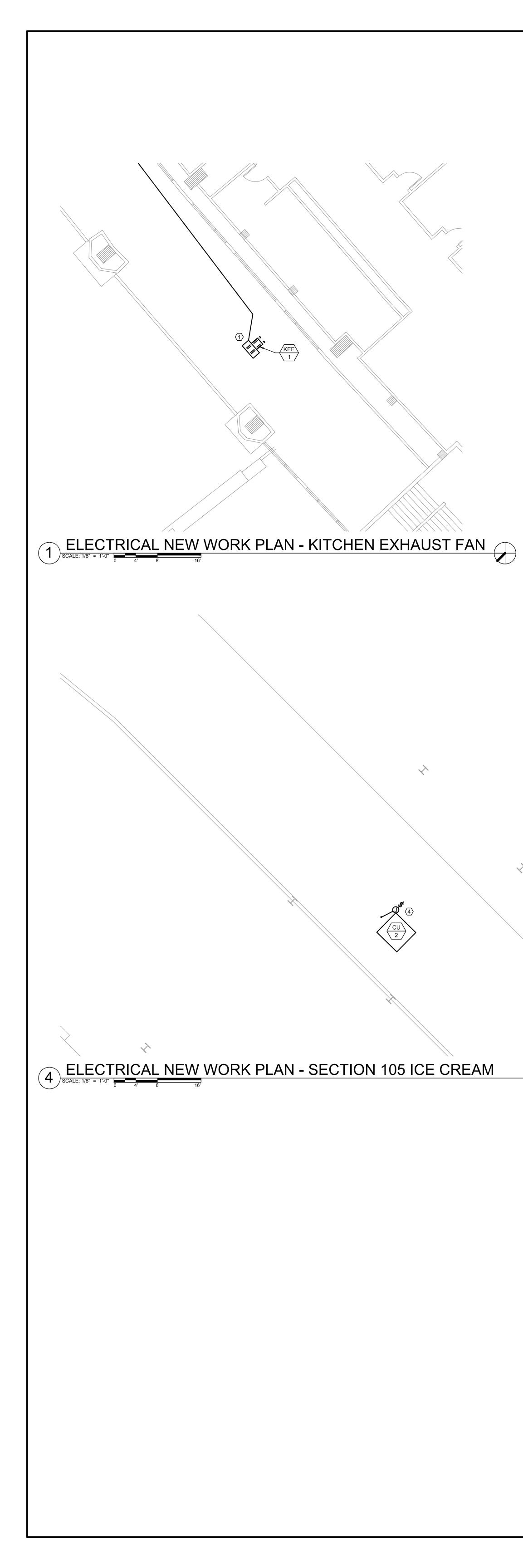


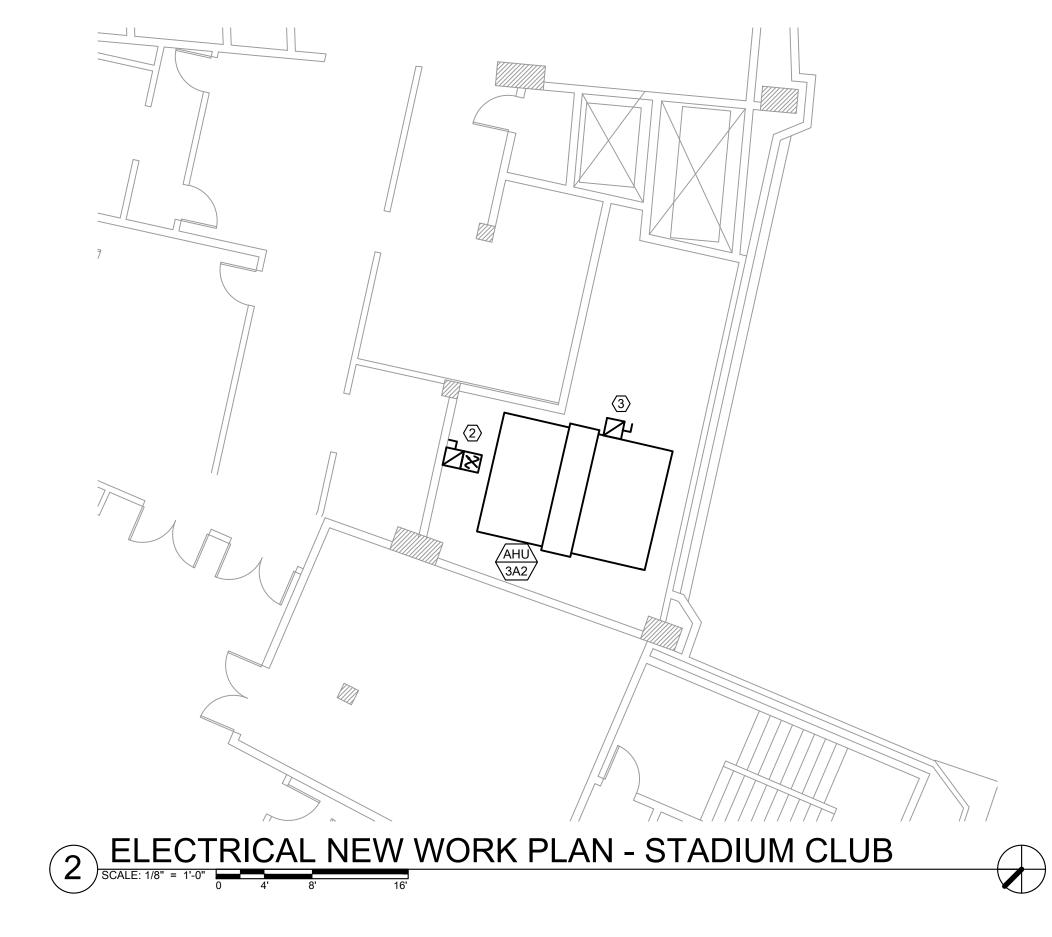
- INFORMATION. 2. FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND WIRES FOR NEW ROOFTOP UNIT. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION. EC SHALL EXTEND EXISTING CONDUIT AND FEEDER FOR NEW ROOFTOP UNIT. EC SHALL FURNISH AND INSTALL NEW 200A DISCONNECT SWITCH FOR ROOFTOP UNIT. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. EC SHALL CONFIRM THAT EXISTING OCPD SERVING THE EXISTING ROOFTOP UNIT IS RATED AT 150A. IF IT IS NOT EXACTLY 150A, THEN EC SHALL NOTIFY ELECTRICAL ENGINEER IMMEDIATELY.
- 3. FURNISH AND INSTALL NEW OVERHEAD CONDUIT AND WIRES FOR NEW MECHANICAL EQUIPMENT FROM EXISTING PANELBOARD SHOWN. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. FURNISH AND INSTALL NEW 15A, 208V/1P CIRCUIT BREAKER IN EXISTING PANELBOARD FOR NEW BRANCH CIRCUIT.
- 4. FURNISH AND INSTALL NEW OVERHEAD CONDUIT AND WIRES FROM EXISTING PANELBOARD SHOWN FOR NEW MECHANICAL EQUIPMENT ON ROOF ABOVE. REFER TO SHEET E1.06 FOR LOCATION OF CONDENSING UNIT. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. FURNISH AND INSTALL NEW 30A, 208V/1P CIRCUIT BREAKER IN EXISTING PANELBOARD FOR NEW BRANCH CIRCUIT. EC SHALL CORE THROUGH THE CEILING FOR NEW CONDENSING UNIT POWER. EC SHALL SCAN CEILING PRIOR TO CORING.
- 5. FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND WIRES FOR NEW AIR CONDITIONING UNITS. COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 6. FURNISH AND INSTALL POWER FOR NEW EXHAUST FAN. EC SHALL FURNISH AND INSTALL POWER FROM PANEL HP-2-7A(1) SHOWN ON PLAN. FURNISH AND INSTALL NEW 20A/3P CIRCUIT BREAKER FOR NEW EXHAUST FAN. FURNISH AND INSTALL NEW 3 HP VFD WITHIN ELECTRICAL ROOM.

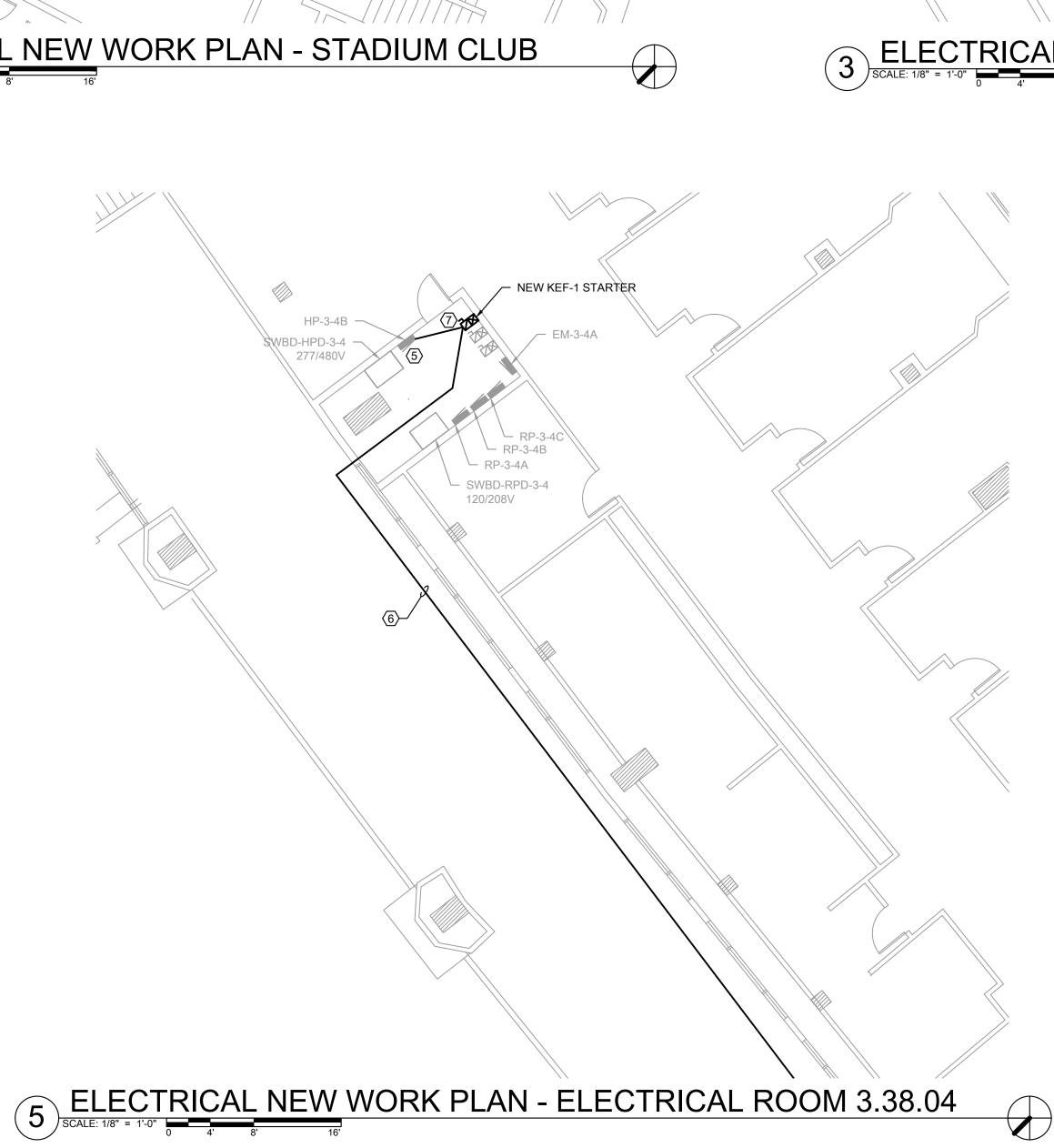
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		PLACEMENT PHASE XI
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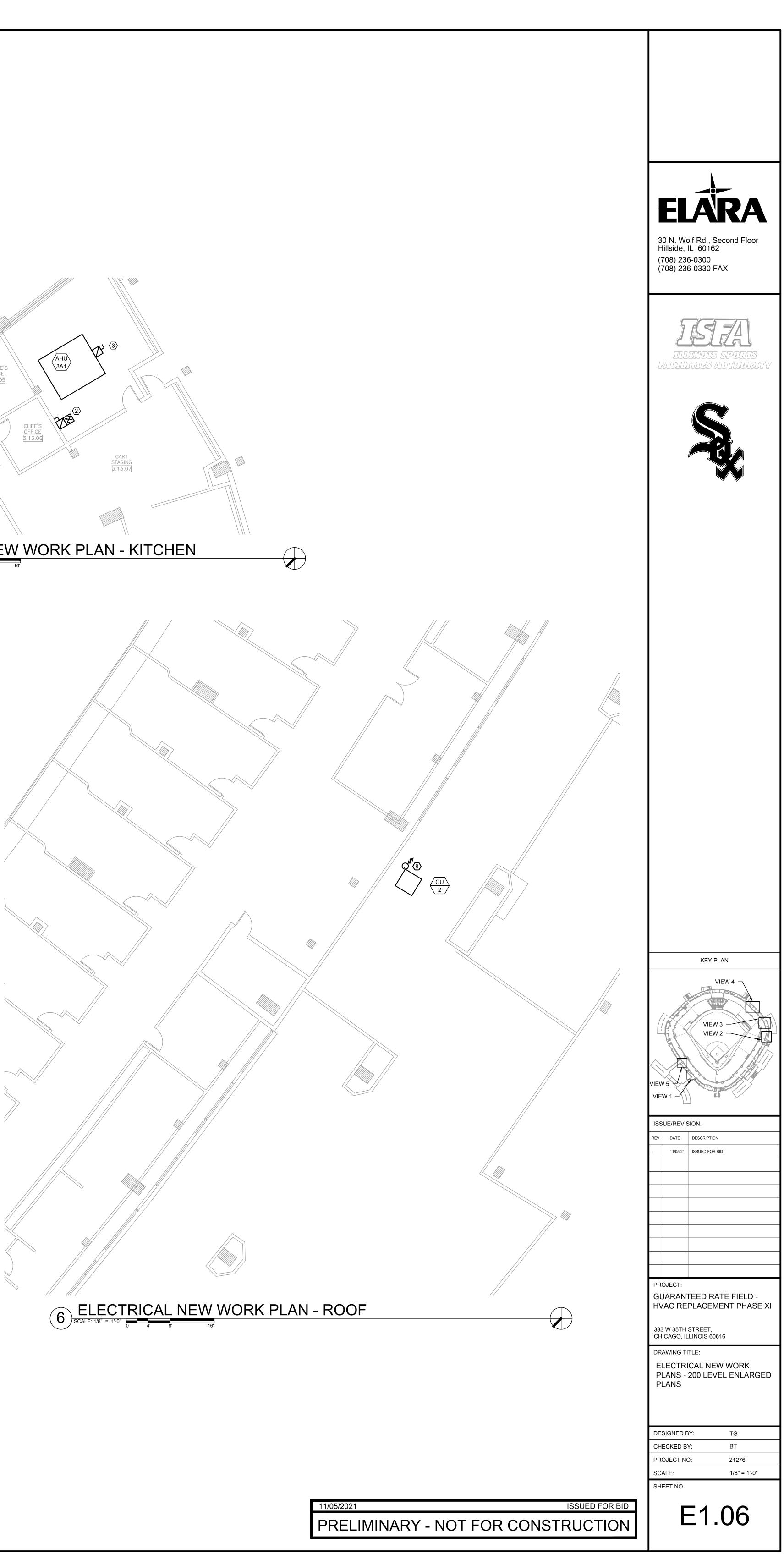


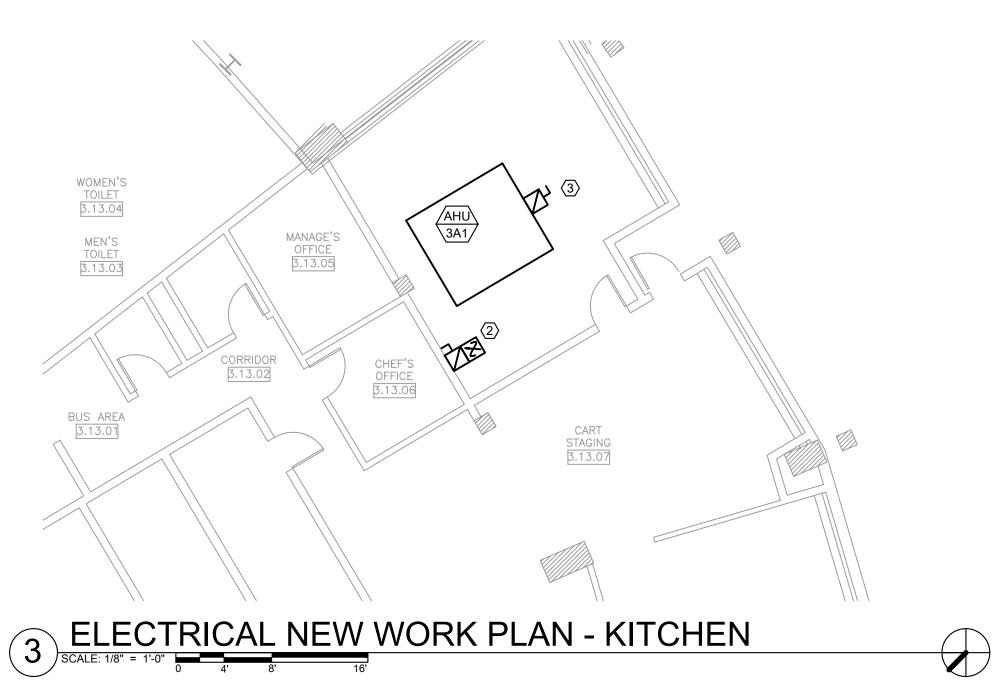


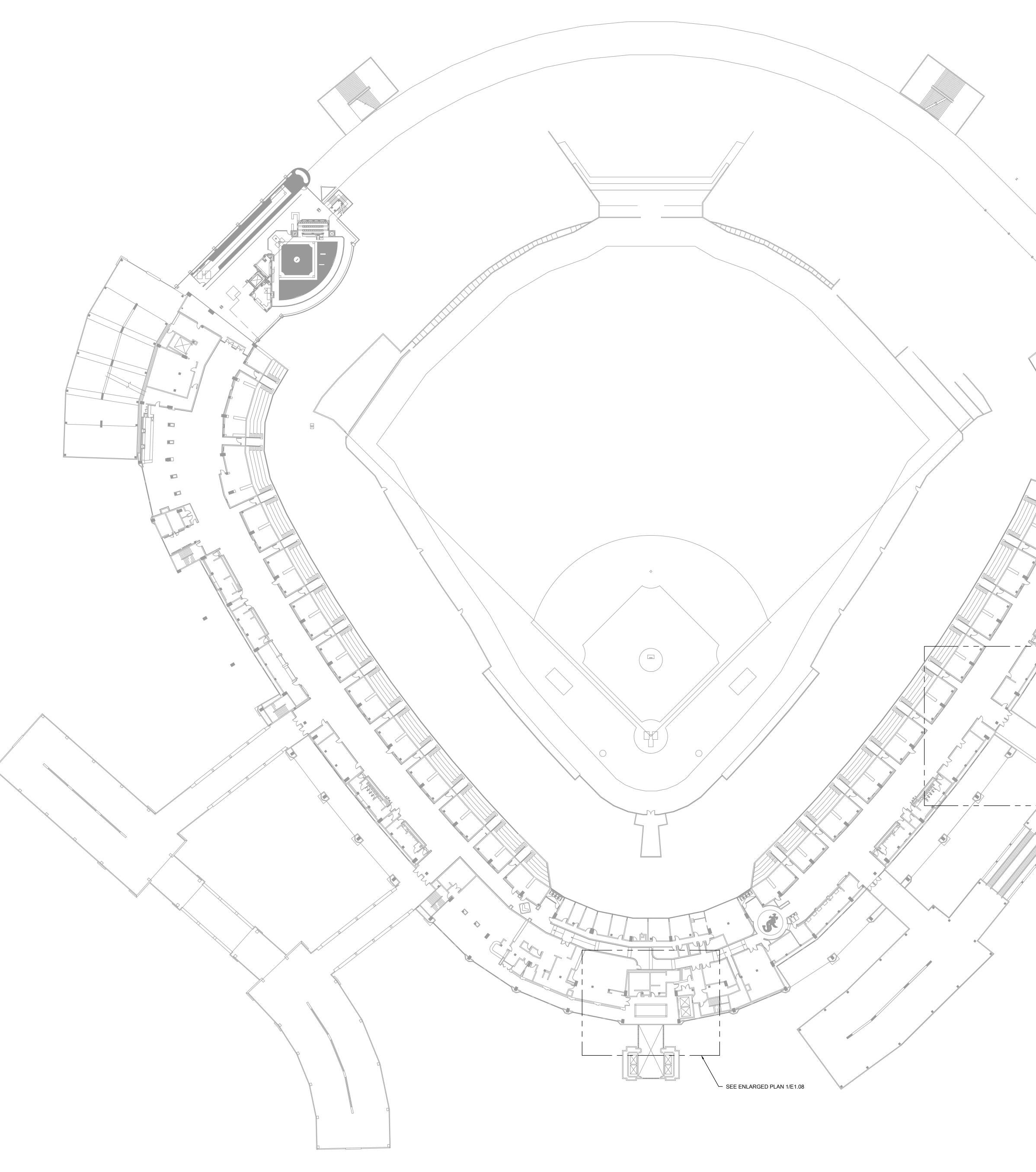


- AND ASSOCIATED CONDUIT AND WIRES FROM PANELBOARD. 2. FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND FEEDER FOR MECHANICAL EQUIPMENT. EC SHALL RE-USE
- EXISTING FEEDER AND CONDUIT TO NEW VFD. FURNISH AND INSTALL CONNECTION TO FACTORY MOUNTED VARIABLE FREQUENCY DRIVE. EC SHALL EXTEND EXISTING CONDUIT AND FEEDER AS REQUIRED. REFER TO HVAC EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 3. FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND FEEDER FOR MECHANICAL EQUIPMENT. EC SHALL RE-USE
- EXISTING FEEDER AND CONDUIT TO NEW ELECTRIC HEATING COIL DISCONNECT SWITCH. FURNISH AND INSTALL NEW DISCONNECT SWITCH FOR ELECTRIC HEATING COIL. EC SHALL EXTEND EXISTING CONDUIT AND FEEDER AS REQUIRED. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 4. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH
- AND ASSOCIATED CONDUIT AND WIRES FROM PANELBOARD SHOWN ON E1.04. 5. FURNISH AND INSTALL NEW 15A/3P CIRCUIT BREAKER FOR NEW KITCHEN EXHAUST FAN. REFER TO VIEW #1 FOR KITCHEN EXHAUST FAN LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 6. FURNISH AND INSTALL NEW CONDUIT AND WIRES FOR NEW KITCHEN EXHAUST FAN PER THE MECHANICAL EQUIPMENT WIRING SCHEDULE.
- 7. FURNISH AND INSTALL NEW 30A RATED STARTER FOR NEW KITCHEN EXHAUST FAN. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 8. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING BRANCH CIRCUIT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH FOR FAN COIL UNIT. EC SHALL EXTEND EXISTING EXISTING BRANCH CIRCUIT AND CONDUIT AS NECESSARY FOR NEW FAN COIL UNIT LOCATION AS REQUIRED. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.

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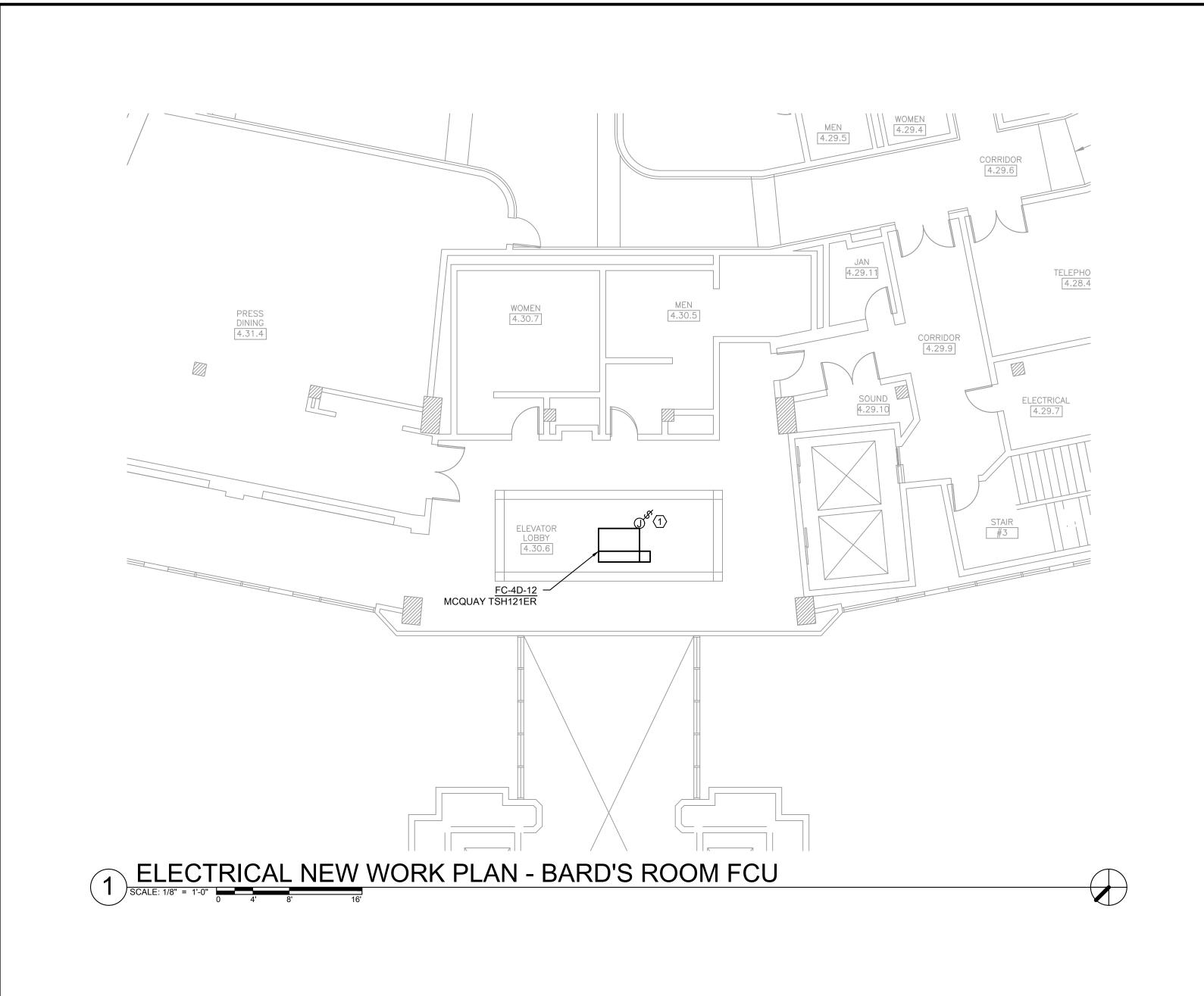






1 ELECTRICAL NEW WORK PLAN - 300 LEVEL OVERALL

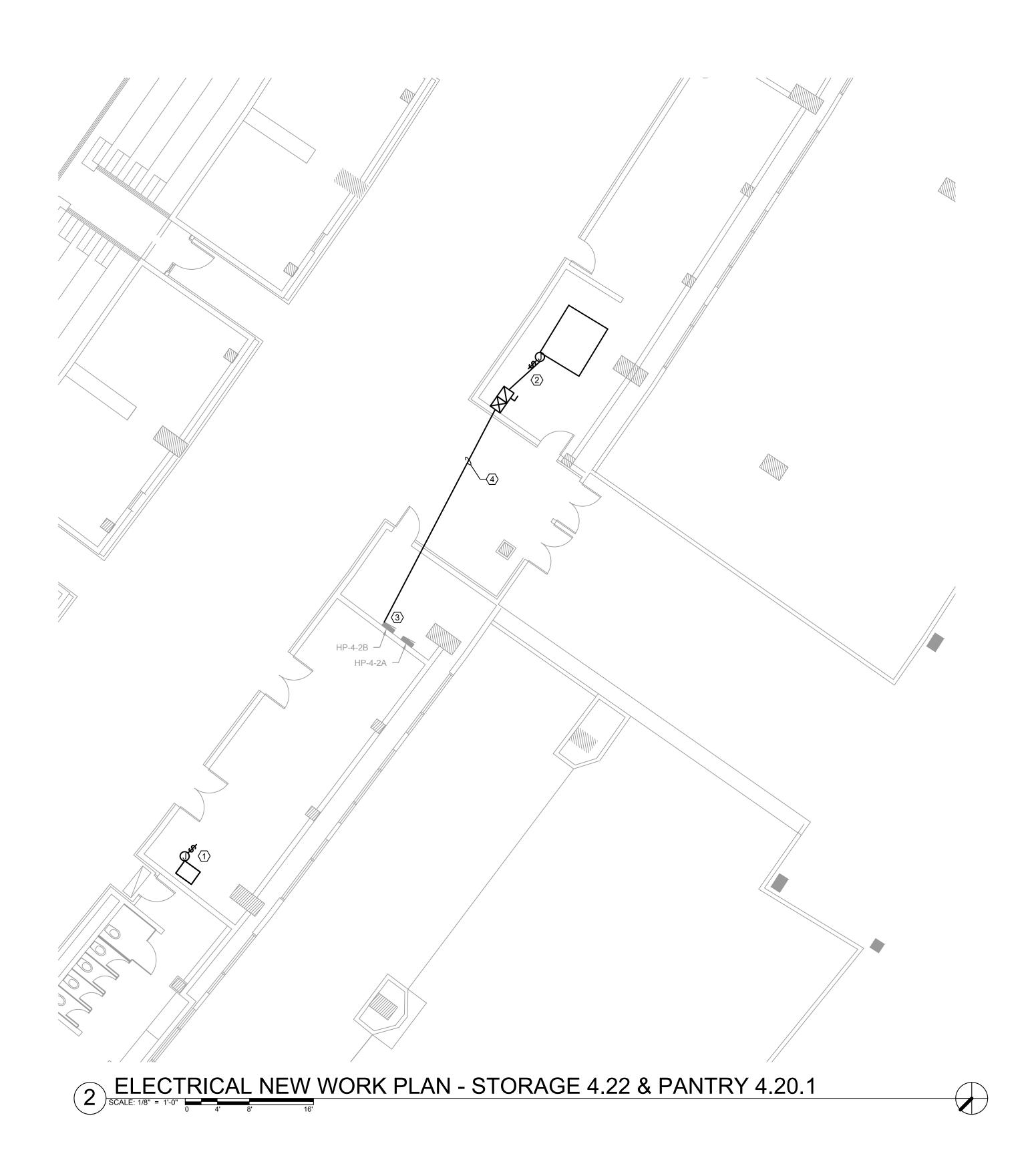
	ELÂRA
	30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
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*	ILLINOIS SPORTS FACILITIES AUTHORITY
	KEY PLAN
SEE ENLARGED PLAN 2/E1.08	
	ISSUE/REVISION: REV. DATE DESCRIPTION
	- 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
\frown	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: ELECTRICAL NEW WORK PLAN - 300 LEVEL OVERALL
	DESIGNED BY: TG CHECKED BY: BT
	PROJECT NO: 21276 SCALE: 1/32" = 1'-0" SHEET NO. 1/32" = 1'-0"
ELIMINARY - NOT FOR CONSTRUCTION	E1.07



KEYED ELECTRICAL NEW WORK SHEET NOTES

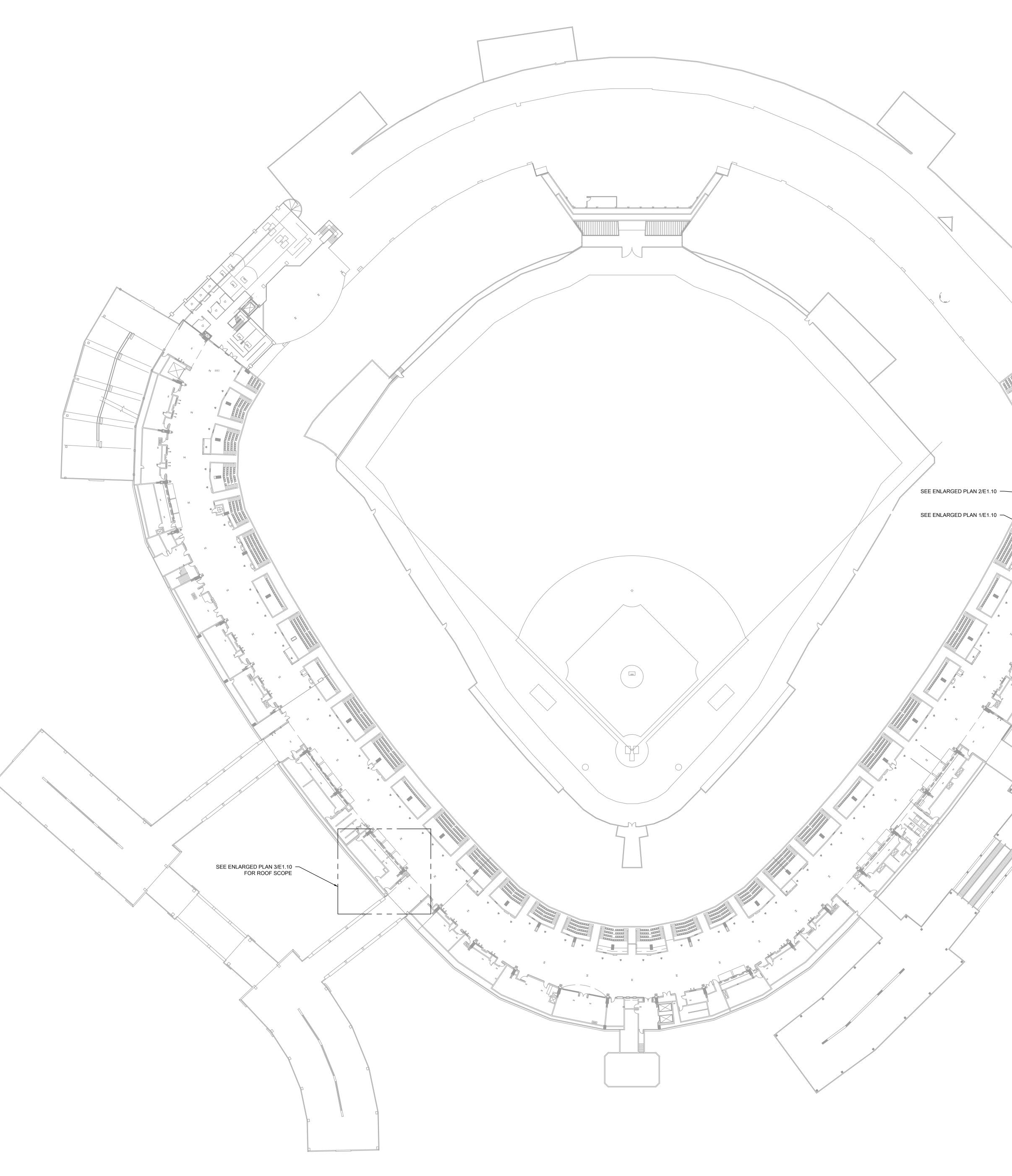
- 1. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING BRANCH CIRCUIT. FURNISH AND INSTALL NEW JUNCTION BOX WITH A SWITCH FOR FAN COIL UNIT. EC SHALL EXTEND EXISTING EXISTING BRANCH CIRCUIT AND CONDUIT AS NECESSARY FOR NEW FAN COIL UNIT LOCATION AS REQUIRED. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 2. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT AND THE ASSOCIATED CONDUIT AND WIRES FROM THE PANELBOARD SHOWN. EC SHALL FURNISH AND INSTALL NEW STARTER FOR THE MECHANICAL EQUIPMENT.
- 3. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT SHOWN . EC SHALL USE ONE OF THE SPARE 20A/3P CIRCUIT BREAKERS. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 4. FURNISH AND INSTALL NEW ABOVE CEILING CONDUIT AND WIRES FOR NEW MECHANICAL EQUIPMENT. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.

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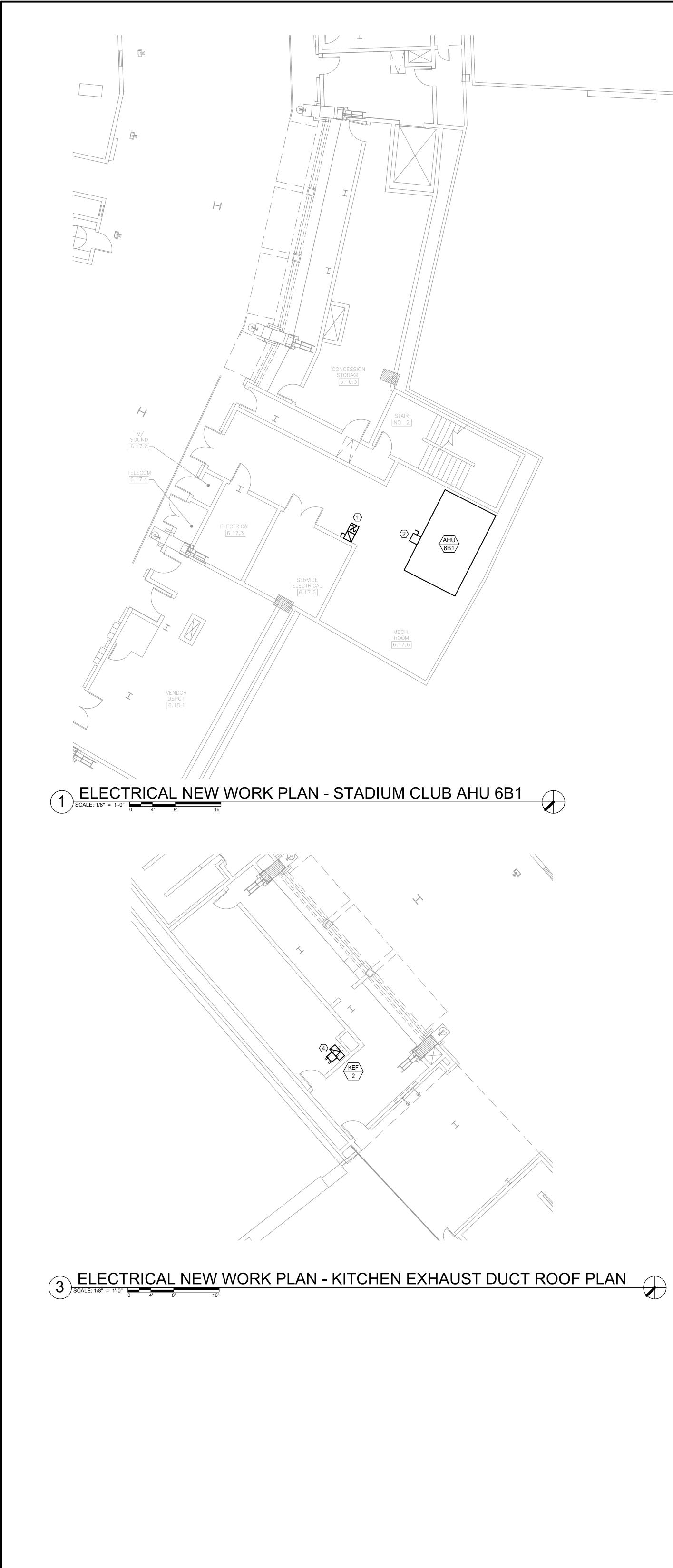
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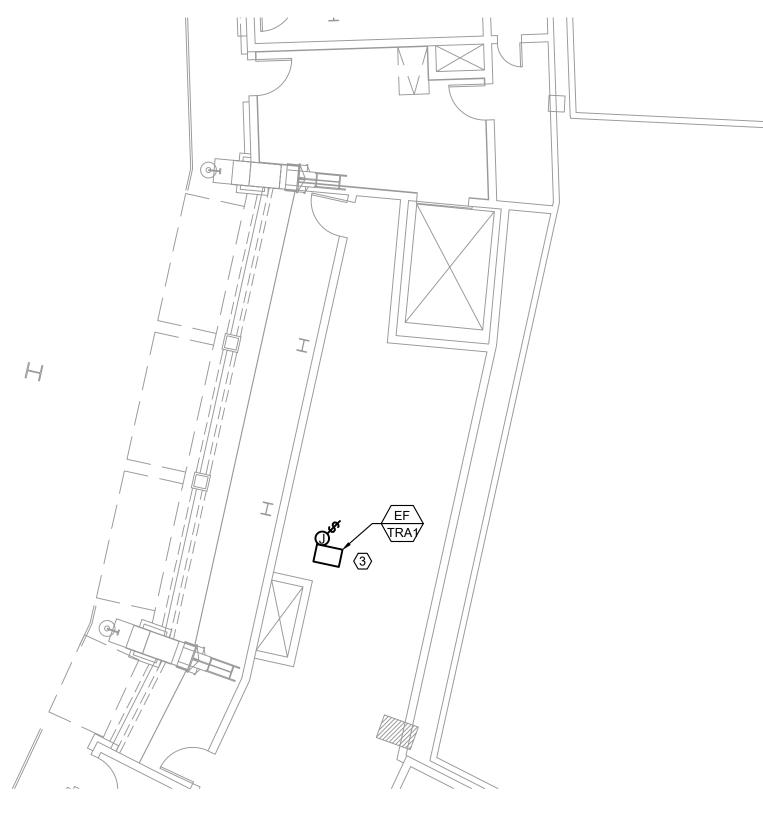
11/05/2021	ISSUED FOR BID
PRELIMINARY - NOT	FOR CONSTRUCTION



1 ELECTRICAL NEW WORK PLAN - 500 LEVEL OVERALL

	So N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
	ILLINOIS SPORTS FACILITIES AUTHORITY
	KEY PLAN
	ISSUE/REVISION:
	REV. DATE DESCRIPTION - 11/05/21 ISSUED FOR BID
	PROJECT: GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI
	333 W 35TH STREET, CHICAGO, ILLINOIS 60616
	DRAWING TITLE: ELECTRICAL NEW WORK PLAN - 500 LEVEL OVERALL
	DESIGNED BY:TGCHECKED BY:BTPROJECT NO:21276
	SCALE: 1/32" = 1'-0" SHEET NO.
ISSUED FOR BID	E1.09





2 ELECTRICAL NEW WORK PLAN - TRASH CHUTE EXHAUST ROOF PLAN

KEYED ELECTRICAL NEW WORK SHEET NOTES

- FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND FEEDER FOR MECHANICAL EQUIPMENT. EC SHALL RE-USE EXISTING FEEDER AND CONDUIT TO NEW VFD. FURNISH AND INSTALL CONNECTION TO FACTORY MOUNTED VARIABLE FREQUENCY DRIVE. EC SHALL EXTEND EXISTING CONDUIT AND FEEDER AS REQUIRED. REFER TO HVAC EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 2. FURNISH AND INSTALL NEW POWER AND ASSOCIATED CONDUIT AND FEEDER FOR MECHANICAL EQUIPMENT. EC SHALL RE-USE EXISTING FEEDER AND CONDUIT TO NEW ELECTRIC HEATING COIL DISCONNECT SWITCH. FURNISH AND INSTALL NEW DISCONNECT SWITCH FOR ELECTRIC HEATING COIL. EC SHALL EXTEND EXISTING CONDUIT AND FEEDER AS REQUIRED. REFER TO HVAC EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.
- 3. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING CONDUIT AND WIRES. FURNISH AND INSTALL NEW STARTER IN ELECTRICAL ROOM 6.17.03 IN THE SAME LOCATION AS THE EXISTING STARTER FOR NEW EXHAUST FAN. EC SHALL EXTEND EXISTING CONDUIT AND WIRES AS NECESSARY FOR NEW EXHAUST FAN LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION. 4. FURNISH AND INSTALL NEW POWER FOR MECHANICAL EQUIPMENT VIA THE EXISTING CONDUIT AND WIRES. FURNISH AND
- INSTALL NEW VARIABLE FREQUENCY DRIVE IN ELECTRICAL ROOM 6.38.03 IN THE SAME LOCATION AS THE EXISTING VFD FOR NEW EXHAUST FAN. EC SHALL EXTEND EXISTING CONDUIT AND WIRES AS NECESSARY FOR NEW EXHAUST FAN LOCATION. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR MORE INFORMATION.

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H	illside, l	olf Rd., Second Floor IL 60162
(7 (7	708) 236 708) 236	6-0300 6-0330 FAX
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HVAC	HVAC EQUIPMENT WIRING SCHEDULE																														
TAG	DESCRIPTION	LOCATION		PHASE		LOAD	C	CPD	FEED FROM	FEEDE	R/BR/	ANCH WIF	RING			EQUIPME	INT CONT	ROLLER		1		LOCAL	DISCONNEC	T SWITCH				EQUIP	MENT ÇONNE	CTION	
					HP	KW FLA	MCA SIZE	E POLE		SETS NO	. Sl	ZE GNC). CONDUIT	P.B F.B	I.B SIZE	TYPE	DISC. SW	OCPD POLE	E ENCL.	SEE NOTE	P.B F.B	I.B S	ZE TYP	E POLE		SEE NOTE	P.B F.B	I.B R	ECP. CPC	HWC FWC	SEE NOTE
AC-1	AIR CONDITIONING UNIT	GROUND LEVEL - IT ROOM	208	1	-	- 1	- 15	2	EXISTING PANEL		1	2 12	3/4"			-	-		-	-	E.C -	-	- 0	2		-	E.C -	-		YES -	-
AC-2		GROUND LEVEL - HYDROTHERAPY ROOM	208	1	-	- 1	- 15	2	EXISTING PANEL		1	$\frac{ 2 }{ 2 }$	3/4"			-	-		-	-	E.C -	-			NEMA 1	-	E.C -	-		YES -	-
AC-3		GROUND LEVEL - HYDROTHERAPY ROOM	208	1	-	- 10.0	- 15	<u> </u>	EXISTING PANEL	$-\frac{1}{2}$		2 $ 2 $	3/4"			-	-		-	-	E.C -	-		2		-	E.C -	-		YES -	-
CU-1 FCU	CONDENSING UNIT FAN COIL UNIT	GROUND LEVEL - SERVICE TUNNEL GROUND LEVEL - COMMAND CENTER	208	1	-	- 18.3	- 25		RP1-4AC RP-1-3C		1		<u>3/4"</u> 3/4"			-	-		-	-	E.C - E.C -		<u>60 -</u> 10 -		NEMA 1 NEMA 1	-	E.C - E.C -	-		YES - YES -	-
PCU DE	RETURN FAN	GROUND LEVEL - CONNAND CENTER GROUND LEVEL - FOOD STORAGE	480	<u>ז</u>	-		- 20	<u>।</u> २	EXISTING PANEL		1	<u>2</u> 2 2 12	3/4				-		-	-	E.C -		0 -	3	NEMA 1	-	E.C -	-		YES -	-
FF	EXHAUST FAN	100 LEVEL - ICE CREAM SHOP	480	3	- 2		- 20	3	HP-2-7A(2)	- 1 3	1	2 12	3/4"								E.C -			3	NEMA 1		E.C -	-		YES -	
EF-2-44-1	EXHAUST FAN	100 LEVEL - CONCESSIONS STAND	120	1	3/ <u>1</u>	- 13.8	- 20		CP-2-5B-1		1	2 12	3/4"				-		-	-	E.C -	-	.0 -	1	NEMA 1		E.C -	-		YES -	_
RTU-1	ROOFTOP UNIT	100 LEVEL - SCOUTS LOUNGE ROOM	480	3	-	- 144.8			EXISTING PANEL	1 2	1	10 6	1 1/2"	MC -		-	-				E.C -		00 -	3	NEMA 3F	2 -	E.C -	-		YES -	
AC-4	AIR CONDITIONING UNIT	100 LEVEL - ICE CREAM STAND	208	1	-	- 1	- 15	2	HP-2-7A(2)		1	2 12	3/4"			-			-	-	E.C -		0 -		NEMA 1	-	E.C -	-		YES -	-
AC-5	AIR CONDITIONING UNIT	100 LEVEL - ICE CREAM STAND	208	1	-	- 1	- 15	2	HP-2-7A(2)	1 2	1	2 12	3/4"			-	-		-	-	E.C -	-	.0 -	2	NEMA 1	-	E.C -	-		YES -	-
CU-2	CONDENSING UNIT	200 LEVEL - ROOF	208	1	-	- 18.3	- 25	2	HP-4-2B	1 2	1	0 10	3/4"			-	-		-	-	E.C -		.0 -	2	NEMA 1	-	E.C -	-		YES -	-
AHU-3A1	AIR HANDLING UNIT MOTOR	200 LEVEL - STADIUM CLUB	480	3	20	- 27	- 35	3	EXISTING PANEL	. 1 3	8	8 10	3/4"	- M.C	E.C -	VFD	-		-	-		-		-	-	-	E.C -	-		YES -	-
AHU-3A1	ELECTRIC HEATING COIL	200 LEVEL - STADIUM CLUB	480	3	-	210 253	- 350	3	SWBD-1-3B	1 3	50	00 3	2.1/2"			-	-		-	-	E.C -	- 2	25 -	3	NEMA 1	-	E.C -	-		YES -	-
AHU-3A2	AIR HANDLING UNIT MOTOR	200 LEVEL - TRASH CHUTE ROOM	480	3	20	- 27	- 35	3	EXISTING PANEL	_ 1 3	3	8 10	3/4"	- M.C	E.C -	VFD	-		-	-		-		-	-	-	E.C -	-		YES -	-
AHU-3A2	ELECTRIC HEATING COIL	200 LEVEL - TRASH CHUTE ROOM	480	3	-	200 241	- 350	3	SWBD-1-3B	1 3	50	00 3	2.1/2"			-	-		-	-	E.C -	- 4	- 00	3	NEMA 1	-	E.C -	-		YES -	-
KEF-1	KITCHEN EXHAUST FAN	200 LEVEL - KITCHEN	480	3	3	- 4.8	- 15	3	HP-3-4B	1 3	1	2 12	3/4"	E.C -	- #0	FVNR	30	- 3	NEMA 1	-		-		-	-	-	E.C -	-		YES -	-
CU-2	CONDENSING UNIT	200 LEVEL - ICE CREAM STAND ROOF	208	1	-	- 18.3	- 25	2	HP-2-7A(2)	1 2	1	0 10	3/4"			-	-		-	-	E.C -	-	- 00	2	NEMA 1	-	E.C -	-		YES -	-
FCU	FAN COIL UNIT	300 LEVEL - ELEVATOR LOBBY	120	1	-		- 20	1	EXISTING PANEL	_ 1 2	1	2 12	3/4"			-	-		-	-	E.C -	-	.0 -	1	NEMA 1	-	E.C -	-		YES -	-
EF	EXHAUST FAN	300 LEVEL - STORAGE ROOM	480	3	-		- 20		EXISTING PANEL	_ 1 3	1	2 12	3/4"			-	-		-	-	E.C -		- 0		NEMA 1	-	E.C -	-		YES -	-
SUPPLY FAN	SUPPLY FAN	300 LEVEL - FOOD PANTRY	480	3	-		- 20		HP-4-2B	1 3	1	2 12	3/4"			-	-		-	-	E.C -	-	.0 -	3	NEMA 1	-	E.C -	-		YES -	-
AHU-6B1	AIR HANDLING UNIT MOTOR	500 LEVEL - MECH ROOM 6.17.6	480		20	- 27	- 35		EXISTING PANEL	<u> 1 3</u>	8	8 10	3/4"	M.C -	- #2	VFD	-		-	-		-		-	-	-	E.C -	-		YES -	-
AHU-6B1	ELECTRIC HEATING COIL	500 LEVEL - MECH ROOM 6.17.6	480	3	-	85 102	- 150		SWBD-1-3B	1 3	1	0 6	1.1/2"			-	-		-	-	E.C -	- 2	25 -	3	NEMA 1	-	E.C -	-		YES -	-
EF-TRA1	EXHAUST FAN	500 LEVEL - TRASH CHUTE EXHAUST ROOF		3	1	- 2.1	- 15		EXISTING PANEL		1	2 12	3/4"			-	-		-	-	E.C -	-	- 10	3	NEMA 1	-	E.C -	-		YES -	-
KEF-2	KITCHEN EXHAUST FAN	500 LEVEL - KITCHEN EXHAUST ROOF	480	3	5	- 7.6	- 15	3	EXISTING PANEL	. 1 3	1	2 12	3/4"	E.C -	- #0	VFD	-		-	-		-		-	-	-	E.C -	-		YES -	-
										חח.														ה האחרה /ר		יסט סאחם נ					
GENERAL N													•	URNISH ANE	JINSTALL)									•			P1W, & 2SP2 TION	VV)			
		CHITECTURAL, MECHANICAL, PLUMBING, AND								ГD. ID.																D VERIFICA					
	REQUIREMENTS, AND SHOP DRA REQUIREMENTS PRIOR TO IN	AWINGS FOR FINAL EQUIPMENT LOCATION, EL	LEVATIO	IN, AIND F	UVVER						.		ALLED BY																		
2		AD REQUIREMENTS WITH THE OEM PRIOR TO I			דוו ור																E.C. SHALL PROVIDE 120Vac CONTROL COIL FOR STARTERS TYPES (FVNR, FVR, 2SP1W, & 2SP2W) E.C. SHALL PROVIDE 24Vac CONTROL COIL FOR POWER RELAYS/MANUAL STARTER "PRMS"										
2		ELD THE OCPD REQUIREMENTS WITH THE OE									FWC: FLEXIABLE WHIP CONDUIT NOTE #2 E.C. SHALL PROVIDE Z4VAC CONTROL COIL FOR POWER RELATS/WANUAL STARTER PRIVIS																				
		D FROM THE OEM'S SPECIFICATIONS.									CPC: CORD AND PLUG CONNECTION ESULTS																				
4		ELD THE CONTACTOR/STARTER/VFD/PRMS/OF	EM CONT	rni Fr/	DISCON	INECT					FVNR: FULL VOLTAGE NON-REVERSING MAGNETIC STARTER E.C. SHALL PROVIDE FOUR SETS OF FORM "C" AUX CONTACTS WITHIN THE VED ENCLOSURE																				
	RATINGS WITH THE OEM PRI				Diccon					VFD																					
5		ELD THE THERMAL OVERLOAD RATINGS WITH	H THE OE	EM.						TS:			GLE SWITCH					NOTE #3													
	PROVIDE OVERLOADS PER C									FUS																					
6		ELD WITH THE OEM PRIOR TO INSTALLING CO	ONDUIT.							NON	ON-FUSE NON-FUSED DISCONNECT SWITCH AND SHALL NOT EXCEED A MAXIMUM DISTANCE OF 5 FEET FROM THE MOTOR/EQUIPMENT																				
	E.C. SHALL LOCATE THE DISCONNECT SWITCH WITHIN 5FT AND WITHIN SIGHT OF THE EQUIPMENT.																		F OF DISCO					·							
7	7 E.C. SHALL PROVIDE CONNECTIONS TO MOTOR/LISTED EQUIPMENT. PROVIDE A Cu EQUIPMENT GROUND(EGC)															NOTE #4	E.C. SHAI	L VERIFY N	IOTOR ROTA	TION AND	OPERATION	WITH THE (OEM								
	FROM THE DISCONNECT SWITCH TO THE MOTOR/LISTED EQUIPMENT CONNECTION POINT/JUNCTION BOX.																REPRESE	INTATIVE PI	ROIR TO ENE	ERGIZING N	OTOR(S)/EC	UIPMENT									
																			GROUNDIN		()		ECIFICAT	TIONS							
																			EQUIPME	NT FLEX W	HIPS SHALL	NOT EXCE	ed 72" Maxi	MUM LENG	TH						
																			VERIFY A	LL CPC NEI	VIA CONNEC	TIONS WIT	H THE OEM I	PRIOR TO IN	ISTALLAT	ION					
																		NOTE #5	E.C SHAL	L PROVIDE	USER TOGO	BLE/KEY S	/ITCH @ 48'	AFF.							
																		NOTE #6	DISCONN	ECT IS INTE	GRAL WITH	EQUIPME	IT CONTROL	ER							

ELÂRA 30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX <u>ISA</u> ILLINOIS SPORTS FACILITIES ADTHORITY \bigcirc KEY PLAN ISSUE/REVISION:
 REV.
 DATE
 DESCRIPTION

 11/05/21
 ISSUED FOR BID
 ____ _ _____ PROJECT: GUARANTEED RATE FIELD -HVAC REPLACEMENT PHASE XI 333 W 35TH STREET, CHICAGO, ILLINOIS 60616 DRAWING TITLE: ELECTRICAL SCHEDULES DESIGNED BY: TG CHECKED BY: BT 21276 PROJECT NO: SCALE: SHEET NO. NO SCALE E2.01

ISSUED FOR BID 11/05/2021 PRELIMINARY - NOT FOR CONSTRUCTION

A.	ALL ELECTRICAL WORK INCLUDING BUT NOT LIMITED TO INSTALLATION, GROUNDING, EQUIPMENT, AND DEVICES SHALL CONFORM TO THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION AND APPLICABLE NATIONAL, STATE, CITY, AND MUNICIPAL BUILDING CODES.	D. THE ENGINEER WILL MAKE PERIODIC VISITS TO THE JOBSITE TO OBSERVE THE PROGRESS OF TH WORK AND TO OBSERVE ITS ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE ENGINEER IS NOT A GUARANTOR OF THE CONTRACTOR'S WORK, RESPONSIBLE FOR JOBSITE SAFETY,
В.	ALL ELECTRICAL WORK SHALL CONFORM TO NATIONAL AND LOCAL STANDARDS AND GUIDELINES INCLUDING BUT NOT LIMITED TO THE LATEST VERSIONS OF THE FOLLOWING: 1. ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE	RESPONSIBLE FOR SUPERINTENDING, OR IN CHARGE OF THE ERECTION AND/OR CONSTRUCTION OF THE WORK. THE ENGINEER IS NOT RESPONSIBLE FOR SAFETY OR ADEQUACY OF ANY SHIPMENT, BUILDING, SCAFFOLDING, FORMS OR OTHER WORK AIDS USED.
	 ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IES) NATIONAL ELECTRICAL SAFETY CODE (NESC) 	V. LAWS, ORDINANCES, AND REGULATIONS A. ALL SYSTEMS SHALL CONFORM IN FULL AND/OR PART SHALL CONFORM TO ALL PERTINENT LAWS
	 NATIONAL ELECTRICAL SAFETY CODE (NESC) NFPA - NATIONAL FIRE PROTECTION ASSOCIATION: STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE (NFPA 70E) 	ORDINANCES AND REGULATIONS OF ALL BODIES HAVING JURISDICTION AT ALL GOVERNING LEVELS, NOTWITHSTANDING ANYTHING IN THESE DRAWINGS OR SPECIFICATIONS TO THE CONTRARY. IN CASE OF CONFLICT BETWEEN GOVERNING LEVELS, THE MORE STRINGENT LAWS SHALL APPLY.
C.	5. UNDERWRITERS LABORATORY (OR OTHER RECOGNIZED INSPECTING AGENCY) ALL MATERIALS SHALL BE LISTED BY AN APPROVED LABORATORY AND SHALL BE NEW AND THE	B. THE CONTRACTOR SHALL PAY ALL FEES AND OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY ANY AUTHORITY HAVING JURISDICTION IN CONNECTION WITH HIS
D.	BEST OF THEIR RESPECTIVE KINDS AND SHALL BE INSTALLED AND APPLIED AS INTENDED AND REQUIRED BY THE MANUFACTURER. ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO:	WORK. C. WHERE APPLICABLE, ALL NEW MATERIAL SHALL BEAR THE UNDERWRITER'S (UL) SEAL OF APPROVAL, AS WELL AS THOSE SEALS OF ALL MUNICIPALITIES HAVING JURISDICTION.
	 ALL MATERIALS EQUIPMENT, TOOLS, AND LABOR REQUIRED FOR A COMPLETE AND CODE COMPLIANT 	 CERTIFICATES TO THIS AFFECT TO BE FURNISHED TO ARCHITECT UPON REQUEST. D. THE ELECTRICAL CONTRACTOR SHALL SECURE AND PAY FOR ALL LICENSES REQUIRED BY THE GOVERNING BODIES TO OPERATE AS AN ELECTRICAL CONTRACTOR FOR THIS PROJECT.
	SYSTEM.3. ANY OSHA REQUIREMENTS THAT MAY APPLY TO THE WORK UNDER THIS CONTRACT	VI. WORKMANSHIP
	 INCLUDING BUT NOT LIMITED TO SAFETY MEETINGS, STRICT LOCK/OUT/TAG/OUT PROCEDURES, AND PROPER PROTECTIVE EQUIPMENT. 4. LABOR AND SPECIALTY MODELING SOFTWARE REQUIRED FOR INTERDISCIPLINARY 	A. ALL WORK TO BE PERFORMED SHALL BE DONE BY QUALIFIED MECHANICS. ALL MECHANICS IN THE EMPLOY OF THIS CONTRACTOR ON THIS PROJECT SHALL BE SKILLED IN THE PHASES OF THE WORK TO WHICH THEY ARE USED.
	 COORDINATION AND FAMILIARIZATION WITH SITE CONDITIONS. TRAINING AND GATHERING OF DOCUMENTATION FOR CLOSEOUT PROCEDURES. 	B. ALL WORK MUST BE DONE IN WORKMANLIKE MANNER TO THE COMPLETE SATISFACTION OF THE ENGINEER. ALL MATERIAL SHALL BE NEW, OF THE QUALITY SPECIFIED, FREE FROM DEFECTS ANI IN FIRST-CLASS CONDITION. ALL VERTICAL CONDUITS SHALL BE PLUMB.
E.	THE DRAWINGS AND SPECIFICATIONS SHALL BE UNDERSTOOD TO COVER COMPLETE SYSTEMS ACCORDING TO THEIR INTENT AND MEANING AS DESCRIBED HEREIN. THIS SPECIFICATION IS INCLUSIVE FOR EACH ITEM, REQUIRING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO PROPERLY INSTALL, ALTER, ADJUST AND PUT IN OPERATION THE COMPLETE ELECTRICAL	C. THE COMPLETE SYSTEM SHALL MEET THE REQUIREMENTS OF THE LOCAL ELECTRICAL CODE ANI AS MAY BE MODIFIED BY LOCAL AMENDMENTS.
F.	SYSTEM. THIS CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL ELECTRICAL COMPONENTS AND SYSTEMS AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM AND AS	D. THIS CONTRACTOR SHALL ESTABLISH SAFE WORKING PROCEDURES FOR THE PROTECTION OF THE WORKING CREW AND NON-WORKING OCCUPANTS IN ALL PHASES OF WORK, COMPLYING WITH THE APPLICABLE PROVISIONS OF ALL CITY, STATE AND FEDERAL SAFETY LAWS (OSHA). THI
	DESCRIBED HEREIN. ALL EQUIPMENT AND DEVICES SPECIFIED AND ADDITIONALLY REQUIRED WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. IT WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PURCHASE ALL EQUIPMENT AND FURNISH LABOR AND	SHALL INCLUDE "LOCK-OUT/TAG-OUT" AND REQUIRED GROUNDING. WORK UNDER THIS CONTRAC SHALL NOT BE DONE ON ENERGIZED CIRCUITS.
G.	EQUIPMENT FOR A COMPLETE CODE COMPLIANT OPERATING ELECTRICAL SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER LAYOUT AND CONSTRUCTION OF THE WORK INCLUDED IN THIS CONTRACT, INSTALLED ACCORDING TO THE APPLICABLE BUILDING	VII. MATERIALS AND EQUIPMENT A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL CONFORM TO THE GRADE, QUALITY
H.	CODES. SPECIFIC VOLTAGE AND CURRENT REQUIREMENTS ON THE ELECTRICAL DRAWINGS SHALL NOT RELIEVE THIS CONTRACTOR OF THE RESPONSIBILITY TO VERIFY THE VOLTAGE PRIOR TO	AND STANDARD SPECIFIED HEREIN. ALL EQUIPMENT OFFERED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR SERVICE, IN ACCORDANCE WITH ENGINEERING DATA, RATINGS OR OTHER COMPREHENSIVE LITERATURE MADE AVAILABLE TO THE PUBLIC AND IN EFFECT AT THE TIME OF OPENING OF BIDS.
	PURCHASING OR ROUGH-IN WORK. THIS CONTRACTOR SHALL REVIEW ALL DEVICES AND EQUIPMENT FURNISHED BY HIS/HER CONTRACT AND THOSE FURNISHED BY OTHER CONTRACTORS ARE IN AGREEMENT WITH THE DATA SHOWN ON THE DRAWINGS. THE E.C. SHALL PROVIDE FEEDERS, CABLE AND DEVICES THAT ARE IN ACCORDANCE WITH CODE.	B. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR TYPE AND CAPACITY OF EACH PIECE OF EQUIPMENT USED, UNLESS INDICATED OTHERWISE, THE ENGINEER MAKES NO REPRESENTATION AS TO WHETHER OR NOT
I.	ITEMS, ACCESSORIES, AND DEVICES REASONABLY INFERABLE AS NECESSARY FOR THE COMPLETE AND PROPER OPERATION OF ANY SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR	ANY HAZARDOUS OR CONTAMINATED MATERIALS (INCLUDING BUT NOT LIMITED TO ASBESTOS, PCB'S, CONTAMINATED SOILS, ETC.) ARE PRESENT WITHIN THE EXISTING BUILDING OR ON THE SITE. WORK SHOWN ON THE DRAWINGS AND/OR INDICATED IN THE SPECIFICATIONS SHALL NOT
J.	FOR SUCH SYSTEM(S), WHETHER THEY ARE SPECIFICALLY CALLED FOR BY THE DRAWINGS AND/OR SPECIFICATIONS OR NOT. THE DRAWINGS MAY NOT SHOW COMPLETE OR ACCURATE DETAILS OF THE EXISTING FACILITY IN	BE CONSTRUED TO CALL FOR CONTACT WITH ANY OF THESE MATERIALS. IF THESE MATERIALS ARE ENCOUNTERED OR SUSPECTED THE CONTRACTOR SHALL NOT DISTURB THEM AND SHALL CONTACT THE ENGINEER IMMEDIATELY.
	EVERY RESPECT. EXACT LOCATIONS AND RELATIONS ARE TO BE DETERMINED IN THE FIELD AND SHALL BE TO THE SATISFACTION OF THE OWNER. THIS CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL FIELD MEASUREMENTS AND EXACT EQUIPMENT LOCATIONS.	C. ALL INSTRUMENTS, APPARATUS AND EQUIPMENT SHALL BE TESTED AND PROVED TO BE ELECTRICALLY AND MECHANICALLY WITHOUT DEFECTS. THE ELECTRICAL SYSTEM SHALL BE TESTED FOR GROUNDS OR SHORTS. IF THE TROUBLE IS WITHIN THE CIRCUIT WIRING, ALL SHORTED OR GROUNDED WIRES SHALL BE REPLACED AND THEN RE-TESTED. ALL METERS,
K.	DRAWINGS ARE GENERALLY DIAGRAMMATIC. ROUTING OF CONDUIT AND RACEWAYS ARE SHOWN FOR CONCEPT. BUT DO NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING, NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF THIS WORK.	CABLES, EQUIPMENT OR APPARATUS NECESSARY FOR MAKING ALL TESTS SHALL BE FURNISHED AND PROVIDED BY THIS CONTRACTOR. ANY TESTING OR EQUIPMENT MUST CONFORM TO OSHA REQUIREMENTS.
	CONTRACTOR SHALL MAKE ANY REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS, SUCH AS OFFSETS, BENDS OR CHANGES IN ELEVATION DUE TO COORDINATION WITH THE WORK OF OTHER TRADES AND BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER OR DELAY IN	VIII. COORDINATION WITH OTHER TRADES
L.	COMPLETION DATE OF THE PROJECT. IT IS INTENDED THAT EQUIPMENT SHALL BE LOCATED SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS OF THE BUILDING, NOTWITHSTANDING THE FACT THAT LOCATIONS	A. THE SEQUENCE FOR THE INSTALLATION OF ALL WORK SHALL BE COORDINATED BETWEEN ALL CONTRACTORS ON THE PROJECT AND IN STRICT ACCORDANCE WITH ENGINEER AND OWNERS STIPULATION AS CALLED FOR IN THE SPECIFICATION AND/OR AS DIRECTED.
	INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLEARNESS OF PRESENTATION. ENGINEER HAS RIGHT TO MOVE ANY EQUIPMENT OR DEVICE BY 10 FEET WITHOUT ANY ADDITIONAL COST TO OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO ROUGH-IN.	B. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE LABOR AND SOFT MATERIALS REQUIRE FOR COORDINATING CONSTRUCTION INSTALLATION ELECTRONICALLY WITH OTHER TRADES USING CURRENT SOFTWARE AND MODELING SYSTEMS. THE CONTRACTOR SHALL CONFIRM MODELING RECUMPENTS APPORT TO PID
M.	CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL X-RAY IMAGING, CORING, CUTTING, PATCHING, REPAIRING AND REFINISHING OF BUILDING CONSTRUCTION REQUIRED TO	MODELING REQUIREMENTS PRIOR TO BID. C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THAT WORK OF THE OTHER TRADES. CONTRACTOR IS COMPLETELY RESPONSIBLE IF FAILURE ON HIS PART TO
	ACCOMMODATE THE INSTALLATION OF THEIR WORK. ALL PATCHING, REPAIRING AND REFINISHING WORK SHALL BE PERFORMED BY THOSE REGULARLY INVOLVED IN THAT TRADE AND SHALL MATCH THE NEW CONSTRUCTION AS CLOSELY AS POSSIBLE. CARE SHALL BE TAKEN SO AS NOT TO DAMAGE ANY EXISTING BUILDING CONSTRUCTION OR ITEMS THAT ARE TO REMAIN. ANY	COORDINATE EFFORTS RESULTS IN EXTRA WORK HAVING TO BE DONE TO COMPLETE A TASK. AS SUCH, HIS FAILURE SHALL NOT BE THE BASIS FOR ANY EXTRA CHARGE AGAINST THE OWNER. D. CONTRACTOR SHALL CHECK DRAWINGS OF OTHER TRADES TO VERIFY THAT SPACES IN WHICH
	EXISTING FINISHES THAT ARE DAMAGED DURING THE INSTALLATION OF NEW WORK SHALL BE REPAIRED, REPLACED AND PAID FOR BY THE INSTALLING CONTRACTOR, TO THE SATISFACTION OF THE ENGINEER AND OWNER.	THEIR WORK WILL BE INSTALLED IS CLEAR OF OBSTRUCTIONS. WORK SHALL BE INSTALLED TO MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITION AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, CONTRACTOR SHALL NOTIFY ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION OF THEIR WORK. CONTRACTOR SHALL
N.	THIS CONTRACTOR IS RESPONSIBLE FOR SCHEDULING DELIVERY, RECEIVING, UNLOADING, UNCRATING, STORING, SETTING IN PLACE, AND PROTECTING FROM DAMAGE, VANDALISM, THEFT OR WEATHER ALL NEW EQUIPMENT FURNISHED BY THIS CONTRACTOR FOR THE ENTIRETY OF	FURNISH OTHER TRADES ADVANCE INFORMATION AND/OR SHOP DRAWINGS ON LOCATIONS AND SIZES OF CONDUITS, RACEWAYS, EQUIPMENT, FRAMES, BOXES, SLEEVES AND OPENINGS, ETC. NEEDED FOR THEIR WORK TO PERMIT OTHER TRADES AFFECTED TO INSTALL THEIR WORK
	CONSTRUCTION. THIS REQUIREMENT ALSO APPLIES TO ITEMS FURNISHED BY THE OWNER TO THE ELECTRICAL CONTRACTOR. THIS CONTRACTOR SHALL COORDINATE THE DELIVERY TO MEET THE PROJECT COMPLETION DATES AS ESTABLISHED BY THE OWNER.	PROPERLY AND WITHOUT DELAY. E. WHERE THERE IS EVIDENCE THAT WORK OF ONE TRADE WILL INTERFERE WITH WORK OF OTHER TRADES, ALL TRADES SHALL MEET ON JOB SITE TO WORK OUT SPACE CONDITIONS, AND MAKE
	REFER TO ARCHITECTURAL DRAWINGS FOR EXISTING BUILDING CONSTRUCTION THAT IS TO REMAIN AND, THEREFORE, SUBJECT TO PATCHING, REPAIRING, AND REFINISHING. ANY ITEMS AND EQUIPMENT SCHEDULED TO BE REMOVED THAT THE OWNER WANTS TO RETAIN	SATISFACTORY ADJUSTMENTS TO INSTALLATION OF THE NEW WORK. CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL ELECTRICAL DEVICES AND EQUIPMENT PRIOR TO ROUGH-IN WITH FIELD CONDITIONS, SHOP DRAWINGS AND WORK OF OTHER TRADES. EACH CONTRACTOR SHALL BE RESPONSIBLE, AT THEIR OWN EXPENSE, FOR THE REMOVAL AND REINSTALLATION OF
	SHALL BE REMOVED CAREFULLY (SO AS NOT TO DAMAGE THEM) AND TURNED OVER TO THE OWNER. ALL OTHER ITEMS TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE.	ANY PART OF THEIR WORK IF SAME WAS INSTALLED WITHOUT CONSULTING WITH OTHER TRADES BEFORE INSTALLING THEIR WORK. F. REFER TO THE ARCHITECTURAL, MECHANICAL AND PLUMBING SHEETS AND SPECIFICATIONS FOR
Q.	CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR OWN CLEANUP DURING CONSTRUCTION. IF CONTRACTOR FAILS TO PROVIDE SUCH CLEANUP, THE ENGINEER WILL DIRECT ANOTHER CONTRACTOR TO PERFORM THE CLEAN-UP AND THE NEGLIGENT CONTRACTOR SHALL PAY THE ASSOCIATED BACK-CHARGES AS DEEMED APPROPRIATE BY THE ENGINEER.	EQUIPMENT LOCATIONS, LOADS, AND ADDITIONAL REQUIREMENTS. G. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR EXACT
R.	ACCESS TO WORK AREAS, INCLUDING WORK SCHEDULED THEREIN, MUST HAVE PRIOR APPROVAL OF THE OWNER. ALL WORK AREAS WILL BE KEPT CLEAN BY THIS CONTRACTOR WITH	 LOCATION OF HVAC EQUIPMENT TO BE WIRED PRIOR TO ROUGH-IN. H. THE EC SHALL REVIEW AND BE FAMILIAR WITH THE MECHANICAL DRAWINGS AND SCHEDULES FO FINAL EQUIPMENT SELECTION. THE EC SHALL VERIFY HORSEPOWER, VOLTAGE, PHASES,
	THOROUGH CLEAN UP AT END OF EACH DAY'S WORK. ALL EXISTING ELECTRIC SERVICE EQUIPMENT IS TO REMAIN OPERATIONAL DURING THE CONSTRUCTION PERIOD. ANY TEMPORARY WIRING OR REROUTING OF CIRCUITRY TO ACHIEVE THIS IS BY THE ELECTRICAL CONTRACTOR.	AMPACITY, AND SPECIAL MOUNTING BEFORE SUBMITTING HIS BID. ANY SPECIAL CONDITIONS OF CONFLICTS MUST BE INDICATED IN WRITING TO THE ENGINEER PRIOR TO OR AT THE TIME OF BID I. BEFORE STARTING ANY DEMOLITION ON HVAC EQUIPMENT WHICH HAS AN ELECTRICAL
S.	CONTRACTOR SHALL FURNISH MATERIALS AND USE INSTALLATION METHODS SUITABLE FOR THE ENVIRONMENTAL CONDITIONS OF THE AREA IN WHICH EQUIPMENT, FIXTURES AND DEVICES ARE INSTALLED.	CONNECTION.THE MECHANICAL CONTRACTOR SHALL MEET WITH THE ELECTRICAL CONTRACTOR TO IDENTIFY ALL SUCH EQUIPMENT. THE ELECTRICAL CONTRACTOR WILL DISCONNECT THE POWER TO EACH UNIT, REMOVE CONDUIT, WIRING, DISCONNECT SWITCHES, AND STARTERS UNDER HIS CONTRACT. MECHANICAL CONTRACTOR WILL REMOVE ALL EQUIPMENT, ELECTRICAL
Т.	CONTRACTOR SHALL PROVIDE SLEEVES IN BEAMS, FLOORS, COLUMNS AND WALLS, AS REQUIRED BY JOB SITE CONDITIONS, AND/OR AS SPECIFIED, WHEN INSTALLING THEIR WORK. ALL BEAMS AND COLUMNS WHICH ARE REQUIRED TO BE SLEEVED SHALL BE CUT AND REINFORCED AS REQUIRED BY FIELD CONDITIONS AND LOCATIONS AND SIZES SHALL BE CHECKED AND APPROVED	TEMPERATURE CONTROL AND WIRING UNDER HIS CONTRACT. MECHANICAL CONTRACTOR SHAL NOT START DEMOLITION UNTIL ALL ELECTRICAL POWER HAS BEEN SAFELY DISCONNECTED FROM EQUIPMENT TO BE DEMOLISHED.
U.	BY ENGINEER BEFORE CONTRACTOR CUTS ANY BUILDING STRUCTURAL MEMBER. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND STRUCTURAL CONTRACT DRAWINGS (BEFORE SUBMITTING THEIR BIDS) TO FAMILIARIZE THEMSELVES WITH THE EXTENT OF THE	IX. SUBMITTALS A. THE CONTRACTOR SHALL PROVIDE COMPLETE SHOP DRAWINGS INDICATING EQUIPMENT, DEVICI
V	GENERAL CONTRACTORS WORK, CEILING HEIGHTS AND CLEARANCE FOR INSTALLING THEIR WORK. CONTRACTOR SHALL STORE ALL MATERIALS AND EQUIPMENT SHIPPED TO THE SITE IN A	AND RACEWAY LOCATIONS, INVERTS FOR OUTDOOR DEVICES, AND COMPLETE INSTALLATION DRAWINGS. THE DRAWINGS SHALL BE MAINTAINED AT THE JOB SITE AND SHALL BE UPDATED AND MAINTAINED IN AS NEAR AS POSSIBLE TO THE "AS INSTALLED" STATUS OF THE PROJECT AND
v.	PROTECTED AREA. IF MATERIAL IS STORED OUTSIDE OF THE BUILDING, IT MUST BE STORED OFF THE GROUND A MINIMUM OF SIX INCHES (6") ON 6' x 6' PLANKS AND/OR WOOD PALLETS. ALL PIPING AND DUCTWORK WILL HAVE THE ENDS CLOSED TO KEEP OUT DIRT AND OTHER DEBRIS.	SHALL BE KNOWN AS "CONTRACT RECORD DOCUMENTS". THE DRAWINGS SHALL BE REVISED IN AN AUTOCAD FORMAT AND SUBMITTED TO THE ENGINEER FOR REVIEW. THE FINAL ELECTRICAL PAYOUT SHALL NOT BE MADE TO THE EC UNTIL THE CONTRACT RECORD DOCUMENTS HAVE BEE RECEIVED AND REVIEWED BY THE ENGINEER. THE ENGINEER WILL PROVIDE WRITTEN
	NO EQUIPMENT SHALL BE STORED ON THE SITE UNLESS IT IS SITTING ON WOOD PLANKS AND COMPLETELY PROTECTED WITH WEATHERPROOF COVERS. ALL MATERIALS AND EQUIPMENT MUST BE COMPLETELY COVERED WITH WATERPROOF TARPS OR VISQUIN.	CONFIRMATION TO THE OWNER AND GENERAL CONTRACTOR FOR FINAL PAYOUT BASED ON THE REVIEW OF THE CONTRACT RECORD DOCUMENTS.B. PROVIDE PRODUCT DATA FOR ALL EQUIPMENT AND DEVICES SUCH AS PANELBOARDS.
W.	ELECTRICAL CONTRACTOR SHALL COORDINATE ALL NON-ACCESSIBLE SYSTEM DEVICES, PULL BOXES AND EQUIPMENT, ETC. TO ACCESSIBLE CEILING AREAS. E.C. SHALL INCLUDE ALL COMPLETE COSTS FOR RELOCATION AND VERIFY SUCH CONDITIONS WITH ARCHITECTURAL CEILING PLANS PRIOR TO FINAL BID.	 B. PROVIDE PRODUCT DATA FOR ALL EQUIPMENT AND DEVICES SUCH AS PANELBOARDS, DISCONNECT SWITCHES, CONDUIT & JUNCTION BOXES, WIRING, GROUNDING MATERIALS, WIRING DEVICES, EMERGENCY GENERATOR, PIPING MATERIALS, VALVES, ETC. C. PROVIDE DIMENSIONAL DRAWINGS, MANUFACTURERS' TECHNICAL DATA, PERFORMANCE,
X.	ELECTRICAL CONTRACTOR SHALL FOLLOW NEMA NO. PB-1.1 1979 PUBLICATION, PART V PROCEDURES PRIOR TO ENERGIZATION OF ANY SWITCHGEAR. THE ELECTRICAL CONTRACTOR SHALL USE ONLY TRAINED AND AUTHORIZED PROFESSIONAL ELECTRICAL CRAFT PERSONS. THE	ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES. INCLUDE WIRING DIAGRAMS FOR POWER, SIGNAL, AND CONTROL WIRING.
	E.C. SHALL FURNISH ANY PERSONNEL SAFETY EQUIPMENT, LADDERS, MAN-LIFTS, AND POWERED HAND TOOLS THAT MAY BE REQUIRED. ALL POWERED TOOLS SHALL BE IN GOOD CONDITION WITH ALL GROUND CONDUCTOR IN PROPER OPERATION.	D. PROVIDE OPERATION AND MAINTENANCE DATA FOR ALL EQUIPMENT AND DEVICES INCLUDING MANUFACTURER'S WRITTEN INSTRUCTIONS FOR TESTING AND ADJUSTING EQUIPMENT AND DEVICES.
Y.	VERIFY CODE CLEARANCES FOR ALL NEW ELECTRICAL WORK BEFORE PROCEEDING WITH CONSTRUCTION. PROVIDE ADEQUATE WORKING CLEARANCES, DEDICATED EQUIPMENT SPACE, AND LEAK PROTECTION SYSTEMS AS REQUIRED BY APPLICABLE ELECTRICAL CODES.	E. PROVIDE SHOP DRAWINGS FOR CONDUITS LARGER THAN 1" AND ALL EXPOSED RACEWAYS.
	COORDINATE USAGE OF AVAILABLE SPACE WITH ALL TRADES. IN THE EVENT OF CONFLICTS, NOTIFY THE ENGINEER BEFORE PROCEEDING WITH THE WORK.	X. IDENTIFICATION A. IN ADDITION TO THE REQUIREMENTS OF THE ELECTRICAL CODE AND OSHA, INSTALL AN IDENTIFICATION SIGN WHICH CLEARLY INDICATES INFORMATION REQUIRED FOR USE AND
	CONFLICT IN DOCUMENTS GENERALLY, THE DRAWINGS ESTABLISH THE LOCATION, QUANTITY AND RELATIONSHIP OF THE	MAINTENANCE OF ITEMS SUCH AS PANELBOARDS, MOTOR CONTROLLERS (VFD, STARTERS, ETC.) SAFETY SWITCHES, CONTROL DEVICES AND OTHER SIGNIFICANT EQUIPMENT. NAMEPLATES SHALL BE LAMINATED BLACK PHENOLIC RESIN WITH A WHITE CORE WITH ENGRAVED LETTERING, A MINIMUM OF 6 MM (1/4 INCH) HIGH.
	PARTS OF THE WORK, AND THE SPECIFICATIONS DEFINE THE TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP. WORK SHOWN IN THE DRAWINGS AND NOT MENTIONED IN THE SPECIFICATIONS, OR REQUIRED BY THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, SHALL BE PROVIDED AS IF FULLY PROVIDED FOR IN BOTH. IN THE CASE OF CONFLICTS BETWEEN	B. PROVIDE PANELBOARD AND CIRCUIT NUMBER TAG ON EACH RECEPTACLE.
	THE DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT, THE ENGINEER SHALL DETERMINE THE INTENT. IN SUCH CASES, IN GENERAL, THE MORE STRINGENT REQUIREMENT CONCERNING GREATER QUANTITY, QUALITY AND/OR RESULTING IN A HIGHER COST SHALL GOVERN WITHOUT FURTHER COST TO THE OWNER.	XI. FIRESTOPPING A. APPLY UL LISTED FIRE STOPPING TO PENETRATIONS OF FIRE-RATED FLOOR AND WALL
<u>III. :</u>	SHUT-DOWN OF SYSTEM	ASSEMBLIES FOR ELECTRICAL INSTALLATIONS TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.
	COORDINATE AND SEQUENCE DEMOLITION SO AS NOT TO CAUSE SHUTDOWN OF OPERATION OF SURROUNDING AREAS.	B. PROVIDE FIRE PUTTY TO MEET FIRE RATED ENCLOSURE UL LISTING REQUIREMENTS ON ALL ELECTRICAL BOXES INSTALLED ON THE FIRE RATED WALLS AND CEILINGS.
B.	 SHUT-DOWN PERIODS: 1. ARRANGE TIMING OF SHUT-DOWN PERIODS OF SYSTEM, SERVICE WITH OWNER. DO NOT SHUT DOWN ANY SERVICE, WITHOUT PRIOR WRITTEN APPROVAL. PROVIDE NOTICE MINIMUM 	XII. CLOSEOUT PROCEDURES A. TESTING
	 WORKING DAYS IN ADVANCE. KEEP SHUT-DOWN PERIOD TO MINIMUM OR USE INTERMITTENT PERIOD AS DIRECTED BY THE 	 PERFORM TESTS RECOMMENDED BY MANUFACTURER INCLUDING VISUAL, MECHANICAL, AND ELECTRICAL INSPECTIONS. REPEORM INSULATION RESISTANCE TESTS IN ACCORDANCE WITH IEEE 42
	OWNER.3. MAINTAIN LIFE-SAFETY SYSTEM IN FULL OPERATION IN OCCUPIED FACILITIES, OR PROVIDE NOTICE MINIMUM 15 WORKING DAYS IN ADVANCE.	 PERFORM INSULATION-RESISTANCE TESTS IN ACCORDANCE WITH IEEE 43. FUNCTIONALLY TEST EQUIPMENT TO ENSURE IT IS INSTALLED PER DESIGN.
	4. THE SYSTEM SHUT-DOWN SHALL BE DONE DURING OFF-BUSINESS HOURS.	 PROVIDE OPERATIONAL TEST AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, CONFIRM PROPER OPERATION. PROVIDE WRITTEN REPORT OF THE RESULTS OF TESTS AND INSPECTIONS.
	VISIT TO SITE THIS CONTRACTOR SHALL CAREFULLY EXAMINE THE ENTIRE SET OF CONTRACT DOCUMENTS,	 PERFORM EMERGENCY SYSTEM (GENERATOR, TRANSFER SWITCH, EMERGENCY LIGHTING, BATTERIES, ETC.) TESTS RECOMMENDED BY MANUFACTURER INCLUDING VISUAL AND MECHANICAL AND ELECTRICAL INSPECTIONS. FUNCTIONALLY TEST EQUIPMENT TO ENSURE
	VISIT THE SITE, AND FULLY FAMILIARIZE HIMSELF/HERSELF AS TO ALL CONDITIONS AND MATTERS THAT CAN AFFECT THE WORK OR THE COST THEREOF. THIS CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ENGINEER IN WRITING, AND PRIOR TO BID, OF DISCREPANCIES OR OMISSIONS FROM THE DRAWINGS, SPECIFICATIONS OR OTHER DOCUMENTS. OBTAIN CLARIFICATION PRIOR TO	MECHANICAL AND ELECTRICAL INSPECTIONS. FUNCTIONALLY TEST EQUIPMENT TO ENSURE IT IS INSTALLED PER DESIGN INCLUDING EMERGENCY LIGHTING BLACKOUT TEST. PROVIDE OPERATIONAL TEST AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, CONFIRM PROPE OPERATION. PROVIDE WRITTEN REPORT OF THE RESULTS OF TESTS AND INSPECTIONS.
	SUBMITTING ANY BID. LACK OF NOTIFICATION SHALL BE INTERPRETED TO INDICATE NO DISCREPANCIES OR CONFLICTS EXIST AND ADDITIONAL COMPENSATION WILL NOT BE GRANTED AFTER AWARD OF CONTRACT FOR ANY WORK REQUIRED TO COMPLY WITH THESE REQUIREMENTS OR INTENT.	 B. GUARANTEE 1. THIS CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIAL, FOULIEMENT AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE

I. GENERAL CONDITIONS AND REQUIREMENTS

. SUBMISSION OF PROPOSALS SHALL BE CONSIDERED EVIDENCE THAT THE CONTRACTOR HAS VISITED AND EXAMINED THE SITE.

INVOLVED IN HIS CONTRACT DURING THIS GUARANTEE PERIOD.

C. NO EXTRA PAYMENT WILL BE ALLOWED THE CONTRACTOR FOR EXTRA WORK CAUSED BY FAILURE

TO VISIT, EXAMINE AND VERIFY.

RACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIAL, T AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER. THE CONTRACTOR SHALL PROVIDE FREE SERVICE FOR ALL EQUIPMENT

2. THE GUARANTEE SHALL INCLUDE RESTORATION TO ITS ORIGINAL CONDITION OF ALL

ADJACENT WORK THAT MUST BE DISTURBED IN FULFILLING THIS GUARANTEE. 3. ALL SUCH REPAIRS AND/OR REPLACEMENTS SHALL BE MADE WITHOUT DELAY AND AT THE CONVENIENCE OF THE DEVELOPER AND TENANT.

- 1. INSTALLER AND MANUFACTURERS AGREE TO REPAIR OR REPLACE MATERIALS OR WORKMANSHIP THAT FAIL WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY PERIOD SHALL BE FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION. D. INSPECTION
- 1. ALL ELECTRICAL WORK IS TO BE INSPECTED AND APPROVED BY THE AUTHORIZED REPRESENTATIVE BEFORE THE SYSTEM IS ENERGIZED. DUPLICATE CERTIFICATES OF THIS APPROVAL SHALL BE DELIVERED TO THE ENGINEER.
- 2. ALL FEES FOR THIS INSPECTION AND APPROVAL SHALL BE BORNE BY THE CONTRACTOR AND ARE TO BE INCLUDED IN HIS/HER BID. NO EXTRA COMPENSATION SHALL BE ALLOWED FOR THIS SERVICE E. CLOSEOUT DOCUMENT AND EQUIPMENT TURNOVER
- 1. PROVIDE FINAL AS-BUILT DRAWINGS IN ELECTRONIC PDF FORMAT TO OWNER AND ENGINEER SHOWING FINAL INSTALLED CONDITIONS AND BEFORE FINAL PAYMENT WILL BE ISSUED.
- 2. THE AS-BUILT DRAWINGS SHALL DIAGRAMMATICALLY INDICATE THE INSTALLED CONDITION. CIRCUIT NUMBERS, AND LOCATION OF THE DEVICES FOR ALL WORK. THESE DRAWINGS SHALL BE CONSIDERED CONTRACT RECORD DOCUMENTS AND SHALL ACCURATELY REFLECT THE
- ACTUAL INSTALLATION OF THE ELECTRICAL COMPONENTS AND CONDUITS. 3. PROVIDE ALL EQUIPMENT INSTALLATION, MAINTENANCE, AND INSTRUCTION MANUALS.
- 4. TURN OVER ALL KEYS, SPARE MATERIALS, STOCK ITEMS, AND OTHER EQUIPMENT PURCHASED AS PART OF THE CONTRACT AND BELONGING TO THE OWNER.

XIII. HANGERS AND SUPPORT SYSTEMS

C. WARRANTY

- A. CONTRACTOR SHALL INSTALL ALL AUXILIARY SUPPORTING STEEL AS REQUIRED FOR THE SUPPORTING OF THEIR CONDUIT, FIXTURES, DEVICES, EQUIPMENT, ETC. ALL SUPPORTING STEEL FOR ITEMS ABOVE A SUSPENDED CEILING SHALL BE FROM BUILDING STRUCTURAL MEMBERS ONLY.
- B. THIS CONTRACTOR SHALL VERIFY ALL EQUIPMENT AND DEVICE MOUNTING ARRANGEMENTS, HEIGHTS, AND LOCATIONS PRIOR TO ROUGH-IN. ANY MENTION OF A SPECIFIC MOUNTING ARRANGEMENT, HEIGHT, OR LOCATION SHALL NOT RELIEVE THIS CONTRACTOR OF THE RESPONSIBILITY TO COORDINATE LOCATIONS AND SPECIFIC REQUIREMENTS WITH THE EQUIPMENT FURNISHED BY OTHER TRADES IN THE SAME AREA. NO ADDITION TO THE CONTRACT SUM WILL BE PERMITTED FOR WRONG OR CONFLICTING LOCATIONS. THE OWNER RESERVES THE RIGHT TO RELOCATE ANY DEVICE 10' - 0" PRIOR TO ROUGH-IN WITHOUT ANY ADDITIONAL CHARGE BY THIS CONTRACTOR. THIS CONTRACTOR SHALL FULLY COORDINATE ELECTRICAL WORK WITH THE INSTALLATION OF WORK BY ALL OTHER TRADES AND MAKE NECESSARY FIELD ADJUSTMENTS AS REQUIRED TO ACCOMMODATE THE ELECTRICAL INSTALLATION. ALL OF THE ABOVE SHALL BE INCLUDED IN THE SCOPE OF WORK AT NO ADDITIONAL COST TO THE OWNER.
- ALL CONDUITS SHALL BE RIGIDLY SUPPORTED BY MEANS OF APPROVED CONDUIT HANGERS OR CLAMPS FIRMLY ANCHORED IN PLACE AND SPACED AT INTERVALS NOT TO EXCEED 7'-0". ALL EXPOSED CONDUIT SHALL BE RACKED AND PARALLEL OR PERPENDICULAR TO WALLS AND STRUCTURAL MEMBERS, WITH 90° BENDS WHERE REQUIRED. PULL AND JUNCTION BOXES SHALL BE HELD TO A MINIMUM. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL RODS, ANGLES, RAILS, STRUTS, BRACE PLATES, PLATFORMS, ETC.. REQUIRED FOR SUSPENSION OR SUPPORT OF CONDUIT AND EQUIPMENT AND ALL STRAPS, CLAMPS, THREADED RODS, TURNBUCKLES, ANCHORS, FASTENERS, AND MISCELLANEOUS SPECIALTIES FOR THE ATTACHMENT OF HANGERS AND SUPPORTS TO THE STRUCTURE. ALL CONDUIT FASTENERS STRAPS, SUPPORTS AND ETC., MUST BE "BOLT-ON" GALVANIZED STEEL ON EXPOSED CONSTRUCTION. SINGLE CONDUIT SUPPORTS SHALL BE MINNERALIC OR EQUAL.
- D. IN SUSPENDED CEILINGS, SUPPORT CONDUIT AND JUNCTION BOXES DIRECT FROM THE STRUCTURAL SLAB, DECK, OR FRAMING PROVIDED FOR THAT PURPOSE. THE CONDUITS SHALL NOT BE CLIPPED TO THE CEILING SUPPORT WIRES OR SPLICE UNLESS THE CEILING SYSTEM HAS BEEN SPECIFICALLY DESIGNED FOR THAT PURPOSE AND APPROVAL GRANTED BY ENGINEER.
- XIV. RACEWAY, JUNCTION BOX, AND PULL BOX SYSTEMS A. THIS CONTRACTOR SHALL INSTALL SIZE OF CONDUIT CALLED FOR ON DRAWINGS AND SHALL NOT REDUCE SIZE OF CONDUITS TO SUIT WIRE FILL CAPACITY, MINIMUM SIZE OF CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED. THIS CONTRACTOR SHALL LEAVE A WIRE PULLING LINE IN ALL
- CONDUITS WHICH ARE NOT FILLED TO CAPACITY. THE E.C. SHALL VERIFY ALL CONDUIT SIZE PRIOR TO INSTALLATION. NOTIFY THE ENGINEER IMMEDIATELY OF ANY CONFLICT. B. THE RACEWAY SYSTEM SHALL BE METALLIC, ELECTRICAL METALLIC TUBING "EMT" IN TRADE SIZED CONCEALED WHEREVER POSSIBLE. ALL FITTINGS SHALL BE COMPRESSION TYPE ONLY EXCEPT
- WHERE PVC IS ALLOWED BY CONTRACT DOCUMENTS. C. CONDUIT USED OUTDOORS AND NOT BELOW GRADE OR EXPOSED TO WEATHER SHALL BE TYPE INTERMEDIATE METALLIC CONDUIT "IMC" OR RIGID GALVANIZED METAL CONDUIT "RMC" WITH THREADED COUPLINGS. PROVIDE MEYERS HUBS AT NON/CAST TYPE JUNCTION/PULL BOXES AND SWITCH/RECEPTACLE OUTLETS.
- . CONDUIT USED OUTDOORS, BELOW GRADE, EMBEDDED IN CONCRETE, OR EXPOSED TO WEATHER SHALL BE TYPE RIGID GALVANIZED METAL CONDUIT "RMC" WITH THREADED COUPLINGS. PROVIDE MEYERS HUBS AT NON/CAST TYPE JUNCTION/PULL BOXES AND SWITCH/RECEPTACLE OUTLETS.
- E. DIRECT BURIED UNDERGROUND CONDUIT SHALL BE HEAVY WALL SCH.80, UL LISTED PVC TYPE MAY BE USED ONLY WHERE ACCEPTABLE BY CODE. . ALL CONDUITS SHALL BE RUN PARALLEL AND/OR PERPENDICULAR TO CONSTRUCTION LINES OF
- THE BUILDING AND IN THE CASE OF CEILING AND FLOOR RUNS, CONDUITS SHALL BE GROUPED AND SUPPORTED WITH TRAPEZE/TYPE RACKS OR STANDOFFS WITH INDIVIDUAL CONDUITS SEPARATELY ACCESSIBLE FOR REPLACEMENT AND MAINTENANCE.
- G. ALL WIRING INCLUDING ALL LOW VOLTAGE CABLING BEHIND THE WALL AND ABOVE THE NON-ACCESSIBLE CEILING SHALL BE INSTALLED IN CONDUIT. H. JUNCTION BOXES, PULL BOXES AND TERMINAL BOXES SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS AND AT OTHER LOCATIONS AS REQUIRED TO FACILITATE THE PULLING OF CABLES.
- PULL BOXES SHALL BE CODE SIZED AND SHALL BE CONSTRUCTED OF CODE GAUGE GALVANIZED SHEET STEEL. EACH BOX SHALL BE PROVIDED WITH A SCREW-ON REMOVABLE COVER. PROVIDE FLANGED COVERS ON FLUSH BOXES. BOXES SHALL BE SMOOTH, SQUARE AND SET PARALLEL WITH WALLS AND CEILING.
- J. ALL BOXES SHALL BE PROVIDED IN LOCATIONS WHERE REASONABLE ACCESS CAN BE OBTAINED IN THE FUTURE WITHOUT REQUIRING REMOVAL OF BUILDING ELEMENTS OR FINISHES. IT SHALL BE THE SOLE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO RELOCATE BOXES TO ACCESSIBLE AREAS WHERE INACCESSIBILITY IS DETERMINED BY THE INSPECTOR OR ENGINEER.
- K. REMOVE ALL UNUSED AND ABANDONED CONDUIT AND RACEWAY COMPLETELY. .. ANY SURFACE RACEWAY USED ON A FINISHED SURFACE MUST BE METALLIC RACEWAY, WIREMOLD OR EQUAL. IF RACEWAY USED FOR POWER AND DATA, THEN MUST BE DUAL CHANNEL WITH PARTITION. SUBMIT FOR APPROVAL BY ENGINEER PRIOR TO INSTALLATION.
- M. FINAL CONNECTIONS TO MOVABLE DEVICES, OR DEVICES THAT MAY TRANSMIT VIBRATION SHALL BE MADE THROUGH FLEXIBLE METALLIC CONDUIT OR LIQUID-TIGHT FLEXIBLE CONDUIT. (MOTORS,
- TRANSFORMERS, DUCT MOUNTED DEVICES, ETC.) N. ENDS OF ALL METALLIC CONDUITS SHALL BE EQUIPPED WITH INSULATED GROUNDING BUSHINGS FOR DEDICATED CONDUITS SERVING GROUNDING CONDUCTORS. ALL METALLIC CONDUIT SERVING FEEDERS AND BRANCH CIRCUITS SHALL BE EQUIPPED WITH INSULATED ANTI-SHORT FITTINGS AT ENDS. ENDS OF ALL CONDUITS SHALL BE TEMPORARILY CAPPED PRIOR TO INSTALLATION AND DURING CONSTRUCTION TO EXCLUDE FOREIGN MATERIAL. UPON THE COMPLETION OF CONSTRUCTION THE OPEN END OF CONDUITS OR SLEEVES SHALL BE SEALED WATERTIGHT
- D. EACH LIGHT, RECEPTACLE OR OTHER MISCELLANEOUS DEVICE SHALL BE PROVIDED WITH A GALVANIZED OR SHERARDIZED PRESSED STEEL OUTLET BOX OF THE KNOCKOUT TYPE, OR NOT LESS THAN NO. 14 U.S. GAUGE STEEL. CONDUITS SHALL BE FASTENED WITH LOCK NUTS AND BUSHINGS. ALL UNUSED BOX KNOCKOUTS MUST BE LEFT SEALED. THERE MUST BE SUFFICIENT ROOM FOR WIRES AND BUSHINGS. AND DEEP BOXES SHALL BE INSTALLED WHERE REQUIRED. BOXES SHALL BE SECURELY AND ADEQUATELY SUPPORTED.
- P. WHERE FLOOR FITTINGS REQUIRE PENETRATION OF THE FLOOR SLAB. THERE SHALL BE A STANDARD DEVICE LISTED BY UL FOR THE PURPOSE AND HAVE A UL FIRE RATING EQUAL TO THE FLOOR RATING. ALL CORE SIZES AND LOCATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL AND SUBMISSION TO STRUCTURAL ENGINEER PRIOR TO CORING. THE ELECTRICAL CONTRACTOR MUST PROVIDE FLOOR X-RAY SERVICES TO DETECT AND AVOID EXISTING EMBEDDED SYSTEMS PRIOR TO CORING.
- Q. ALL CONDUIT RUNS SHALL BE INSTALLED ABOVE AND OVER TOP OF ALL NEW DUCTWORK, PIPING, CONDUITS, PULL BOXES, ETC. WITH PROVISION FOR ALL NECESSARY ACCESSIBLE PULL BOXES. CONDUIT MAY NOT EXCEED CODE ALLOWED NUMBER OF BENDS.
- R. CONDUIT RUNS OR PULL BOXES SHALL NOT BLOCK OR PREVENT FULL ACCESS OR OPERATION OF HVAC EQUIPMENT, ACCESS DOORS, PIPING VALVES, JUNCTION BOXES, MAIN RETURN AIR DUCTS, PULL BOXES, CLEAN OUTS, ETC.
- S. FLEXIBLE METAL CONDUIT SHALL NOT BE LONGER THAN 6'0" LONG.
- XV. WIRE AND WIRING METHOD
- A. ALL CONDUCTORS SHALL BE COPPER IN SIZES AS SHOWN OR REQUIRED BY LOADS SERVED. ALL CABLE SHALL BE 600/VOLT INSULATION RATED AT 75 DEGREES C. WITH TERMINATIONS AND LOADS SERVED RATED AT 75 DEGREES C. INDOOR DRY LOCATIONS SHALL BE TYPE "THHN" AND WET LOCATIONS (EXPOSED, BELOW THE SLAB, AND BELOW GRADE) SHALL BE TYPE "XHHW".
- B. A SEPARATE NEUTRAL CONDUCTOR AND GREEN GROUND WIRE SHALL BE INSTALLED FOR EACH FEEDER AND BRANCH CIRCUIT.
- C. EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL WIRE. A SHARED NEUTRAL IS NOT ALLOWED. D. MINIMUM SIZE CONDUCTOR SHALL BE #12 EXCEPT FOR CONTROL, FIRE ALARM AND SIGNAL
- CABLES. CONDUCTORS AND ASSOCIATED RACEWAYS SHALL BE INCREASED FOR VOLTAGE DROP COMPENSATION AS CALCULATED ACCORDING TO ELECTRICAL CODE REQUIREMENTS. E. THE E.C. SHALL FURNISH AND INSTALL LUG KITS TO MATCH THE CABLE SIZES AS SHOWN ON THE
- DRAWINGS. TYPICAL FOR ALL ELECTRICAL AND MECHANICAL EQUIPMENT. ANY AND ALL REQUIRED LUG KITS SHALL BE INCLUDED IN THE BASE BID. CABLE SIZE REDUCING PINS SHALL NOT BE AN ACCEPTABLE ALTERNATIVE TO LUG KITS. F. REMOVE ALL UNUSED AND ABANDONED WIRING, INCLUDING LOW VOLTAGE, COMPLETELY BACK
- TO SOURCE. G. ALL COMMUNICATION CABLING INSTALLED IN PLENUM AIR SPACES SHALL BE IN CONDUIT,
- WITHOUT ANY EXCEPTIONS. H. ALL PLENUM AIR SPACES AREA SHALL BE IN CONDUIT WITH PLENUM RATED BOX.
- I. E.C SHALL PROVIDE ALL FEEDER & BRANCH CIRCUITS SIZED BASED ON VOLTAGE DROP REQUIRED PER LOCAL CODE.
- J. CONDUCTOR SPLICING 1. SPLICING WIRES SHALL BE DONE ONLY IN ACCESSIBLE OUTLET JUNCTION OR PULL BOXES. 2. SPLICES SHALL BE MADE STRICTLY IN ACCORDANCE WITH THE INSTRUCTIONS OF THE CABLE
- MANUFACTURER USING THE METHODS AND MATERIALS RECOMMENDED BY HIM. FOR #10 AND #12 WIRE SPLICES SHALL BE MADE WITH SCOTCH-LOK CONNECTORS.
- 4. WIRE #6 AND LARGER SHALL BE CONNECTED WITH BURNDY OR EQUAL SOLDERLESS MECHANICAL LUG AND PAINTED WITH INSULATING VARNISH.
- 5. ALL CONNECTIONS SHALL BE PROPERLY TAPED WITH SCOTCH ELECTRICAL TAPE #22, #33 OR APPROVED EQUAL.
- 6. ALL GROUND SPLICES AND GROUND CONNECTIONS TO DEVICES WITHIN METALLIC BOXES SHALL BE BONDED TO BOX USING APPROPRIATELY SIZED PIGTAIL CONNECTIONS OR OTHER UL APPROVED BONDING METHOD.

XVI. GROUNDING AND BONDING

A. EQUIPMENT GROUNDING CONDUCTORS SHALL BE UL 83 INSULATED STRANDED COPPER, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. INSULATION COLOR SHALL BE CONTINUOUS GREEN FOR ALL EQUIPMENT GROUNDING CONDUCTORS. BONDING CONDUCTORS SHALL BE ASTM B8 BARE STRANDED COPPER, EXCEPT THAT SIZES NO. 10 AWG AND SMALLER SHALL BE ASTM B1 SOLID BARE COPPER WIRE. CONDUCTOR SIZES SHALL NOT BE LESS THAN WHAT IS SHOWN ON

THE DRAWINGS AND NOT LESS THAN REQUIRED BY THE NEC, WHICHEVER IS GREATER. A GROUND CONDUCTOR SHALL BE INSTALLED IN EVERY RACEWAY AND BONDED TO ALL BOXES AND ENCLOSURES EXCEPT FOR THE SERVICE LATERALS. THE GROUND CONDUCTOR SHALL BE BONDED IN EVERY ENCLOSURE.

XVII. MOTOR AND CONTROL WIRING

A. MOTORS FOR EQUIPMENT WILL BE PROVIDED AND SET IN PLACE BY RESPECTIVE TRADES INSTALLING THE EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL INSTALL STARTERS AND CONTROLLERS, REMOTE CONTROL STATIONS, INCLUDING APPARATUS FOR PROPER OPERATION AND THEIR RESPECTIVE MOTORS OR EQUIPMENT. ALL STARTERS FOR ALL MOTORS SHALL HAVE PROPER HEATING ELEMENTS INSTALLED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL:

1. PROVIDE, INSTALL AND TERMINATE ALL POWER WIRING FOR ALL MOTORS.

2. INSTALL THOSE DEVICES FURNISHED BY THE MECHANICAL CONTRACTOR. 3. PROVIDE AND INSTALL ALL CONTROL WIRING IN ACCORDANCE WITH

INSTRUCTIONS/DIRECTIONS RECEIVED FROM THE MECHANICAL CONTRACTOR OR TEMPERATURE CONTROL DESIGNATE.

4. COORDINATING MOTOR THERMAL OVERLOAD REQUIREMENTS AND PROVIDING EXTERNAL THERMAL OVERLOAD PROTECTION WHERE MOTORS ARE NOT NOTED TO BE PROVIDED WITH INTEGRAL THERMAL OVERLOADS.

5. AFTER FINAL CONNECTIONS ARE COMPLETED, THE ELECTRICAL CONTRACTOR SHALL TEST MOTOR FOR PROPER ROTATION. BEFORE APPLYING CURRENT TO THE MOTOR, THE ELECTRICAL CONTRACTOR SHALL HAVE CONTRACTOR WHO SUPPLIED MOTOR CHECK THE MOTOR ALIGNMENT. OIL. ETC. THE ELECTRICAL CONTRACTOR SHALL MAKE ANY NECESSARY ADJUSTMENTS, REPLACEMENTS OR MODIFICATIONS TO THE STARTERS AND CONTROL EQUIPMENT FOR PROPER STARTING AND OVERLOAD PROTECTION.

6. ELECTRICAL CONTRACTOR SHALL MEASURE ALL OPERATING VOLTAGE AND AMPERAGE ON EACH MOTOR. VERIFY THAT THE CORRECT OVERCURRENT TRIP INFORMATION IS PROGRAMMED INTO THE VFD DRIVE UNITS. VERIFY PROPER ROTATION WITH THE MECHANICAL CONTRACTOR.

XVIII. DISCONNECT SWITCHES

A. ALL FUSED (FD) AND NON-FUSED (NF) DISCONNECTS SHALL BE SQUARE D COMPANY OR APPROVED EQUAL, 3-POLE HEAVY DUTY TYPE ONLY. FOR ELEVATOR DISCONNECTS FURNISH AN AUXILIARY 10A CONTACTS FOR AUTOMATIC BATTERY LOWERING OF ELEVATOR CAB. ALL UNITS INSTALLED OUTDOORS SHALL BE RATED WEATHERPROOF NEMA 3R. MANUFACTURERS: SCHNEIDER SQUARE D, EATON, GENERAL ELECTRIC, SIEMENS, OR APPROVED EQUAL.

B. WHERE DISCONNECTS ARE USED ON VFD DRIVES THE DISCONNECT MUST HAVE AUXILIARY 10A CONTACTS THAT MUST BE WIRED INTO THE DRIVE STOP CIRCUIT. THE DRIVE MUST SHUT DOWN WHEN THE LOCAL MOTOR DISCONNECT IS OPENED.

XIX. STARTER

A. ALL STAND ALONE MOTOR STARTERS SHALL BE NEMA RATED STARTER (MINIMUM NEMA SIZE 1). THEY SHALL BE INSTALL IN SUITABLE NEMA RATED ENCLOSURES SUITABLE FOR THE ENVIRONMENT WHERE INSTALLED. THEY SHALL BE FVNR, HAVE APPROPRIATE CONTROL TRANSFORMER, (2) NO/NC AUXILIARY CONTACT, HOA SELECTOR SWITCH, STOP AND RUN LIGHTS. COMBINATION UNITS SHALL HAVE INTEGRAL DISCONNECT SWITCH AND FUSE (RK1) AS NOTED. PROVIDE WITH SOLID-STATE OVERLOAD RELAY WITH FOLLOWING FUNCTIONS: SQUARE-D CLASS 8538, ALLEN-BRADLEY, SIEMENS, OR APPROVED EQUAL.

1. MICROPROCESSOR BASED CONTROL.

2. PHASE LOSS AND CURRENT UNBALANCE PROTECTION, USER SELECTABLE 3. SWITCH OR DIAL SELECTABLE FOR MOTOR RUNNING OVERLOAD PROTECTION

4. SENSORS IN EACH PHASE

5. STANDARD SELECTABLE TRIP CLASS 10/20.

6. MOTOR TEMPERATURE AND POWER-UP PROTECTION WITH THERMAL MEMORY.

XX. PANELBOARDS

A. PROVIDE PANELBOARDS WITH ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES; LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, MARKED FOR INTENDED

B. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PANELBOARDS BY:

LOCATION AND APPLICATION AND THAT COMPLY WITH NEMA PB 1.

1. SQUARE D

2. SIEMENS

3. GENERAL ELECTRIC 4. EATON

5. APPROVED EQUAL

C. SURFACE OR RECESSED MOUNTED (AS SHOWN IN PLAN), DEAD-FRONT CABINETS RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.

D. PANELBOARD TRIM AND FRONT COVER SHALL BE HINGED DOOR-IN-DOOR SYLE.

E. INDOOR DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1). PROVIDE GALVANIZED STEEL CABINETS TO HOUSE PANELBOARDS FLUSH AND SURFACE-MOUNTED, DEAD-FRONT CABINETS. F. FACTORY FINISHED WITH MANUFACTURER'S STANDARD TWO-COAT, BAKED-ON FINISH.

G. PROVIDE DIRECTORY CARD WITH TRANSPARENT COVER PERMANENTLY MOUNT ON INSIDE OF DOORS.

H. PHASE, NEUTRAL, AND GROUND BUSES AND BARS SHALL BE TINNED COPPER MATERIAL AND BUS SHALL BE FULLY RATED THE ENTIRE LENGTH OF ENCLOSURE. PROVIDE FULL-SIZED NEUTRAL WITH FULL-CAPACITY BONDING STRAP FOR SERVICE ENTRANCE APPLICATIONS. MAIN AND NEUTRAL LUGS SHALL BE MECHANICAL TYPE, WITH A LUG ON THE NEUTRAL BAR FOR EACH POLE IN THE PANELBOARD AND WITH A LUG ON THE GROUND BAR FOR EACH POLE IN THE PANELBOARD.

PANELBOARDS SHALL BE STANDARD MANUFACTURED PRODUCTS. ALL COMPONENTS WITHIN ONE ASSEMBLY SHALL BE OF THE SAME MANUFACTURER. ALL PANELBOARDS SHALL BE DEAD FRONT TYPE. ALL PANELBOARDS SHALL BE COMPLETELY FACTORY ASSEMBLED WITH MOLDED CASE CIRCUIT BREAKERS AND ARRANGED SO THAT IT WILL BE POSSIBLE TO SUBSTITUTE A 2_POLE BREAKER FOR TWO SINGLE POLE BREAKERS, AND A 3_POLE BREAKER FOR THREE SINGLE POLE BREAKERS, WHEN TRIP IS 30 AMPS OR LESS AND FRAME SIZE IS 100 AMPERES OR LESS, WITHOUT HAVING TO DRILL AND TAP THE MAIN BUS BARS AT BUS STRAPS.CIRCUIT BREAKERS SHALL BE BOLT-ON CONNECTED TO THE PANELBOARD, MINIMUM INTERRUPTING CAPACITY SHALL BE 14.000 AIC FOR 277/480 VOLT CIRCUIT BREAKERS AND 10,000 AIC FOR 120/208 VOLT CIRCUIT BREAKERS. PLUG-IN CIRCUIT BREAKERS ARE NOT APPROVED.

PANELBOARD FAULT WITHSTAND RATING SHALL BE INCREASED BY THE ELECTRICAL CONTRACTOR AS A RESULT OF SHORT-CIRCUIT STUDY RESULTS AT NO ADDITIONAL COST TO PROJECT.

K. ALL NEW CIRCUIT BREAKERS FOR THE EXISTING PANELBOARDS SHALL BE COMPATIBLE WITH THE EXISTING EQUIPMENT. AIC RATINGS SHALL MATCH THE ORIGINAL EQUIPMENT AIC RATINGS. L. CIRCUIT BREAKERS SERVING HAND DRYERS AND WATER COOLERS SHALL BE GFCI TYPE, WHERE APPLICABLE.

M. CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING. FIRE PUMPS, FIRE ALARM, EXIT SIGNS, AND SIMILAR EMERGENCY/LIFE-SAFETY LOADS SHALL BE PROVIDED WITH RED LOCK-ON DEVICES. N. PROVIDE A TYPEWRITTEN DIRECTORY OF ALL CIRCUITS IN THE PANELBOARD.

XXI. TRANSFORMERS

A. PROVIDE FACTORY-ASSEMBLED AND -TESTED, AIR-COOLED UNITS FOR 60-HZ SERVICE. FOR TRANSFORMERS RATED 15 KVA AND LARGER COMPLY WITH NEMA TP 1 ENERGY-EFFICIENCY LEVELS AS VERIFIED BY TESTING ACCORDING TO NEMA TP 2. TRANSFORMER CORES ARE TO BE ELECTRICAL GRADE, NON-AGING SILICON STEEL WITH HIGH PERMEABILITY AND LOW HYSTERESIS LOSSES; COILS ARE TO BE CONTINUOUS COPPER WINDINGS WITHOUT SPLICES EXCEPT FOR TAPS WITH BRAZED OR PRESSURE TYPE INTERNAL CONNECTIONS. CORES ARE TO HAVE ONE LEG PER PHASE. FOR TRANSFORMERS SMALLER THAN 30 KVA SHALL HAVE CORE AND COILS COMPLETELY RESIN ENCAPSULATED. TRANSFORMER IMPEDANCE SHALL BE MINIMUM 5%. CORE ASSEMBLIES SHALL BE GROUNDED TO THEIR ENCLOSURES BY ADEQUATE FLEXIBLE GROUND STRAPS. B. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE TRANSFORMERS BY:

1. SQUARE D

2. SIEMENS

3. GENERAL ELECTRIC 4. EATON

5. APPROVED EQUAL

DISTRIBUTION TRANSFORMERS SHALL COMPLY WITH UL 156 AND THEIR KVA RATING (SHOWN ON THE DRAWINGS AND NAMEPLATE) SHALL BE SELF-COOLED BY NATURAL CONVECTION CONTINUOUS-DUTY WITHOUT THE USE OF COOLING FANS. FOR TRANSFORMERS SMALLER THAN 30 KVA PROVIDE INSULATION CLASS: 185 DEG C, UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115-DEG C RISE ABOVE 40-DEG C AMBIENT TEMPERATURE; FOR TRANSFORMERS 30 KVA AND LARGER PROVIDE INSULATION CLASS: 220 DEG C. UL-COMPONENT-RECOGNIZED INSULATION SYSTEM WITH A MAXIMUM OF 115-DEG C RISE ABOVE 40-DEG C AMBIENT TEMPERATURE.

TRANSFORMERS 3 KVA AND SMALLER SHALL HAVE ONE 5 PERCENT TAP ABOVE NORMAL FULL CAPACITY, TRANSFORMERS 7.5 TO 24 KVA SHALL HAVE ONE 5 PERCENT TAP ABOVE AND ONE 5 PERCENT TAP BELOW NORMAL FULL CAPACITY. TRANSFORMERS 25 KVA AND LARGER SHALL HAVE TWO 2.5 PERCENT TAPS ABOVE AND TWO 2.5 PERCENT TAPS BELOW NORMAL FULL

E. SOUND-LEVELS

CAPACITY.

1. PROVIDE LOW-SOUND-LEVEL TRANSFORMERS WITH MAXIMUM SOUND LEVELS WHEN FACTORY TESTED ACCORDING TO IEEE C57.12.91, AS FOLLOWS:

a.	9 KVA AND LESS:	40 DB.
b.	30 TO 50 KVA:	45 DB.
C.	51 TO 150 KVA:	50 DB.
d.	151 TO 300 KVA:	55 DB.
e.	301 TO 500 KVA:	60 DB.
f.	501 TO 750 KVA:	60 DB.
g.	751 TO 1000 KVA:	60 DB.
h.	1001 TO 1500 KVA:	60 DB.

XXII. WIRING DEVICES

DESIGN DRAWINGS:

a. LEVITON

A. LIST OF APPROVED MANUFACTURERS SHALL BE THE FOLLOWING OR AS OTHERWISE NOTED ON

1. POWER DEVICES:



c. LEGRAND B. TOGGLE SWITCHES SHALL BE SINGLE UNIT TOGGLE, BUTT CONTACT, QUIET AC TYPE

HEAVY DUTY GENERAL-PURPOSE USE WITH AN INTEGRAL SELF GROUNDING MOUNTING STRAP, LISTED BY UNDERWRITERS LABORATORIES, INC., AND MEET THE REQUIREMENTS OF NEMA WD 1. HEAVY DUTY AND UL 20 RATED FOR 20 AMPERES AT 120-277 VOLTS AC.

ELARA
30 N. Wolf Rd., Second Floor Hillside, IL 60162 (708) 236-0300 (708) 236-0330 FAX
ILINOIS SPORTS FACILITIES AUTHORITY
KEY PLAN
ISSUE/REVISION: REV. DATE DESCRIPTION
- 11/05/21 ISSUED FOR BID
PROJECT:
GUARANTEED RATE FIELD - HVAC REPLACEMENT PHASE XI 333 W 35TH STREET,
CHICAGO, ILLINOIS 60616 DRAWING TITLE: ELECTRICAL SPECIFICATIONS
DESIGNED BY: TG
CHECKED BY:BTPROJECT NO:21276
SCALE: NO SCALE SHEET NO.
E3.01

/2021	ISSUED FOR	BID
ELIMINARY -	NOT FOR CONSTRUCTIO)