

**DEVELOPMENT SERVICES**

**PLAN REVIEW CONDITIONS**

**Slaggie Architects Responses**  
**2022-09-01**

August 29, 2022

CENTRIC CONSTRUCTION GROUP  
520 W PENNWAY STE 100  
KANSAS CITY, MO 64108

Permit No: PRCOM20223368  
Project Title: K1 SPEED ENTERTAINMENT COMPLEX  
Project Address: 2911 NE INDEPENDENCE AVE, LEES SUMMIT, MO 64064  
Parcel Number: 52200014000000000  
Location / Legal: STROTHER CROSSING LOTS 4A-4C --- LOT 4C  
Description:  
  
Type of Work: NEW COMMERCIAL  
Occupancy Group: ASSEMBLY FOR INDOOR SPORTING INCL ARENAS, RINKS, COURTS, SWIMMING POOLS  
Description: NEW BUILDING FOR ELECTRIC KART RACING - INCLUDES RESTAURANT, GAME ARCADE AND PUBLIC MEETING ROOMS

***Revisions Required***

***One or more departments have not approved the permit and the following is a list of requirements from the City of Lee's Summit that have not been satisfactorily addressed in the plans and specifications. Please address the comments as requested and provide three (3) copies of any revised sheets and/or additional information. Please contact the appropriate department regarding clarification of comments.***

Development Services Department (816) 969-1200

Fire Department (816) 969-1300

**Fire Plan Review**

**Reviewed By: Jim Eden**

**Rejected**

6. 2018 IFC 506.1- Where required. Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the fire code official is authorized to require a key box to be installed in an approved location. The key box shall be of an approved type and shall contain keys to gain necessary access as required by the fire code official.

Action required- A Knox box shall be located 6' AFF over the FDC and not by the front door.

**Response: Knox box has been relocated adjacent to the FDC. See revised sheet A-001.**

9. Provide information on the type of batteries to be used for the go carts, quantity, charging methods and interlocks, how and where will spare batteries be stored. Manufacturers safety requirements.

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**DEVELOPMENT SERVICES**

Provide the manufacturers specifications for the batteries and charging systems. What are the quantity of batteries in pounds? What interlocks are provided during charging?

**Response:**

- a) As previously stated, batteries are UL Approved LiFePO 48V 60Ah with Digital BMS Lithium. Ownership has decided to remove all lead-based batteries and will be specifying 100% lithium batteries in all karts. Chargers are SPE brand model Green6 480V 3-phase 48V 100A AC UL Approved for Lithium batteries. See attached additional specification information.
- b) Quantity of Batteries in pounds:
  - 38 – 48V 60Ah with Digital BMS Lithium batteries (used in 38 adult karts):  
(38 x 81.4 lbs = 3,093.2 lbs)
  - 12 – 48V 60Ah with Digital BMS Lithium batteries (used in 12 junior karts):  
(12 x 81.4 lbs = 976.8 lbs)
  - Total Quantity of Batteries in pounds: 4,070 lbs
- c) Interlocks provided during charging: The karts are plugged-in via an SPE brand UL and CE listed charger that connects via a REMA brand charging port. This charging port will have communication to the go-kart that will either start, pause, or stop the charger depending on the status of the battery/kart. While the charger connector is plugged into the go-kart, it activates a micro switch that deactivates the controller. So, in any case, the car is unable to turn on and move on its own while plugged in. Also, the charger has a few fail-safes for reverse polarity, over voltage, under voltage and several other safety features that will keep the charging operation safe during the lifetime of the business.

REMA connector #95039-01 DIN 160 a – 35 mm2 on the charger.  
REMA battery connector socket #95017-08 DIN 160 A on the kart.

**Building Plan Review**

**Reviewed By: Joe Frogge**

**Rejected**

1. The building permit for this project cannot be issued until the Development Services Department has received, approved, and processed the Final Development Plan.

Action required: Comment is informational.  
8/22/22 - acknowledged in letter

**Response: Per communications through our design team with Mike Weisenborn, FDP is ready for approval.**

6. Inadequate information to complete review.

Provide the following:

- \*\*kitchen design prompts additional comments. See added comments at bottom of this report.
  - \*\*battery information provided prompts additional comments. See added comments at bottom of this report. Types of batteries and chargers for karts.
- Due to use of lead-acid, modify designs to demonstrate compliance with IMC 502.4 & IFC 1206.11.3

10. \*\*Comments added after review of kitchen designs.

- Coordinate plumbing design with grease trap location. (currently GW runs to nowhere west of kitchen while MEP and FDP plans show trap in parking lot)

**Response: Grease trap location has been coordinated with civil drawings. See revised sheets ME-201, P-100, P-102 and Kitchen Drawing K3.**

**DEVELOPMENT SERVICES**

- Provide Type II hood over oven or provide verification that the oven is rated for non-hood use and that the hvac system is designed to compensate for any heat and humidity.

**Response: Type II Hood is not required over specified oven. See attached cutsheet of specified ovens. Per K1 Speed Corporate Kitchen Consultant - All foods prepared in the specified ovens are pre-cooked and just reheated in the ovens.**

**HVAC System has been designed to account for heat and humidity of kitchen equipment.**

11. \*\*Comment added after review of battery information provided.

- Due to use of lead-acid, modify designs to demonstrate compliance with ventilation requirements of 2018 IMC 502.4 & 2018 IFC 1206.11.3

**Response: Due to the owner moving to entirely lithium-ion batteries, an exhaust ventilation system is not required. In the 2015 IMC and IFC, there was an exception for lithium-ion batteries not needing exhaust ventilation (IMC section 502.4 – Exception). In the 2018 IMC and IFC, the code sections for Electrical Energy Storage Systems were completely revised and the requirements for exhaust ventilation became complicated and not clear. In the 2021 IMC and IFC, the code sections for Electrical Energy Storage Systems were clarified and a table was added, IFC Table 1207.6, to help clarify the requirements. It was clarified that exhaust ventilation is still not required for lithium-ion battery technology.**

**Licensed Contractors**

**Reviewed By: Joe Frogge**

**Rejected**

2. Lee's Summit Code of Ordinance, Section 7-130.4 - Business License. (excerpt)

No person, other than a licensed contractor or employees of a licensed contractor, shall engage in electrical, plumbing or mechanical business, construction, installation or maintenance unless duly licensed in accordance with this section.

Action required: MEP subcontractors are required to be listed on permit. Provide company names of licensed MEP contractors.

8/22/22 - acknowledged in letter

**Response:**

**Fire Sprinkler - Alliance Fire Protection**

**HVAC - B&C Mechanical Services**

**Plumbing - Pro Design Contractors**

**Electrical & Fire Alarm - Torgeson Electric**

***The review conducted by the City of Lee's Summit Development Services Department shall not be construed as a structural review of the project.***



# GREEN6

Main features:

Modular system (3 configurable modules)

Power up to 8 kW, up to 150A @ 48V,

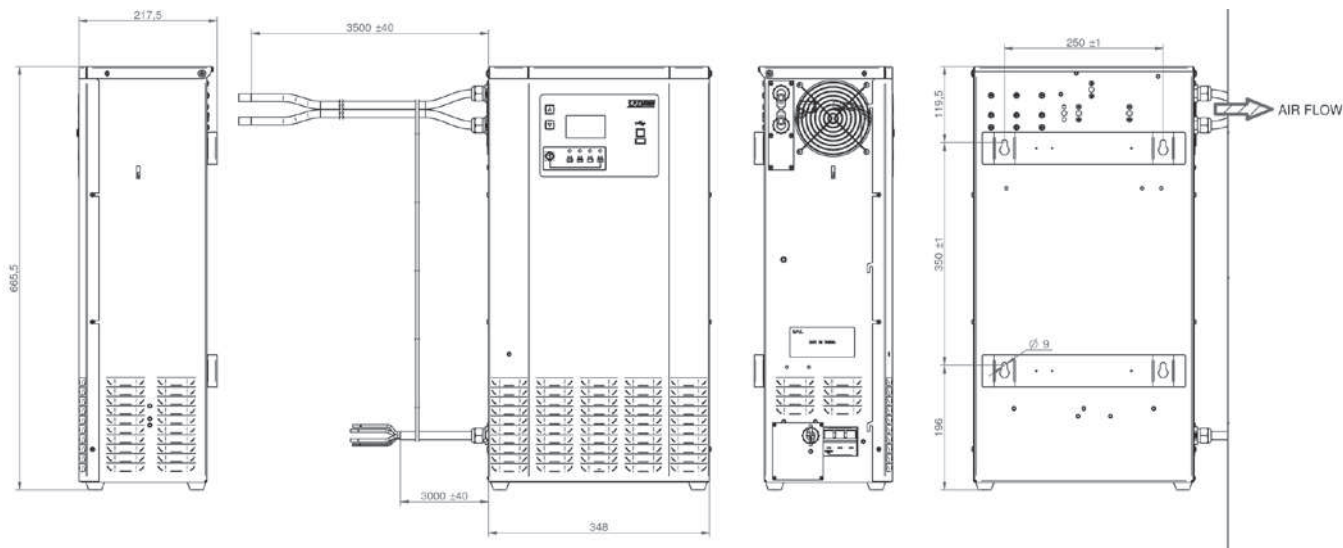
up to 100A @ 80V, up to 75A @ 96V

Programmable via USB type A/B port or via display

Graphical display

## APPLICATIONS





DIMENSIONS (LxWxH): 348x665,50x217,5 mm – 13.70x26.20x8.56 in.

WEIGHT: 35 Kg - 77.16 lbs

PROTECTION GRADE IP20

INPUT VOLTAGE: 200/208-240/400/480 Vac – 50-60 Hz

| Battery Voltage | IUla Wet 8h Range (C5) | IUla Wet 12h Range (C5) | IUla Gel PzV 10-14h Range (C5) | Charging Current | Model  |
|-----------------|------------------------|-------------------------|--------------------------------|------------------|--------|
| 24V             | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 24-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 24-60  |
|                 | 390÷480 Ah             | 630÷770 Ah              | 480÷590 Ah                     | 70A              | 24-70  |
|                 | 450÷550 Ah             | 720÷880 Ah              | 550÷680 Ah                     | 80A              | 24-80  |
|                 | 560÷690 Ah             | 900÷1100 Ah             | 690÷850 Ah                     | 100A             | 24-100 |
|                 | 680÷830 Ah             | 1080÷1320 Ah            | 830÷1020 Ah                    | 120A             | 24-120 |
| 36V             | 840÷1030 Ah            | 1350÷1650 Ah            | 1040÷1270 Ah                   | 150A             | 24-150 |
|                 | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 36-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 36-60  |
|                 | 390÷480 Ah             | 630÷770 Ah              | 480÷590 Ah                     | 70A              | 36-70  |
|                 | 450÷550 Ah             | 720÷880 Ah              | 550÷680 Ah                     | 80A              | 36-80  |
|                 | 560÷690 Ah             | 900÷1100 Ah             | 690÷850 Ah                     | 100A             | 36-100 |
| 48V             | 680÷830 Ah             | 1080÷1320 Ah            | 830÷1020 Ah                    | 120A             | 36-120 |
|                 | 840÷1030 Ah            | 1350÷1650 Ah            | 1040÷1270 Ah                   | 150A             | 36-150 |
|                 | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 48-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 48-60  |
|                 | 390÷480 Ah             | 630÷770 Ah              | 480÷590 Ah                     | 70A              | 48-70  |
|                 | 450÷550 Ah             | 720÷880 Ah              | 550÷680 Ah                     | 80A              | 48-80  |
| 72V             | 560÷690 Ah             | 900÷1100 Ah             | 690÷850 Ah                     | 100A             | 48-100 |
|                 | 680÷830 Ah             | 1080÷1320 Ah            | 830÷1020 Ah                    | 120A             | 48-120 |
|                 | 730÷890 Ah             | 1170÷1430 Ah            | 900÷1100 Ah                    | 130A             | 48-130 |
|                 | 840÷1030 Ah            | 1350÷1650 Ah            | 1040÷1270 Ah                   | 150A             | 48-150 |
|                 | 170÷210 Ah             | 270÷330 Ah              | 210÷255 Ah                     | 30A              | 72-30  |
|                 | 230÷280 Ah             | 360÷440 Ah              | 275÷340 Ah                     | 40A              | 72-40  |
| 80V             | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 72-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 72-60  |
|                 | 450÷550 Ah             | 720÷880 Ah              | 550÷680 Ah                     | 80A              | 72-80  |
|                 | 560÷690 Ah             | 900÷1100 Ah             | 690÷850 Ah                     | 100A             | 72-100 |
|                 | 170÷210 Ah             | 270÷330 Ah              | 210÷255 Ah                     | 30A              | 80-30  |
|                 | 230÷280 Ah             | 360÷440 Ah              | 275÷340 Ah                     | 40A              | 80-40  |
| 96V             | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 80-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 80-60  |
|                 | 450÷550 Ah             | 720÷880 Ah              | 550÷680 Ah                     | 80A              | 80-80  |
|                 | 560÷690 Ah             | 900÷1100 Ah             | 690÷850 Ah                     | 100A             | 80-100 |
|                 | 110÷140 Ah             | 180÷220 Ah              | 140÷170 Ah                     | 20A              | 96-20  |
|                 | 140÷170 Ah             | 230÷280 Ah              | 170÷210 Ah                     | 25A              | 96-25  |
| 96V             | 170÷210 Ah             | 270÷330 Ah              | 210÷250 Ah                     | 30A              | 96-30  |
|                 | 230÷280 Ah             | 360÷440 Ah              | 280÷340 Ah                     | 40A              | 96-40  |
|                 | 280÷340 Ah             | 450÷550 Ah              | 350÷420 Ah                     | 50A              | 96-50  |
|                 | 340÷410 Ah             | 540÷660 Ah              | 420÷510 Ah                     | 60A              | 96-60  |
|                 | 390÷480 Ah             | 630÷770 Ah              | 480÷590 Ah                     | 70A              | 96-70  |
|                 | 420÷520 Ah             | 680÷830 Ah              | 520÷630 Ah                     | 75A              | 96-75  |

# GREEN6



E249016

#1207934 - #1207936 - #1212158



#1207935



- MANUALE D'USO -  
- USER MANUAL -  
- MANUEL D'UTILISATION -

- BEDIENUNGSHANDBUCH -  
- MANUAL DEL USUARIO -  
- MANUAL DE USO -

- 取扱説明書 -  
- 使用手册 -  
- 사용자 매뉴얼 -

Prima di collegare il caricabatteria alla tensione di alimentazione ed alle batterie, **LEGGERE ATTENTAMENTE LE ISTRUZIONI.**

Before connecting the battery charger to the mains and to the battery, **READ THE INSTRUCTIONS CAREFULLY.**

Avant de brancher le chargeur de batterie à la tension d'alimentation et aux batteries, **LIRE ATTENTIVEMENT LES CONSIGNES.**

Vor dem Anschließen des Batterieladegeräts an das Stromnetz und an die Batterien, **DIESE ANLEITUNGEN AUFMERKSAM DURCHLESEN.**

Antes de conectar el cargador de baterías a la tensión de alimentación y a las baterías, **LEER ATENTAMENTE LAS INSTRUCCIONES.**

Antes de ligar o carregador de bateria na tensão de alimentação e nas baterias, **LER AS INSTRUÇÕES COM ATENÇÃO.**

バッテリーチャージャーを電源やバッテリーに接続する前に、この説明書をよくお読みください。

将电池充电器连接到电源和电池前，请仔细阅读使用说明。

배터리 충전기를 주 전원과 배터리에 연결하기 전에 지침을 자세히 읽어 주십시오.



## WARNING

The USB port is a service port which should only be used to programme battery charger parameters and to download log data and graphs.

During charging, the USB cable must not be connected in order to prevent electromagnetic interference (EMI) from disturbing the charge process with unpredictable consequences for the battery charger and battery.

## INTRODUCTION

When using the battery charger, safety norms contained in laws, regulations and provisions issued by local authorities must be complied with.

**User obligations as per these operating instructions:** the "user" is any natural or legal person who directly uses the S.P.E. battery charger or whomsoever uses it on behalf of the aforementioned person. Under special circumstances (for example leasing, rental, etc.) the "user" is the person who assumes these obligations according to the agreements stipulated between the owner and the user.

"The user" shall be responsible for the installation site of the battery charger. He or she shall check that the battery charger does not disturb particularly sensitive equipment. He or she shall choose the installation site so that the battery charger does not affect the operation of electromagnetic devices and magnetic data carriers (for example pace makers, monitors, magnetic disks, magnetic tapes, magnetic cards, watches etc.), as a high direct current produces magnetic interference.

"The user" shall ensure that the use of the S.P.E. battery charger complies with regulations in force and that any action which could endanger the life and safety of the "user" or of third parties is prevented, as well as the prevention of damage to property.

"The user" shall ensure that other users and operators have read and understood the instructions and that they comply with accident-prevention rules, safety rules, and maintenance directives.

## SAFETY AND INSTALLATION WARNINGS

|                                                                                     |                 |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Warning:</b> | The battery charger may be opened by authorised and/or qualified personnel only.<br>Check insulation on the mains cord and the battery cables before using the battery charger.                                                                                                                                                                                                                                  |
|                                                                                     | <b>Warning</b>  | Carefully follow the instructions given in the battery charger and battery instruction manuals.                                                                                                                                                                                                                                                                                                                  |
|                                                                                     | <b>Warning</b>  | The battery charger must be connected to the mains by qualified personnel in compliance with local regulations in force, for example CEC, NEC etc.                                                                                                                                                                                                                                                               |
|                                                                                     | <b>Warning</b>  | Check the battery type and its characteristics before charging.                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                     | <b>Warning</b>  | Only charge lead-acid batteries and only in a well-ventilated area. Other types of batteries could explode causing damage and injury.<br>Charging batteries produce explosive gas so flames and/or sparks must not be generated near the battery charger while in use.<br>The standard battery charger (IP20) must be used in closed, well-ventilated spaces, and must not be exposed to rain or water splashes. |
|                                                                                     | <b>Warning</b>  | In order to reduce the risk of fire, install the battery charger on flooring made of fireproof material such as stone, brick, concrete or metal.                                                                                                                                                                                                                                                                 |
|                                                                                     | <b>Warning</b>  | For continued protection against the risk of fire and/or electric shocks, replace the fuse only with fuses of the same kind and rating.                                                                                                                                                                                                                                                                          |

The S.P.E. battery charger needs no special maintenance, apart from the usual cleaning procedures to be carried out periodically (at least once every 3 months), according to the installation site. Before cleaning the battery charger, disconnect it from the mains and the batteries.

For battery charger cleaning, follow the instructions set out below:

- disconnect the battery charger from the mains and the batteries.
- remove the cover;
- disconnect the power modules and remove them from their housing;
- vacuum up any dirt and dust from inside the battery charger;
- vacuum up any dirt and dust from inside the power modules through the ventilation slits;
- vacuum up any dirt and dust from the surface of the fans;
- put the power modules back into their housing and connect them to the battery charger;
- put the cover back on;
- reconnect the battery charger to the mains and the batteries.

## POWER CONSUMPTION

| Model           | Input voltage | Vout | Iout | Nominal Iin |
|-----------------|---------------|------|------|-------------|
| GREEN6 24V 80A  | 480Vac        | 24   | 80   | 4,3         |
| GREEN6 24V 100A | 480Vac        | 24   | 100  | 5,4         |
| GREEN6 24V 120A | 480Vac        | 24   | 120  | 6,4         |
| GREEN6 24V 150A | 480Vac        | 24   | 150  | 8,0         |
| GREEN6 36V 80A  | 480Vac        | 36   | 80   | 6,4         |
| GREEN6 36V 100A | 480Vac        | 36   | 100  | 8,0         |
| GREEN6 36V 120A | 480Vac        | 36   | 120  | 9,6         |
| GREEN6 36V 150A | 480Vac        | 36   | 150  | 12,0        |
| GREEN6 48V 50A  | 480Vac        | 48   | 50   | 5,4         |
| GREEN6 48V 60A  | 480Vac        | 48   | 60   | 6,4         |
| GREEN6 48V 80A  | 480Vac        | 48   | 80   | 8,6         |
| GREEN6 48V 100A | 480Vac        | 48   | 100  | 10,7        |
| GREEN6 48V 120A | 480Vac        | 48   | 120  | 12,9        |
| GREEN6 48V 130A | 480Vac        | 48   | 130  | 13,9        |
| GREEN6 48V 150A | 480Vac        | 48   | 150  | 16,1        |

| Model           | Input voltage | Vout | Iout | Nominal Iin |
|-----------------|---------------|------|------|-------------|
| GREEN6 24V 80A  | 200 - 240Vac  | 24   | 80   | 7,4         |
| GREEN6 24V 100A | 200 - 240Vac  | 24   | 100  | 9,3         |
| GREEN6 36V 80A  | 200 - 240Vac  | 36   | 80   | 11,2        |
| GREEN6 36V 100A | 200 - 240Vac  | 36   | 100  | 14,0        |
| GREEN6 48V 50A  | 200 - 240Vac  | 48   | 50   | 9,3         |
| GREEN6 48V 60A  | 200 - 240Vac  | 48   | 60   | 11,2        |
| GREEN6 48V 80A  | 200 - 240Vac  | 48   | 80   | 14,9        |
| GREEN6 48V 100A | 200 - 240Vac  | 48   | 100  | 18,6        |

| Model                  | Input voltage | Vout | Iout | Nominal Iin |
|------------------------|---------------|------|------|-------------|
| <b>GREEN6 24V 80A</b>  | 380 - 415Vac  | 24   | 80   | 5,2         |
| <b>GREEN6 24V 100A</b> | 380 - 415Vac  | 24   | 100  | 6,4         |
| <b>GREEN6 24V 120A</b> | 380 - 415Vac  | 24   | 120  | 7,7         |
| <b>GREEN6 24V 150A</b> | 380 - 415Vac  | 24   | 150  | 9,6         |
| <b>GREEN6 36V 80A</b>  | 380 - 415Vac  | 36   | 80   | 7,7         |
| <b>GREEN6 36V 100A</b> | 380 - 415Vac  | 36   | 100  | 9,6         |
| <b>GREEN6 36V 120A</b> | 380 - 415Vac  | 36   | 120  | 11,2        |
| <b>GREEN6 36V 150A</b> | 380 - 415Vac  | 36   | 150  | 14,4        |
| <b>GREEN6 48V 50A</b>  | 380 - 415Vac  | 48   | 50   | 6,4         |
| <b>GREEN6 48V 60A</b>  | 380 - 415Vac  | 48   | 60   | 7,7         |
| <b>GREEN6 48V 80A</b>  | 380 - 415Vac  | 48   | 80   | 10,2        |
| <b>GREEN6 48V 100A</b> | 380 - 415Vac  | 48   | 100  | 12,8        |
| <b>GREEN6 48V 120A</b> | 380 - 415Vac  | 48   | 120  | 15,4        |
| <b>GREEN6 48V 130A</b> | 380 - 415Vac  | 48   | 130  | 16,7        |
| <b>GREEN6 48V 150A</b> | 380 - 415Vac  | 48   | 150  | 19,3        |

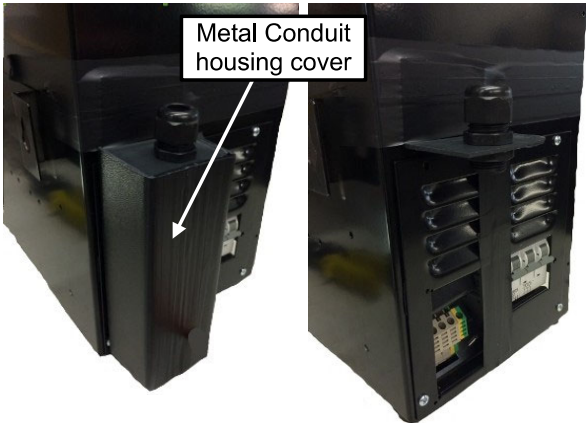
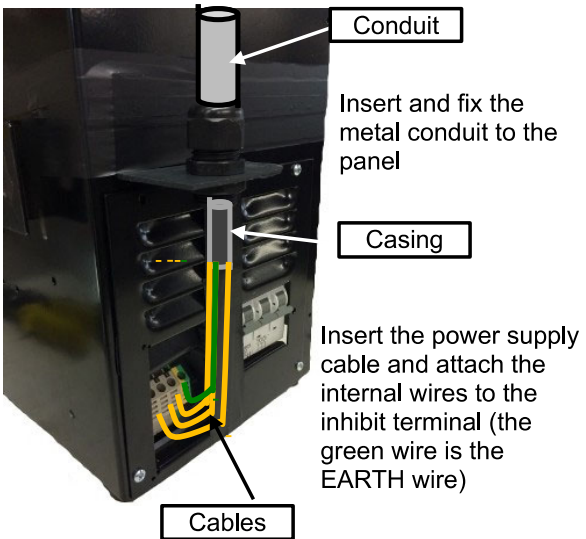
## MAINS CONNECTION (only for #1207934, #1207936, #1212158)

The "UL LISTED" battery charger is manufactured without a mains cord. Mains connection must be carried out by qualified personnel.

The battery charger is fitted with a hole, the diameter of which is set out in the table below. The table gives the diameter of the cable clamp and matching conduit.

| Diameter of Conduit<br>(inches) | Diameter of Hole<br>(mm) |
|---------------------------------|--------------------------|
| ¾ minimum                       | 19                       |

To connect the battery charger to the mains, use a 4xAWG10, 3P+E mains cord, at least 75°C.

| ELECTRICAL CONNECTION                                                                |                                                                                      |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Configuration with cable gland.                                                      | Configuration with cable gland.                                                      |
| Open the metal panel by removing the 4 screws                                        | Remove the metal conduit housing cover.                                              |
|    |   |
| Insert the cable gland and screw it to the panel                                     |                                                                                      |
|   |  |
| Then insert the power supply cable and connecting wires to the input terminal board. |                                                                                      |

Close the metal panel with the 4 screws.



Close the cover.

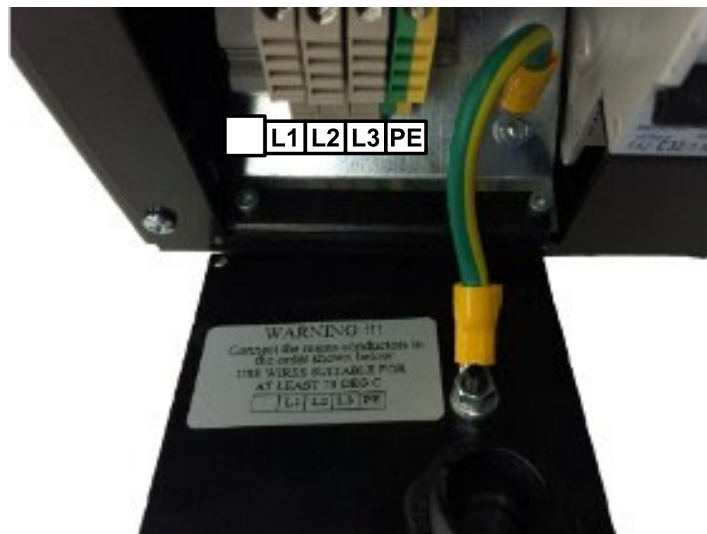


The plate which shows the order of connecting the power supply cable wires (EMPTY, PHASE1, PHASE2, PHASE3, EARTH) is set out below

**WARNING !!!**

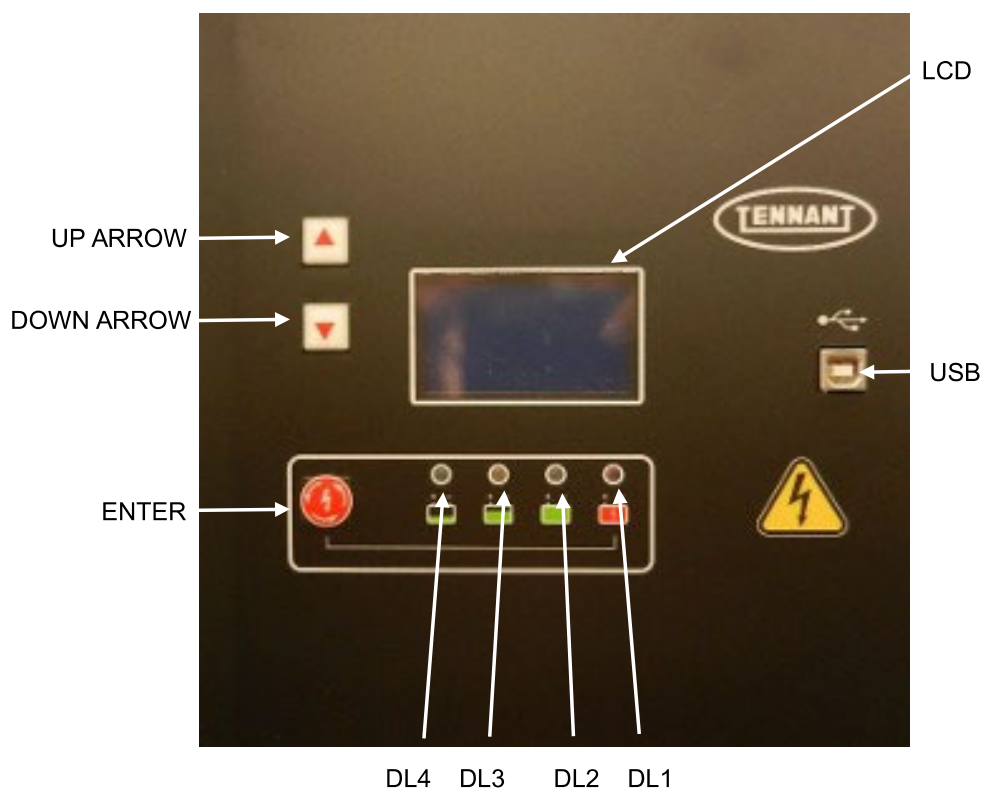
Connect the mains wires in the order given below:  
USE CABLES SUITABLE FOR TEMPERATURES OF 75°C

**L1 L2 L3 PE**



The battery charger must be connected to a socket proportionate in power to the installed charger. Ensure you connect the battery charger to EARTH using a cable of at least AWG10.

## DESCRIPTION OF THE CONTROL BOARD



Where:

|             |                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------|
| UP ARROW:   | SETUP / UP: lets you go into the menu, move around, change /increase a parameter                  |
| DOWN ARROW: | PARAMETERS: lets you view charging parameters, change /decrease a parameter                       |
| ENTER:      | ON / OFF: lets you suspend / restart the current charge, select a menu, confirm a parameter value |
| DL4:        | GREEN signal LED: Battery connected (Green)                                                       |
| DL3:        | YELLOW signal LED: Final charge in progress (Yellow)                                              |
| DL2:        | GREEN signal LED: end of charge (Green)                                                           |
| DL1:        | RED signal LED: Fault (Red)                                                                       |
| LCD:        | Multifunctional crystal liquid graphics display                                                   |
| USB:        | USB port for reading and viewing charge cycle data stored in memory                               |

## LED SIGNALS

The following table illustrates the displays of the 4 status Leds during the various operational phases of the battery charger

| REF            | DESCRIPTION                          | DL4 LED<br>(green) | DL3 LED<br>(yellow) | DL2 LED<br>(green) | DL1 LED<br>(red) | DISPLAY |
|----------------|--------------------------------------|--------------------|---------------------|--------------------|------------------|---------|
| <b>S1</b>      | Only battery power supply            | OFF                | OFF                 | OFF                | OFF              | OFF     |
| <b>S2</b>      | Only mains power supply              | OFF                | OFF                 | OFF                | OFF              | ON      |
| <b>S3</b>      | Both mains and battery power supply  | OFF                | OFF                 | OFF                | OFF              | ON      |
| <b>S4</b>      | Perform automatic start (Autostart)  | BL                 | BL                  | BL                 | BL               | ON      |
| <b>F1</b>      | Phase 1 – Initial charge CI          | BL                 | OFF                 | OFF                | OFF              | ON      |
| <b>F2-F7</b>   | Phase 2 – Phase 7                    | BL                 | ON                  | OFF                | OFF              | ON      |
| <b>F8</b>      | Equalisation in standby              | ON                 | ON                  | ON                 | OFF              | ON      |
| <b>EQU ON</b>  | Equalisation charge ON (in progress) | BL                 | BL                  | ON                 | OFF              | ON      |
|                |                                      |                    |                     |                    | OFF              | ON      |
| <b>EQU OFF</b> | Equalisation charge OFF (in standby) | ON                 | ON                  | ON                 | OFF              | ON      |
| <b>M</b>       | Maintenance                          | BL                 | BL                  | ON                 | OFF              | ON      |
| <b>END</b>     | Charge finished                      | ON                 | ON                  | ON                 | OFF              | ON      |
| <b>STOP</b>    | Phase 1 – Initial charge CI          | ON                 | OFF                 | OFF                | OFF              | ON      |
|                | Phase 2 – Phase 7                    | ON                 | ON                  | OFF                | OFF              | ON      |
|                | Equalisation in standby              | ON                 | ON                  | ON                 | OFF              | ON      |
|                | Equalisation charge ON (in progress) | ON                 | ON                  | ON                 | OFF              | ON      |
|                | Equalisation charge OFF (in standby) | ON                 | ON                  | ON                 | OFF              | ON      |
|                | Maintenance                          | ON                 | ON                  | ON                 | OFF              | ON      |
| <b>ERROR</b>   | Phase 1 – Initial charge CI          | ON                 | OFF                 | OFF                | ON               | ON      |
|                | Phase 2 – Phase 7                    | ON                 | ON                  | OFF                | ON               | ON      |
|                | Equalisation in standby              | ON                 | ON                  | ON                 | ON               | ON      |
|                | Equalisation charge ON (in progress) | ON                 | ON                  | ON                 | ON               | ON      |
|                | Equalisation charge OFF (in standby) | ON                 | ON                  | ON                 | ON               | ON      |
|                | Maintenance                          | ON                 | ON                  | ON                 | ON               | ON      |

Where:

OFF = the LED is off  
 ON = the LED is constant  
 BL = the LED is blinking (T=1 second)  
 - - = the LED can be in any condition

## FAULT CONDITIONS

During normal operation of the battery charger, two types of fault may occur:

- Blocking fault (BF)
- NON-Blocking fault (NBF)

The following table gives the LED fault warnings.

| Reference | DESCRIPTION        | Led DL4<br>(green) | Led DL3<br>(yellow) | Led DL2<br>(green) | Led DL1<br>(red) | DISPLAY |
|-----------|--------------------|--------------------|---------------------|--------------------|------------------|---------|
| BF        | Blocking fault     | OFF                | OFF                 | OFF                | ON               | OFF     |
| NBF       | NON-Blocking fault | OFF                | OFF                 | OFF                | BLK              | OFF     |

The MONITOR 1 page, which is usually the page displayed during charging, shows the fault without providing detailed information, only the fault CLASS.

The FAULT CLASSES shown on the display are described below.

| FAULT CLASSE                 | DESCRIPTION                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------|
| SYSTEM FAILURE               | Fault connected to logic board operation                                                           |
| ANTI TRICKLE CHARGING SYSTEM | Battery Voltage which exceeds the voltage limit set to recognise a condition of opportunity charge |
| SYSTEM MESSAGE               | System status message (not a fault message)                                                        |
| COMMUNICATION FAULT          | Communication error between CPU and other peripheral systems (USB, RS485)                          |
| BATTERY STATUS               | Fault connected to battery operation.                                                              |
| BATTERY CHARGER STATUS       | Fault connected to use of battery charger.                                                         |
| FAULT DURING CHARGING        | Fault connected to malfunctioning or power failure                                                 |
| TEMPERATURE FAULT            | Fault connected to battery temperature reading, following setting of the temperature probe.        |
| INTERNAL OVERHEATING         | Fault connected to overheating of the power board                                                  |
| CURVE FAULT                  | Programming fault in the selected charge profile (for example Phase Timeout or General Timeout))   |

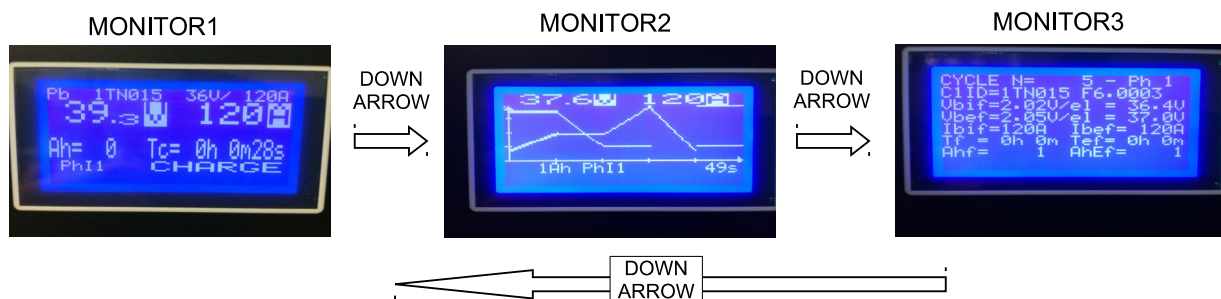
The exact detail (code and description) of the fault is shown to the user only on accessing the MONITOR 2 page.

Fault conditions are divided into different categories according to the effect they have on the charging cycle.

- Client information Message (MESSAGE)
- Faults which block the battery charger until charging is reset and which usually require the user or technical assistance to intervene (BF)
- Non-blocking faults whose trigger may disappear causing charging to restart (NBF)
- Faults which allow the battery charger to attempt 3 restarts. If the restart is unsuccessful, the system will block (3T NBF)

## LCD DISPLAY

The battery charger has 3 menus which can be viewed on the monitor. You can use the "down arrow" key, whose function was described earlier, to move between the menus

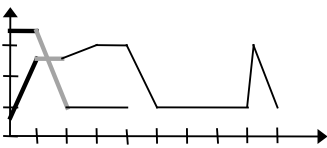


Below is a summary of the information given respectively on the 3 displays.

### MONITOR1

| LINE | EXAMPLE             | DESCRIPTION                                                                                                               |
|------|---------------------|---------------------------------------------------------------------------------------------------------------------------|
| (1)  | Pb 3TN015 36V/ 120A | Battery technology, Type of curve, Battery Charger dimensions                                                             |
| (2)  | 39.3 V 120A         | Battery voltage and charge current                                                                                        |
| (3)  | Ah= 0 Tc= 0h00m28s  | Ah charged, Charging time in hours, min, sec                                                                              |
| (4)  | PhI1 CHARGE         | Current charging phase, battery charger status<br>(for example phase = automatic start A0, STATUS= BATTERY NOT CONNECTED) |
| (5)  | -- Messages         | Possible fault or status messages                                                                                         |

### MONITOR2

| LINE | EXAMPLE                                                                             | DESCRIPTION                                                                                                                                                                                     |
|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)  | 37.6V 120A                                                                          | Battery voltage and charge current                                                                                                                                                              |
| (2)  |  | Active charge profile indicating: <ul style="list-style-type: none"> <li>Phase complete (bold line)</li> <li>Phase in progress (flashing line)</li> <li>Phase to execute (thin line)</li> </ul> |
| (3)  | 0Ah PhI1 00m49s                                                                     | Ah charged, Charging time in hours, min, sec                                                                                                                                                    |
| (4)  | -- Message                                                                          | Possible fault or status messages                                                                                                                                                               |

### MONITOR3

| LINE | EXAMPLE               | DESCRIPTION                                                                                                     |
|------|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| (1)  | CYCLE N= 5 - Ph 1     | Number of charge cycles and current charge phase<br>for example: charge cycles 5 and Phase 1                    |
| (2)  | ClID=1TN015 F6.0003   | Charging curve univocal code                                                                                    |
| (3)  | Vbif=2.02V/el = 36.4V | Battery voltage at start of phase (Vbif) expressed first as element voltage (V/el) then as absolute voltage (V) |
| (4)  | Vbef=2.05V/el = 37.0V | Battery voltage at end of current phase (Vbef) expressed                                                        |

|     |                       |                                                                          |
|-----|-----------------------|--------------------------------------------------------------------------|
|     |                       | first as element voltage (V/el) then as absolute voltage (V)             |
| (5) | Ibif= 120A Ibef= 120A | Current at start of phase (Ibif) and current at end of phase (Ibef)      |
| (6) | Tf =0h0m Tef=0hm      | Individual phase time (Tf) and overall charge time at end of phase (Tef) |
| (7) | Ahf= 1 AhEf = 1       | Ah charged in the selected phase (Ahf) and overall Ah charged (AhEf)     |
| (8) | -- Message            | Any faults occurring during the charge cycle are shown                   |

## LOG DATA

When accessing the "OLD-DATA MENU" from the "MAIN MANU", two options are available to you:



By selecting option 1 and confirming with the "ENTER" key you can view the last 50 charge processes.  
By selecting option 2 you can reset the data file.



On entering the display you can view data regarding cycles and individual phases

There is an example below:

- Select the charge cycle:



1. Select line 1 (CYCLE) and press "ENTER";
2. Select NC using the "ARROW UP" - "ARROW DOWN" key;
3. Exit "ENTER";



- Select the charge phase:



1. Select line 2 (PHASE) and press "ENTER";
2. Select Ph using the "ARROW UP" - "ARROW DOWN" key;
3. Exit "ENTER";



The functions of the keys are set out below:

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| UP ARROW / DOWN ARROW | lets you move UP / DOWN in the menu (lines 1 and 2) and select a sub-menu |
| ENTER:                | selects a sub-menu and gives you access                                   |

The information shown on the lines is described below:

| LINE | EXAMPLE               | DESCRIPTION                                                                                            |
|------|-----------------------|--------------------------------------------------------------------------------------------------------|
| (1)  | *-OLD-DATA NC= 4      | Select the charge cycle with its parameters to analyse (50 cycles are available)                       |
| (2)  | *-CURVE2-PHASE =Ph.1  | Select the selected charge phase to analyse parameters.                                                |
| (3)  | C_ID= 2PB ST+_01.0002 | Charging curve univocal code                                                                           |
| (4)  | Vbef=2.44V/el = 58.6V | Battery voltage at end of selected phase. Expressed as element voltage (V / el) and total voltage (V). |
| (5)  | Ibif= 35A Ibef= 21A   | Ibif is the current at start of phase. Ibef is the current at end of phase.                            |
| (6)  | Tf =10h33m Tef=10h33m | Tf is the phase time. Tef is the total charging time.                                                  |
| (7)  | Ahf= 45 AhEf= 250     | Ahf gives Ah supplied during the selected phase. AhEf gives total Ah supplied up to now.               |
| (8)  | <-EXIT                | Exit the menu                                                                                          |

## WARRANTY

- The warranty is valid 12 months from the date of installation.
- The warranty covers parts found to be defective in manufacturing.
- The warranty does NOT cover damage caused by incorrect usage and/or installation.
- The warranty lapses if any tampering is discovered.
- For any problems, please contact an AUTHORISED RETAILER or S.P.E. ELETTRONICA INDUSTRIALE directly.

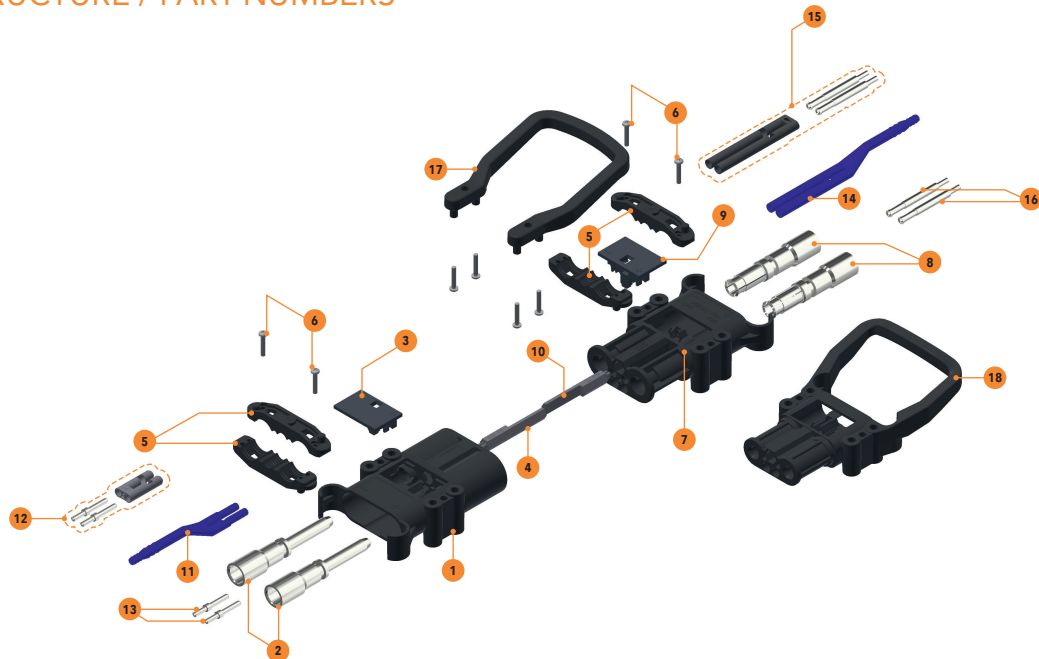
## REMA BATTERY CONNECTOR DIN160



### Product features and advantages

- > Specifically designed for the quick and opportunity charging of large battery capacities
- > Suitable for lead gel accumulators and lithium-ion batteries
- > Corresponds to the DIN VDE 0632-589 and EN 1175-1
- > Spring supported contact system for
  - > optimal contact pressure
  - > high electrical conductivity
- > High-grade contacts made out of pure high conductive Cu-ETP copper with silver plated surface and an anti-friction and tarnish coating ensure
  - > power transition with minimal losses
  - > long life
- > Durable because of acid resistant design
- > Suitable for cable sizes up to 50 mm<sup>2</sup>
- > Direct crimping without reducing bushing for all cable size
- > Wide range of accessories
  - > different handle shapes
  - > 1 pair of additional auxiliary and 1 pair of pilot contacts
  - > cooling system with air supply through
- > Typical applications
  - > forklift trucks
  - > battery charging systems
  - > sweeper and RCC devices

## 1. STRUCTURE / PART-NUMBERS



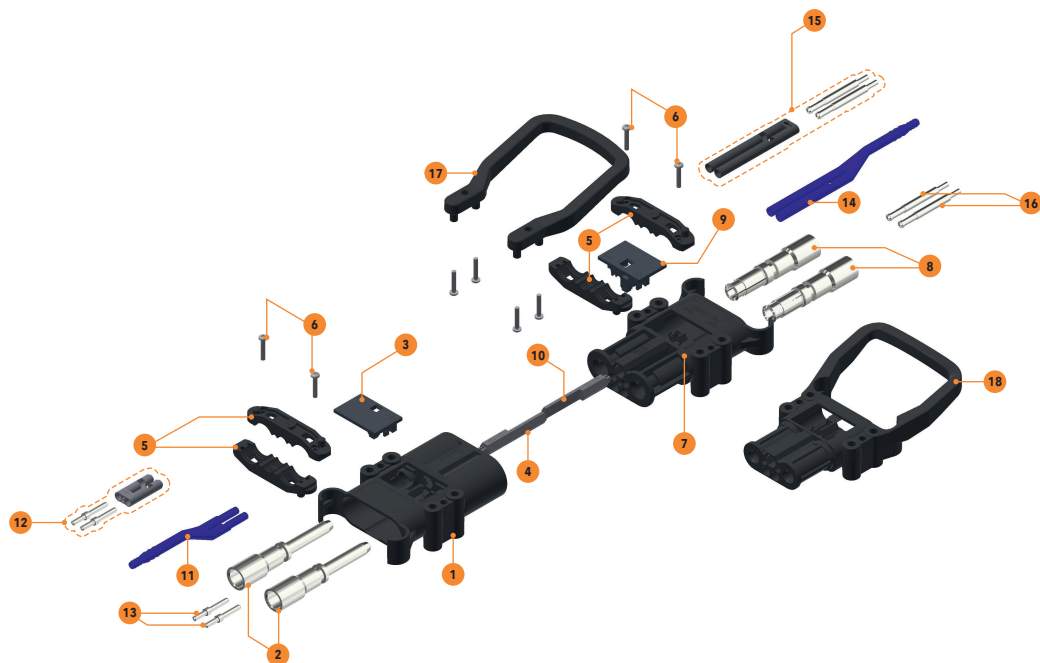
### PLUG AND SOCKET DIN160

| DESCRIPTION                                              | SET PARTS         | CROSS SECTION:  | 10mm <sup>2</sup> | 16mm <sup>2</sup> | 25mm <sup>2</sup> | 35mm <sup>2</sup> | 50mm <sup>2</sup> | 70mm <sup>2</sup> |
|----------------------------------------------------------|-------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| DIN160 plug; grey coding; acid resistant                 | 1/2/3/4/5(2x)/6   | <b>PART-NO.</b> | 108846            | 108845            | 108851            | 108858            | 108865            | 108868            |
| DIN160 socket; grey coding; acid resistant               | 5(2x)/6/7/8/9/10  | <b>PART-NO.</b> | ---               | 108807            | 108813            | 108819            | 108831            | 108832            |
| DIN160 socket; grey coding; fixed handle; acid resistant | 5(2x)/6/8/9/10/18 | <b>PART-NO.</b> | ---               | 108806            | 108812            | 108818            | 108826            | 108829            |

### ADDITION PARTS DIN160

| DESCRIPTION                                     | POSITION | PART-NO. |
|-------------------------------------------------|----------|----------|
| DIN160 air adapter plug (6 / 8 mm connection)   | 11       | 100465   |
| DIN160 air adapter plug (6 / 9 mm connection)   | 11       | 100473   |
| DIN160 pilot contact set plug                   | 12       | 108610   |
| DIN160 aux contact for plug                     | 13       | 102641   |
| DIN160 air adapter socket (6 / 8 mm connection) | 14       | 100464   |
| DIN160 air adapter socket (6 / 9 mm connection) | 14       | 108037   |
| DIN160 pilot contact set socket                 | 15       | 108609   |
| DIN160 aux contact for socket                   | 16       | 102714   |
| DIN160 coding pin green                         | 4        | 100049   |
| DIN160 coding pin yellow                        | 4        | 100048   |
| DIN160 coding pin plug blue                     | 4        | 100020   |
| DIN160 coding pin green                         | 10       | 100049   |
| DIN160 coding pin socket blue                   | 10       | 100021   |

| DESCRIPTION                                            | POSITION | PART-NO. |
|--------------------------------------------------------|----------|----------|
| DIN160 Griff grau; gekröpft; mit 4 Schrauben           | 17       | 108879   |
| DIN160 Griff grau; gekröpft; mit 8 Schrauben           | 17       | 108881   |
| DIN160 Griff; flach; mit 2 Schrauben                   | 17       | 108906   |
| DIN160 Griff; flach; mit 2 Schrauben + Sicher.-Muttern | 17       | 108910   |



## 2. TECHNICAL SPECIFICATIONS

### GENERAL

|                                             |                                         |
|---------------------------------------------|-----------------------------------------|
| > Nominal voltage $U_N$                     | 150 V DC                                |
| > Current rating $I_N^{(1)}$                | 160 A acc. DIN VDE 0623-589             |
| > Test voltage                              | 2 kVAC acc. EN 1175-1                   |
| > Temperature range<br>(incl. self-heating) | -20 °C ... +105 °C<br>-4 °F ... +221 °F |
| > Whole plugging line                       | app. 40 mm                              |
| > Plugging line main contact                | app. 25 mm                              |
| > Plugging line auxiliary contact           | app. 9 mm                               |

(1) for cable cross-sections  $\geq 35 \text{ mm}^2$

### STANDARDS

- > DIN VDE 0623-589
- > DIN EN 1175-1 (VDE 0117-1)
- > **cULus** File E226710

### MATERIAL HOUSING

|                              | Standard         | >PP-GF30<         | >PA-GF30<          |
|------------------------------|------------------|-------------------|--------------------|
| > Color                      |                  | grey sim. RAL7016 | black sim. RAL9005 |
| > Halogen-free               | DIN VDE 0472-815 | yes               | yes                |
| > UV resistant               |                  | yes               | yes                |
| > Ozon resistant             |                  | limited           | no                 |
| > Battery acid resistant     | EN 1175-1        | yes               | no                 |
| > Comparative Tracking Index | IEC 60112        | 600 V             | 550 V              |

### MATERIAL CONTACTS

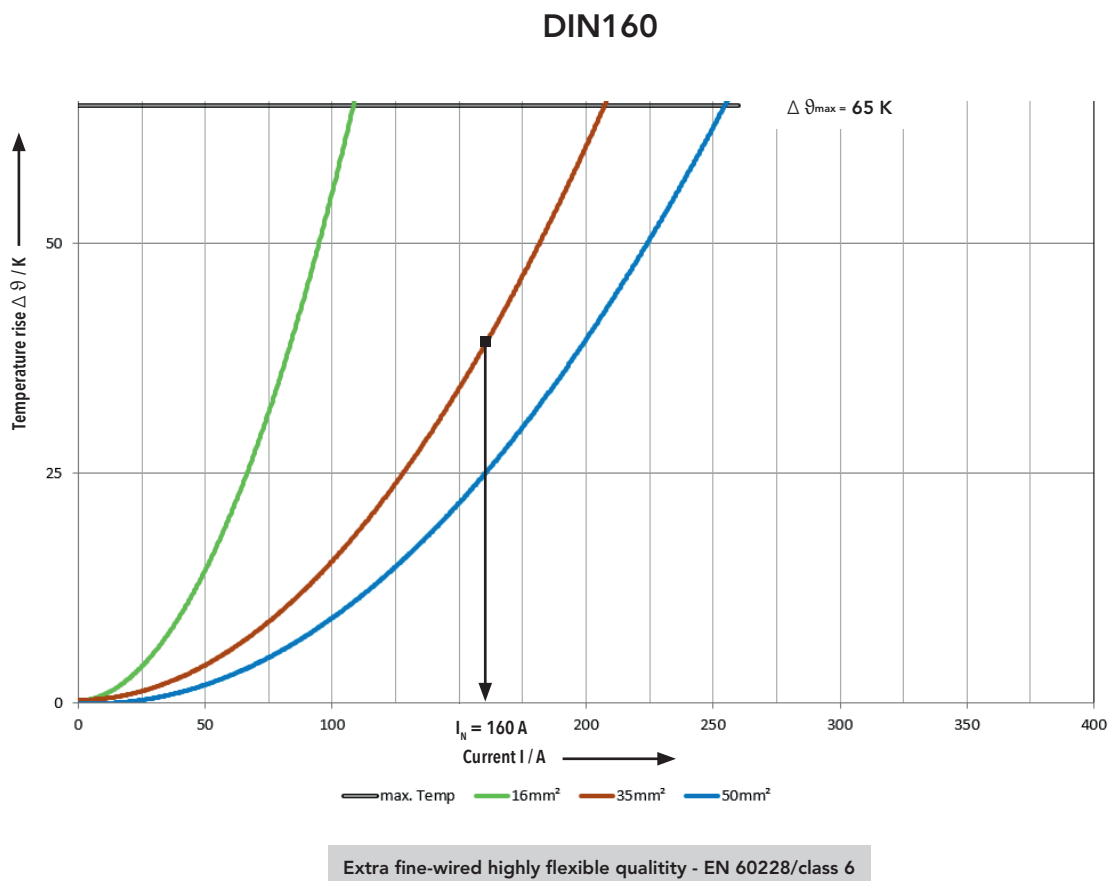
- > Electrolytic high conductive copper Cu-ETP acc. EN 13601 and silver plated surface

### 3. HEATING OF MAIN CONTACTS

The REMA DIN160 connector system is designed for optimum performance when used 35 mm<sup>2</sup> cross section cable according DIN VDE 0623-589.

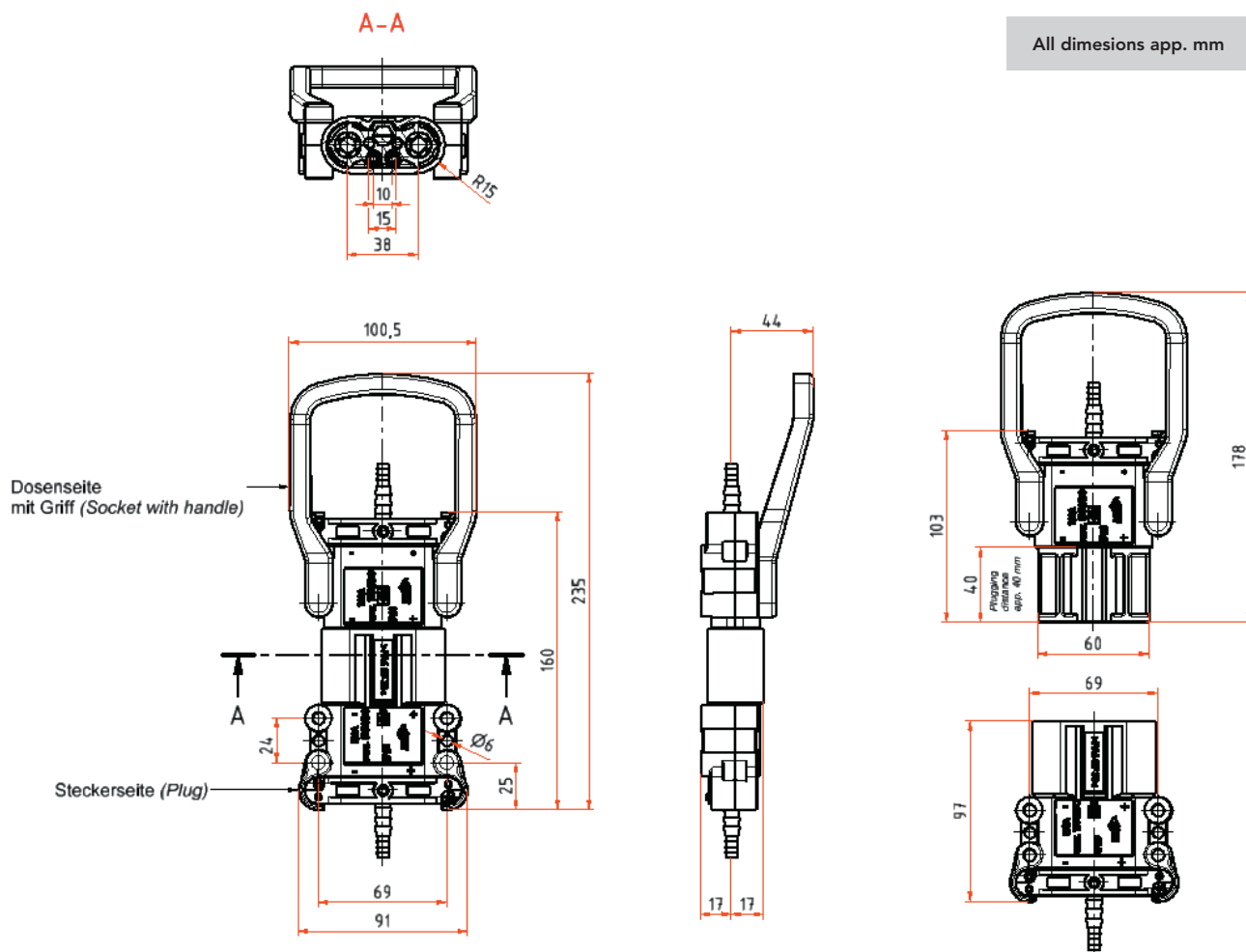
**At other cable cross section the nominal operation current  $I_N$  will be different.**

The following curves are for reference. The actual thermal performance may vary depending upon environmental conditions.

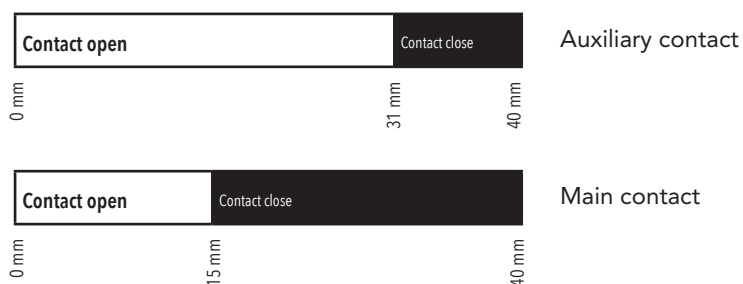


Please contact REMA for additional information concerning DIN160 Battery Connector system.

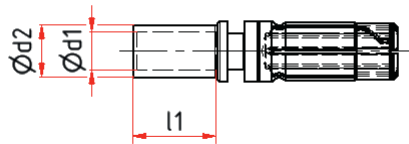
## 4. DRAWINGS



### Plugging distance charts REMA connector DIN160



**Preparation wire acc. DIN VDE 0623-589**



| CROSS SECTION [mm <sup>2</sup> ] | $\varnothing d2$ [MM]<br>0,15 | $\varnothing d1$ [mm]<br>$\pm 0,05$ | $l1$ [mm]<br>$\pm 0,30$ |
|----------------------------------|-------------------------------|-------------------------------------|-------------------------|
| 16                               | 8,4                           | 6,1                                 | 20,0                    |
| 25                               | 11,0                          | 8,1                                 | 20,0                    |
| 35                               | 12,5                          | 9,0                                 | 20,0                    |
| 50                               | 14,5                          | 11,1                                | 20,0                    |

## 5. CODING

The different types of batteries which are used on the vehicle market today (wet, dry or gel batteries), may only be charged with the right charger for this type of battery.

In extreme cases, unapproved combinations of charge system and batteries can lead to the battery destruction.

In addition, only chargers and batteries with the same voltage may be combined.

For this reason REMA has developed a specially designed coding system with colored and labelled coding pins. This system allows correct connections and prevent incorrect ones.

The REMA Coding System meets the requirements of DIN VDE 0623-589.

All displayed product versions can only be used for the REMA DIN160, DIN320, DIN640.

### Coding pin for wet batteries

- > **Current rating I:** acc. DIN VDE 0623-589
- > **Color:** Grey RAL7035
- > **Voltage range:** 24 V ... 96 V



Part-No.100015

### Coding pin for dry batteries

- > **Current rating I:** acc. DIN VDE 0623-589
- > **Color:** Green RAL6005
- > **Voltage range:** 24 V ... 96 V



Part-No. 100049

### Universal coding pin (only for plugs) for wet/dry batteries

- > **Current rating I:** acc. DIN VDE 0623-589
- > **Color:** Yellow RAL1018
- > **Voltage range:** 24 V ... 96 V



Part-No.100048

### Lithium Ionen coding pin (Plug and Socket)

- > **Current rating I:** acc. DIN VDE 0623-589
- > **Color:** Blue RAL5017
- > **Voltage range:** 24 V ... 96 V



Plug: Part-No.100020

Socket: Part-No.100021

## 6. DIE SETS

### General processing information

- Please only use suitable REMA die sets. Only those guarantee a secure electrical connection.
- Please actuate die sets always until the end.
- Only process contacts with clean sleeves. The contaminated crimpsleeves increase the contact resistance and may lead to overheating.
- Please always set the die sets centred on the crimp sleeves.

### Hydraulic tool pliers set HP60 Type H60 - Die Sets

- Indent crimping press area 6 – 70 mm<sup>2</sup>
- Double indent crimping press area 16 – 70 mm<sup>2</sup>

Set Part-No. 107138

Set Part-No. 113032



### Typ C130 - die sets

- Indent crimping press area 10 – 95 mm<sup>2</sup>
- Souple indent crimping press area 10 – 240 mm<sup>2</sup>



For further questions, please contact your REMA Sales department

### Selection of deliverable range of die sets type C130

| CROSS SECTION      | TYPE OF DIE SET | PART-NO. |
|--------------------|-----------------|----------|
| 10 mm <sup>2</sup> | indent          | 104219   |
| 16 mm <sup>2</sup> | indent          | 111092   |
| 25 mm <sup>2</sup> | indent          | 111093   |
| 35 mm <sup>2</sup> | indent          | 111094   |
| 50mm <sup>2</sup>  | indent          | 111095   |
| 70 mm <sup>2</sup> | indent          | 111096   |
| 95 mm <sup>2</sup> | indent          | 111097   |

| CROSS SECTION       | TYPE OF DIE SET | PART-NO. |
|---------------------|-----------------|----------|
| 10 mm <sup>2</sup>  | double indent   | 107181   |
| 16 mm <sup>2</sup>  | double indent   | 107182   |
| 25 mm <sup>2</sup>  | double indent   | 107187   |
| 35 mm <sup>2</sup>  | double indent   | 107191   |
| 50 mm <sup>2</sup>  | double indent   | 107196   |
| 70 mm <sup>2</sup>  | double indent   | 107201   |
| 95 mm <sup>2</sup>  | double indent   | 107204   |
| 120 mm <sup>2</sup> | double indent   | 107208   |
| 240 mm <sup>2</sup> | double indent   | 107212   |

### Selection of deliverable range of die sets type H60

| CROSS SECTION      | TYPE OF DIE SET | PART-NO. |
|--------------------|-----------------|----------|
| 6 mm <sup>2</sup>  | indent          | 110676   |
| 10 mm <sup>2</sup> | indent          | 107264   |
| 16 mm <sup>2</sup> | indent          | 107265   |
| 25 mm <sup>2</sup> | indent          | 107266   |
| 35 mm <sup>2</sup> | indent          | 107267   |
| 50 mm <sup>2</sup> | indent          | 107268   |
| 70 mm <sup>2</sup> | indent          | 112717   |

| CROSS SECTION      | TYPE OF DIE SET | PART-NO. |
|--------------------|-----------------|----------|
| 16 mm <sup>2</sup> | double indent   | 107270   |
| 25 mm <sup>2</sup> | double indent   | 107271   |
| 35 mm <sup>2</sup> | double indent   | 107272   |
| 50 mm <sup>2</sup> | double indent   | 107273   |
| 70 mm <sup>2</sup> | double indent   | 112714   |

## 7. POWER CABLE

The cables of the REMA DIN High-Power DC Connector System are extra fine-wired flexible copper cables according to EN 60228 / class 6.

| CROSS SECTION       | CABEL PART-NO.      |                    |
|---------------------|---------------------|--------------------|
| 10 mm <sup>2</sup>  | REMA Flex® 104750   | H01N2-D 103115     |
| 16 mm <sup>2</sup>  | REMA Flex® 103117   | H01N2-D 103117     |
| 25 mm <sup>2</sup>  | REMA Flex® 103122   | H01N2-D 103121     |
| 35 mm <sup>2</sup>  | REMA Flex® 103125   | H01N2-D 103124     |
| 50 mm <sup>2</sup>  | REMA Flex® 103130   | H01N2-D 103528     |
| 70 mm <sup>2</sup>  | REMA Flex® 103132   | H01N2-D 110428     |
| 95 mm <sup>2</sup>  | REMA Flex® 103135   | H01N2-D 103133     |
| 120 mm <sup>2</sup> | Frötec Kabel 104353 | Lapp Kabel 104705  |
| 240 mm <sup>2</sup> |                     | H01N2-D 104354     |
| AWG 4/0             | cobra wire AWG 4/0  | cobra wire AWG 4/0 |

On request, we are happy to evaluate your special cables and submit an offer for crimp validation.



## THE i3™

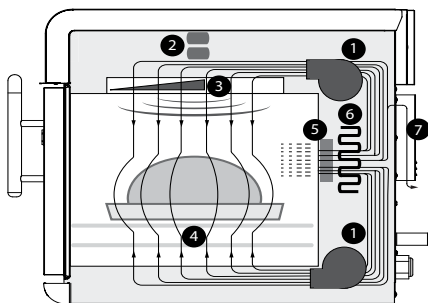


### PERFORMANCE

Utilizing TurboChef's patented technology to rapidly cook food without compromising quality, the i3 oven provides superior cooking performance while requiring less space and consuming less energy.

### VENTILATION

- UL 710B (KNLZ) listed for ventless operation.<sup>†</sup>
- EPA 202 test (8 hr):
  - Product: Pepperoni Pizzas
  - Results: 0.32 mg/m<sup>3</sup>
  - Ventless Requirement: <5.00 mg/m<sup>3</sup>
- Internal catalytic filtration to limit smoke, grease, and odor emissions.



1. Blower Motors
2. Microwave System
3. Stirred Impinged Air (Top) and Microwave
4. Impinged Air (Bottom)
5. Catalytic Converter
6. Impingement Heater
7. Vent Tube Catalyst

Project \_\_\_\_\_

Item No. \_\_\_\_\_

Quantity \_\_\_\_\_

### EXTERIOR CONSTRUCTION

- Two-tone stainless steel front, top and sides
- 304 stainless steel removable grease collection pan
- Ergonomic door handle
- Rubber seal for surface mounting
- Side hand grips for lifting

### INTERIOR CONSTRUCTION

- 304 stainless steel
- Fully insulated cook chamber
- Removable rack
- Top and bottom jetplates

### STANDARD FEATURES

- Integral recirculating catalytic converter for UL 710B (KNLZ) listed ventless operation
- Independently-controlled dual motors for vertically-recirculated air impingement
- Top-launched microwave system
- Stirrer to help ensure even distribution of air and microwave
- External air filtration
- Smart menu system capable of storing up to 200 recipes
- Flash software updates via smart card
- Single or multiple-temperature interface
- Smart Voltage Sensor Technology\* (U.S. only)
- Vent catalyst to further limit emissions
- Built-in self-diagnostics for monitoring oven components and performance
- Stackable (requires stacking stand)
- Field-configurable for single or 3-phase operation
- Warranty – 1 year parts and labor

### COMES WITH STANDARD ACCESSORIES

- 1 Aluminum Paddle (NGC-1478)
- 1 Bottle Oven Cleaner (103180)
- 1 Bottle Oven Guard (103181)
- 2 Trigger Sprayers (103182)
- 2 Teflon Baskets (NGC-1331)



This product conforms to the ventilation recommendations set forth by NFPA96 using EPA202 test method.

\* Smart Voltage Sensor Technology does not compensate for lack of or over voltage situations. It is the responsibility of the owner to supply voltage to the unit according to the specifications on the back of this sheet.

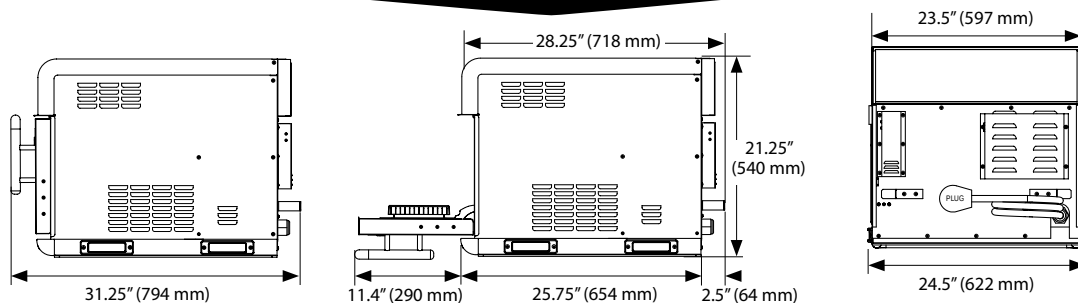
<sup>†</sup> Ventless certification is for all food items except for foods classified as "fatty raw proteins." Such foods include bone-in, skin-on chicken, raw hamburger meat, raw bacon, raw sausage, steaks, etc. If cooking these types of foods, consult local HVAC codes and authorities to ensure compliance with ventilation requirements.

Ultimate ventless allowance is dependent upon AHJ approval, as some jurisdictions may not recognize the UL certification or application. If you have questions regarding ventless certifications or local codes please email [ventless.help@turbochef.com](mailto:ventless.help@turbochef.com)

TurboChef reserves the right to make substitutions of components or change specifications without prior notice.

DOC-1135/Revision E/  
March 2010

i3™



### DIMENSIONS

|                                                              |                 |                 |
|--------------------------------------------------------------|-----------------|-----------------|
| Single Units                                                 |                 |                 |
| Height                                                       | 21.25"          | 540 mm          |
| Width                                                        | 24.5"           | 622 mm          |
| Depth                                                        | 31.25"          | 794 mm          |
| Weight                                                       | 245 lb.         | 111 kg          |
| Cook Chamber                                                 |                 |                 |
| Height                                                       | 6.9"            | 175 mm          |
| Width                                                        | 19.4"           | 493 mm          |
| Depth (Door Open / Closed)                                   | 14.75" / 12.75" | 375 mm / 324 mm |
| Volume                                                       | 1.14 cu.ft.     | 32.3 liters     |
| Wall Clearance (Oven not intended for built-in installation) |                 |                 |
| Top                                                          | 19"             | 483 mm          |
| Sides                                                        | 2"              | 51 mm           |

### ELECTRICAL SPECIFICATIONS-SINGLE PHASE

|                                                                             |                 |  |
|-----------------------------------------------------------------------------|-----------------|--|
| i3 US Model (i3-9500-1) - United States                                     |                 |  |
| Voltage                                                                     | 208/240 VAC     |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 40 amp (40 amp) |  |
| Max Input                                                                   | 8300/9600 watts |  |
| i3 UK Model (i3-9500-2-UK) - United Kingdom                                 |                 |  |
| Voltage                                                                     | 230 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 40 amp (62 amp) |  |
| Max Input                                                                   | 9200 watts      |  |
| i3 BK Model (i3-9500-6-BK) - Brazil                                         |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 40 amp (50 amp) |  |
| Max Input                                                                   | 8800 watts      |  |
| i3 LA Model (i3-9500-7-LA) - Latin America                                  |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 40 amp (50 amp) |  |
| Max Input                                                                   | 8800 watts      |  |
| i3 JK Model - 50 Hz (i3-9500-8-JK) - Japan<br>60 Hz (i3-9500-10-JK) - Japan |                 |  |
| Voltage                                                                     | 200 VAC         |  |
| Frequency                                                                   | 50 Hz or 60 Hz  |  |
| Current (Max Circuit Requirement)                                           | 40 amp (40 amp) |  |
| Max Input                                                                   | 8000 watts      |  |

### ELECTRICAL SPECIFICATIONS-MULTI PHASE

|                                             |                 |  |
|---------------------------------------------|-----------------|--|
| i3 DL Model (i3-9500-14-DL) - United States |                 |  |
| Voltage                                     | 208/240 VAC     |  |
| Frequency                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)           | 24 amp (30 amp) |  |
| Max Input                                   | 8600/9900 watts |  |

|                                                                             |                 |  |
|-----------------------------------------------------------------------------|-----------------|--|
| i3 ED Model (i3-9500-3-ED) - International                                  |                 |  |
| Voltage                                                                     | 230 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 24 amp (32 amp) |  |
| Max Input                                                                   | 9500 watts      |  |
| i3 EW Model (i3-9500-4-EW) - International                                  |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 14 amp (20 amp) |  |
| Max Input                                                                   | 9500 watts      |  |
| i3 AU Model (i3-9500-5-AU) - Australia                                      |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 14 amp (20 amp) |  |
| Max Input                                                                   | 9500 watts      |  |
| i3 JD Model - 50 Hz (i3-9500-9-JD) - Japan<br>60 Hz (i3-9500-11-JD) - Japan |                 |  |
| Voltage                                                                     | 200 VAC         |  |
| Frequency                                                                   | 50 Hz or 60 Hz  |  |
| Current (Max Circuit Requirement)                                           | 23 amp (30 amp) |  |
| Max Input                                                                   | 8000 watts      |  |
| i3 KW Model (i3-9500-12-KW) - Middle East & Korea                           |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 14 amp (20 amp) |  |
| Max Input                                                                   | 9500 watts      |  |
| i3 SD Model (i3-9500-13-SD) - Middle East & Korea                           |                 |  |
| Voltage                                                                     | 230 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 24 amp (30 amp) |  |
| Max Input                                                                   | 9200 watts      |  |
| i3 LD Model (i3-9500-15-LD) - Latin America                                 |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 24 amp (30 amp) |  |
| Max Input                                                                   | 9100 watts      |  |
| i3 BD Model (i3-9500-16-BD) - Brazil                                        |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 24 amp (30 amp) |  |
| Max Input                                                                   | 9100 watts      |  |

### SHIPPING INFORMATION

U.S.: All ovens shipped within the U.S. are packaged in a double-wall corrugated box banded to a wooden skid.  
International: All International ovens shipped via Air or Less than Container Loads are packaged in wooden crates.

Box size: 34" (L) x 30" (W) x 32" (H) / 864 mm x 762 mm x 813 mm  
Crate size: 37" (L) x 33" (W) x 34" (H) / 940 mm x 838 mm x 864 mm  
Item class: 85 NMFC #26770 HS code 8419.81

Boxed weight: 290 lb. (132 kg) Crated weight: 365 lb. (166 kg)

Minimum entry clearance required for box: 30.5" (775 mm)  
Minimum entry clearance required for crate: 33.5" (851 mm)



# THE i5™

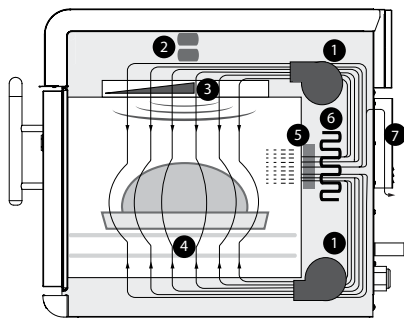


## PERFORMANCE

Utilizing TurboChef's patented technology to rapidly cook food without compromising quality, the i5 oven maximizes versatility with its large cavity size and ability to cook with most any metal pan.

## VENTILATION

- UL 710B (KNLZ) listed for ventless operation.<sup>†</sup>
- EPA 202 test (8 hr):
  - Product: Pepperoni Pizzas
  - Results: 2.80 mg/m<sup>3</sup>
  - Ventless Requirement: <5.00 mg/m<sup>3</sup>
- Internal catalytic filtration to limit smoke, grease, and odor emissions.



1. Blower Motors
2. Microwave System
3. Stirred Impinged Air (Top) and Microwave
4. Impinged Air (Bottom)
5. Catalytic Converter
6. Impingement Heater
7. Vent Tube Catalyst

Project \_\_\_\_\_

Item No. \_\_\_\_\_

Quantity \_\_\_\_\_

## EXTERIOR CONSTRUCTION

- Two-tone stainless steel front, top and sides
- 304 stainless steel removable grease collection pan
- Ergonomic door handle
- Rubber seal for surface mounting
- Side hand grips for lifting

## INTERIOR CONSTRUCTION

- 304 stainless steel
- Fully insulated cook chamber
- Removable rack with dual setting option
- Top and bottom jetplates

## STANDARD FEATURES

- Integral recirculating catalytic converter for UL 710B (KNLZ) listed ventless operation
- Independently-controlled dual motors for vertically-recirculated air impingement
- Top-launched microwave system
- Stirrer to help ensure even distribution of air and microwave
- Variable rack positioning
- External air filtration
- Smart menu system capable of storing up to 200 recipes
- Flash software updates via smart card
- Single or multiple-temperature interface
- Smart Voltage Sensor Technology\* (U.S. only)
- Vent catalyst to further limit emissions
- Built-in self-diagnostics for monitoring oven components and performance
- Stackable (requires stacking stand)
- Field-configurable for single or 3-phase operation
- Warranty – 1 year parts and labor

## COMES WITH STANDARD ACCESSORIES

- 1 Aluminum Paddle (NGC-1478)
- 1 Bottle Oven Cleaner (103180)
- 1 Bottle Oven Guard (103181)
- 2 Trigger Sprayers (103182)
- 2 Teflon Baskets (NGC-1331)



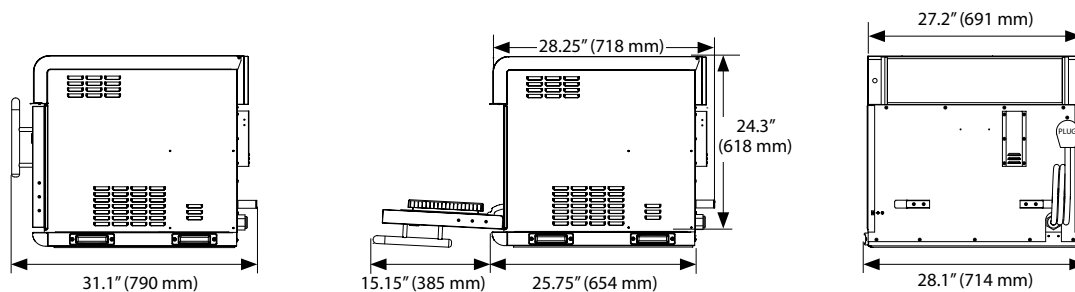
This product conforms to the ventilation recommendations set forth by NFPA96 using EPA202 test method.

\* Smart Voltage Sensor Technology does not compensate for lack of or over voltage situations. It is the responsibility of the owner to supply voltage to the unit according to the specifications on the back of this sheet.

<sup>†</sup> Ventless certification is for all food items except for foods classified as "fatty raw proteins." Such foods include bone-in, skin-on chicken, raw hamburger meat, raw bacon, raw sausage, steaks, etc. If cooking these types of foods, consult local HVAC codes and authorities to ensure compliance with ventilation requirements.

Ultimate ventless allowance is dependent upon AHJ approval, as some jurisdictions may not recognize the UL certification or application. If you have questions regarding ventless certifications or local codes please email [ventless.help@turbochef.com](mailto:ventless.help@turbochef.com)

TurboChef reserves the right to make substitutions of components or change specifications without prior notice.



### DIMENSIONS

|                                                              |            |                 |
|--------------------------------------------------------------|------------|-----------------|
| Single Units                                                 |            |                 |
| Height                                                       | 24.3"      | 618 mm          |
| Width                                                        | 28.1"      | 714 mm          |
| Depth                                                        | 28.25"     | 718 mm          |
| Weight                                                       | 275 lbs.   | 125 kg          |
| Cook Chamber                                                 |            |                 |
| Height                                                       | 10"        | 254 mm          |
| Width                                                        | 24"        | 610 mm          |
| Depth (Door Open / Closed)                                   | 16" / 14"  | 406 mm / 356 mm |
| Volume                                                       | 2.2 cu.ft. | 62 liters       |
| Wall Clearance (Oven not intended for built-in installation) |            |                 |
| Top                                                          | 19"        | 483 mm          |
| Sides                                                        | 2"         | 51 mm           |

### ELECTRICAL SPECIFICATIONS-SINGLE PHASE

|                                                                             |                  |  |
|-----------------------------------------------------------------------------|------------------|--|
| i5 US Model (I5-9500-1) - United States                                     |                  |  |
| Voltage                                                                     | 208/240 VAC      |  |
| Frequency                                                                   | 60 Hz            |  |
| Current (Max Circuit Requirement)                                           | 46 amp (50 amp)  |  |
| Max Input                                                                   | 9500/11500 watts |  |
| i5 UK Model (I5-9500-2-UK) - United Kingdom                                 |                  |  |
| Voltage                                                                     | 230 VAC          |  |
| Frequency                                                                   | 50 Hz            |  |
| Current (Max Circuit Requirement)                                           | 48 amp (60 amp)  |  |
| Max Input                                                                   | 10000 watts      |  |
| i5 BK Model (I5-9500-6-BK) - Brazil                                         |                  |  |
| Voltage                                                                     | 220 VAC          |  |
| Frequency                                                                   | 60 Hz            |  |
| Current (Max Circuit Requirement)                                           | 48 amp (50 amp)  |  |
| Max Input                                                                   | 10000 watts      |  |
| i5 LA Model (I5-9500-7-LA) - Latin America                                  |                  |  |
| Voltage                                                                     | 220 VAC          |  |
| Frequency                                                                   | 60 Hz            |  |
| Current (Max Circuit Requirement)                                           | 48 amp (50 amp)  |  |
| Max Input                                                                   | 10000 watts      |  |
| i5 JK Model - 50 Hz (I5-9500-8-JK) - Japan<br>60 Hz (I5-9500-10-JK) - Japan |                  |  |
| Voltage                                                                     | 200 VAC          |  |
| Frequency                                                                   | 50 Hz or 60 Hz   |  |
| Current (Max Circuit Requirement)                                           | 46 amp (50 amp)  |  |
| Max Input                                                                   | 9000 watts       |  |

### ELECTRICAL SPECIFICATIONS-MULTI PHASE

|                                             |                  |  |
|---------------------------------------------|------------------|--|
| i5 DL Model (I5-9500-14-DL) - United States |                  |  |
| Voltage                                     | 208/240 VAC      |  |
| Frequency                                   | 60 Hz            |  |
| Current (Max Circuit Requirement)           | 30 amp (30 amp)  |  |
| Max Input                                   | 9500/11500 watts |  |

TurboChef recommends installing a type D circuit breaker for all installations.  
 TurboChef reserves the right to substitute components or change specifications without notice.  
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|                                                                             |                 |  |
|-----------------------------------------------------------------------------|-----------------|--|
| i5 ED Model (I5-9500-3-ED) - International                                  |                 |  |
| Voltage                                                                     | 230 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 28 amp (32 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 EW Model (I5-9500-4-EW) - International                                  |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 19 amp (20 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 AU Model (I5-9500-5-AU) - Australia                                      |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 50 Hz           |  |
| Current (Max Circuit Requirement)                                           | 19 amp (20 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 JD Model - 50 Hz (I5-9500-9-JD) - Japan<br>60 Hz (I5-9500-11-JD) - Japan |                 |  |
| Voltage                                                                     | 200 VAC         |  |
| Frequency                                                                   | 50 Hz or 60 Hz  |  |
| Current (Max Circuit Requirement)                                           | 25 amp (30 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 KW Model (I5-9500-12-KW) - Middle East & Korea                           |                 |  |
| Voltage                                                                     | 400 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 19 amp (20 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 SD Model (I5-9500-13-SD) - Middle East & Korea                           |                 |  |
| Voltage                                                                     | 230 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 28 amp (30 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 LD Model (I5-9500-15-LD) - Latin America                                 |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 28 amp (30 amp) |  |
| Max Input                                                                   | 10000 watts     |  |
| i5 BD Model (I5-9500-16-BD) - Brazil                                        |                 |  |
| Voltage                                                                     | 220 VAC         |  |
| Frequency                                                                   | 60 Hz           |  |
| Current (Max Circuit Requirement)                                           | 28 amp (30 amp) |  |
| Max Input                                                                   | 10000 watts     |  |

### SHIPPING INFORMATION

U.S.: All ovens shipped within the U.S. are packaged in a double-wall corrugated box banded to a wooden skid.  
 International: All International ovens shipped via Air or Less than Container Loads are packaged in wooden crates.

Box size: 31" x 32" x 33" (787 mm x 813 mm x 838 mm)  
 Crate size: 40" x 36" x 35" (1016 mm x 914 mm x 889 mm)  
 Item class: 85 NMFC #26770 HS code 8419.81

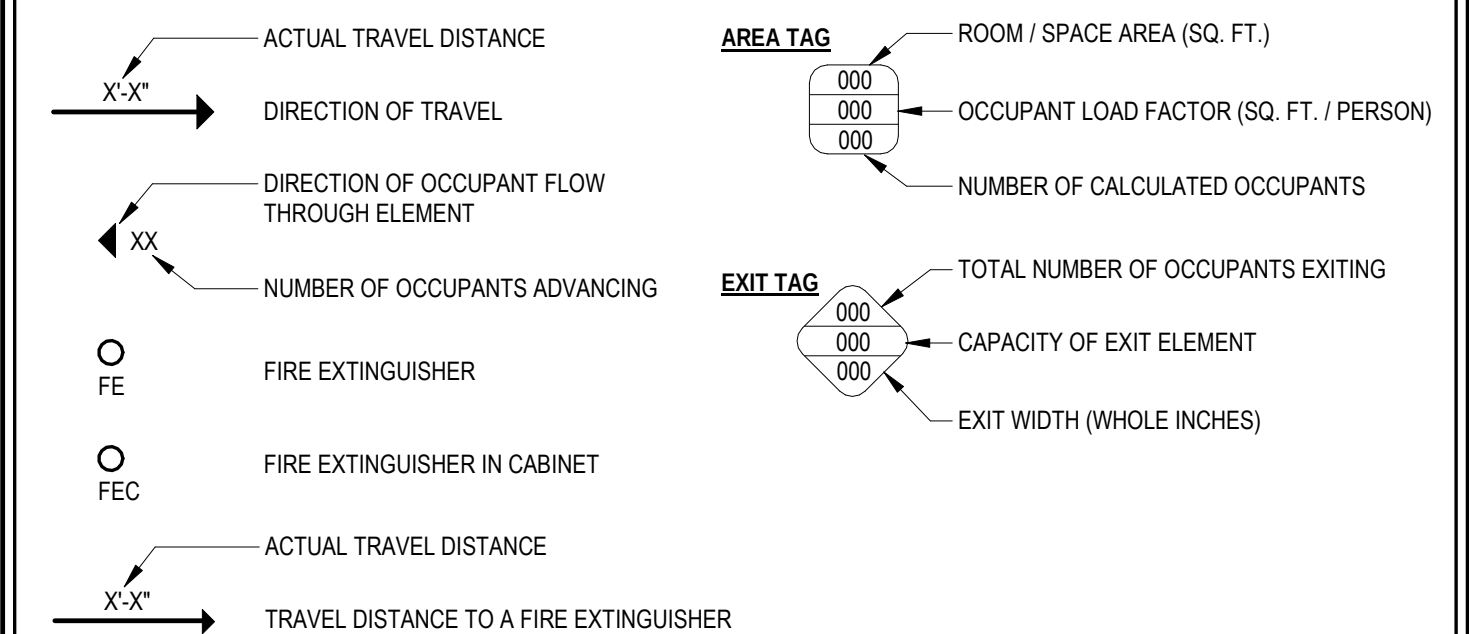
Appx. boxed weight: 330 lb. (150 kg) / Appx. crated weight: 410 lb. (186 kg)

Minimum entry clearance required for box: 31.5" (800 mm)  
 Minimum entry clearance required for crate: 35.5" (902 mm)

## CODE REVIEW

|                                                                                                                                                                                                        |  |                                           |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------|--|
| ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS AND DRAWINGS, AND SHALL SATISFY ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNING BODIES INVOLVED. |  |                                           |  |
| <b>PROJECT INFORMATION SUMMARY:</b>                                                                                                                                                                    |  | <b>PLUMBING FIXTURES (TABLE 290.2.1):</b> |  |
| BUILDING OCCUPANCY:                                                                                                                                                                                    |  | WATER CLOSETS:                            |  |
| NON-SEPARATED OCCUPANCIES:                                                                                                                                                                             |  | OCCUPANCY TYPE BUSINESS:                  |  |
| GROUP B - BUSINESS                                                                                                                                                                                     |  | 1 PER 25 FOR THE FIRST 50                 |  |
| GROUP A-2 - TAVERNS AND BARS, GAMING AREAS                                                                                                                                                             |  | AND 1 PER 50 FOR THE REMAINDER            |  |
| GROUP A-3 - RECREATION OR AMUSEMENT                                                                                                                                                                    |  | TOTAL: 44 OCC.                            |  |
| WITHOUT SPECTATOR SEATING                                                                                                                                                                              |  | MALE: 22 OCC.                             |  |
|                                                                                                                                                                                                        |  | FEMALE: 22 OCC.                           |  |
| BUILDING CONSTRUCTION CLASS:                                                                                                                                                                           |  | OCCUPANCY TYPE: STORAGE                   |  |
| TYPE IIB                                                                                                                                                                                               |  | 1 PER 100                                 |  |
| BUILDING HEIGHT:                                                                                                                                                                                       |  | TOTAL: 2                                  |  |
| 33'-0" FEET                                                                                                                                                                                            |  | MALE: 1 OCC.                              |  |
| ALLOWABLE HEIGHT:                                                                                                                                                                                      |  | FEMALE: 1 OCC.                            |  |
| 75 FEET                                                                                                                                                                                                |  | REQUIRED: 1/100 = 01                      |  |
| STORIES:                                                                                                                                                                                               |  | REQUIRED: 1/100 = 01                      |  |
| 1                                                                                                                                                                                                      |  |                                           |  |
| ALLOWABLE STORIES:                                                                                                                                                                                     |  | OCCUPANCY TYPE: SHOP / FACTORY            |  |
| 3                                                                                                                                                                                                      |  | 1 PER 100                                 |  |
| BUILDING AREA:                                                                                                                                                                                         |  | TOTAL: 9                                  |  |
| 45,230 S.F.                                                                                                                                                                                            |  | MALE: 5 OCC.                              |  |
| ALLOWABLE AREA:                                                                                                                                                                                        |  | FEMALE: 4 OCC.                            |  |
| 49,970 S.F. (38,000S.F. PER TABLE 506.2 + AREA INCREASES)                                                                                                                                              |  | REQUIRED: 5/100 = 05                      |  |
|                                                                                                                                                                                                        |  | REQUIRED: 4/100 = 04                      |  |
| 1 STORY:                                                                                                                                                                                               |  | OCCUPANCY TYPE: RESTAURANTS:              |  |
| EXCEPTION FOR 506.2.3 MIN. FRONTAGE DISTANCE                                                                                                                                                           |  | 1 PER 75                                  |  |
| PER 506.2.3 Aa + (Aa + (Ns x H))                                                                                                                                                                       |  | TOTAL: 308                                |  |
| W = (26.81' x 25' + 60' x 24' + 264.35' x 60' + 102' x 50' + 52' x 60' + 260' x 60'                                                                                                                    |  | MALE: 154                                 |  |
| 162' x 30') / 927' = 46,651.25 / 927' = 50.32'                                                                                                                                                         |  | FEMALE: 154                               |  |
| F = ((F/P - 0.25) W(3 - 927' / 927' - 25' = 75' x 50.32' / 30' + 1.26 INCREASE PER SECTION 506.2                                                                                                       |  | REQUIRED: 154 / 75 = 2.05                 |  |
| Aa = (38,000 + (9500 x 1.26)) = 49,970 S.F. ALLOWABLE SINGLE STORY BUILDING AREA                                                                                                                       |  |                                           |  |
| BUILDING PROTECTED BY AUTOMATIC SPRINKLER SYSTEM:                                                                                                                                                      |  | OCCUPANCY TYPE: GAMING AREAS, ARCADES:    |  |
| YES                                                                                                                                                                                                    |  | 1 PER 125 FOR MALE, 1 PER 65 FOR FEMALE   |  |
| BUILDING IS PROTECTED BY AUTOMATIC FIRE ALARM SYSTEM (NFPA 70 AND NFPA 72):                                                                                                                            |  | TOTAL: 150                                |  |
| YES                                                                                                                                                                                                    |  | MALE: 75 OCC.                             |  |
|                                                                                                                                                                                                        |  | FEMALE: 75 OCC.                           |  |
|                                                                                                                                                                                                        |  | REQUIRED: 75 / 65 = 1.15                  |  |
|                                                                                                                                                                                                        |  |                                           |  |
| <b>APPLICABLE CODES:</b>                                                                                                                                                                               |  | OCCUPANCY TYPE: COLISEUMS, ARENAS:        |  |
| BUILDING CODE:                                                                                                                                                                                         |  | 1 PER 75 FOR THE FIRST 1,500 FOR MALE,    |  |
| INTERNATIONAL BUILDING CODE                                                                                                                                                                            |  | 1 PER 40 FOR FIRST 1500 FOR FEMALE        |  |
| 2018 EDITION                                                                                                                                                                                           |  | TOTAL: 14                                 |  |
| MECHANICAL CODE:                                                                                                                                                                                       |  | MALE: 7 OCC.                              |  |
| INTERNATIONAL MECHANICAL CODE                                                                                                                                                                          |  | REQUIRED: 7 / 75 = 09                     |  |
| 2018 EDITION                                                                                                                                                                                           |  | FEMALE: 7 OCC.                            |  |
| PLUMBING CODE:                                                                                                                                                                                         |  | REQUIRED: 7 / 40 = 175                    |  |
| UNIFORM PLUMBING CODE                                                                                                                                                                                  |  |                                           |  |
| 2018 EDITION                                                                                                                                                                                           |  | TOTAL REQUIRED: 7.985 / 2 = 4 EA.         |  |
| ELECTRICAL CODE:                                                                                                                                                                                       |  | PROVIDED:                                 |  |
| NATIONAL ELECTRICAL CODE                                                                                                                                                                               |  | MALE: 4                                   |  |
| 2017 EDITION                                                                                                                                                                                           |  | FEMALE: 4                                 |  |
| FIRE CODE:                                                                                                                                                                                             |  | LAVATORIES:                               |  |
| INTERNATIONAL FIRE CODE                                                                                                                                                                                |  | OCCUPANCY TYPE BUSINESS:                  |  |
| 2018 EDITION                                                                                                                                                                                           |  | 1 PER 40 FOR THE FIRST 80                 |  |
| GAS CODE:                                                                                                                                                                                              |  | AND 1 PER 80 FOR THE REMAINDER            |  |
| INTERNATIONAL FUEL GAS CODE                                                                                                                                                                            |  | TOTAL: 44 OCC.                            |  |
| 2018 EDITION                                                                                                                                                                                           |  | MALE: 22 OCC.                             |  |
| ACCESSIBILITY:                                                                                                                                                                                         |  | FEMALE: 22 OCC.                           |  |
| ICC/ANSI ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES                                                                                                                                                |  | REQUIRED: 22 / 40 = 55                    |  |
| A117.1-2009                                                                                                                                                                                            |  | REQUIRED: 21 / 40 = 55                    |  |
|                                                                                                                                                                                                        |  |                                           |  |
| <b>FIRE-RESISTANCE - BUILDING ELEMENTS (TABLE 601):</b>                                                                                                                                                |  | OCCUPANCY TYPE: STORAGE                   |  |
| FOR TYPE IIB CONSTRUCTION:                                                                                                                                                                             |  | 1 PER 100                                 |  |
| PRIMARY STRUCTURAL FRAME:                                                                                                                                                                              |  | TOTAL: 2                                  |  |
| 0 HRS                                                                                                                                                                                                  |  | MALE: 1 OCC.                              |  |
| BEARING WALLS (EXTERIOR AND INTERIOR):                                                                                                                                                                 |  | FEMALE: 1 OCC.                            |  |
| 0 HRS                                                                                                                                                                                                  |  | REQUIRED: 1/100 = 01                      |  |
| NONBEARING WALLS - EXTERIOR:                                                                                                                                                                           |  | REQUIRED: 1/100 = 01                      |  |
| PER TABLE 602                                                                                                                                                                                          |  |                                           |  |
| NONBEARING WALLS - INTERIOR:                                                                                                                                                                           |  | OCCUPANCY TYPE: SHOP / FACTORY:           |  |
| 0 HRS                                                                                                                                                                                                  |  | 1 PER 100                                 |  |
| FLOOR CONSTRUCTION:                                                                                                                                                                                    |  | TOTAL: 9                                  |  |
| 0 HRS                                                                                                                                                                                                  |  | MALE: 5                                   |  |
| ROOF CONSTRUCTION:                                                                                                                                                                                     |  | FEMALE: 4                                 |  |
| 0 HRS                                                                                                                                                                                                  |  | REQUIRED: 5/100 = 05                      |  |
|                                                                                                                                                                                                        |  | REQUIRED: 4/100 = 04                      |  |
|                                                                                                                                                                                                        |  |                                           |  |
| <b>FIRE-RESISTANCE FOR EXTERIOR WALLS - FIRE SEPARATION DISTANCE (TABLE 602):</b>                                                                                                                      |  | OCCUPANCY TYPE: RESTAURANT:               |  |
| OCCUPANCY GROUP S1                                                                                                                                                                                     |  | 1 PER 200                                 |  |
| X < 5'                                                                                                                                                                                                 |  | TOTAL: 308                                |  |
| 2 HRS                                                                                                                                                                                                  |  | MALE: 154                                 |  |
| 5' ≤ X < 10'                                                                                                                                                                                           |  | FEMALE: 154                               |  |
| 1 HR                                                                                                                                                                                                   |  | REQUIRED: 154 / 200 = 77                  |  |
| 10' ≤ X < 30'                                                                                                                                                                                          |  | REQUIRED: 154 / 200 = 77                  |  |
| 0 HRS                                                                                                                                                                                                  |  |                                           |  |
| X > 30'                                                                                                                                                                                                |  | OCCUPANCY TYPE: GAMING AREAS, ARCADES:    |  |
|                                                                                                                                                                                                        |  | 1 PER 200                                 |  |
|                                                                                                                                                                                                        |  | TOTAL: 150                                |  |
|                                                                                                                                                                                                        |  | MALE: 75                                  |  |
|                                                                                                                                                                                                        |  | FEMALE: 75                                |  |
|                                                                                                                                                                                                        |  | REQUIRED: 75 / 200 = 375                  |  |
|                                                                                                                                                                                                        |  | REQUIRED: 75 / 200 = 375                  |  |
|                                                                                                                                                                                                        |  |                                           |  |
|                                                                                                                                                                                                        |  | OCCUPANCY TYPE: COLISEUMS, ARENAS:        |  |
|                                                                                                                                                                                                        |  | 1 PER 200 MALE, 1 PER 150 FEMALE          |  |
|                                                                                                                                                                                                        |  | TOTAL: 14                                 |  |
|                                                                                                                                                                                                        |  | MALE: 7                                   |  |
|                                                                                                                                                                                                        |  | FEMALE: 7                                 |  |
|                                                                                                                                                                                                        |  | REQUIRED: 7/200 = 035                     |  |
|                                                                                                                                                                                                        |  | REQUIRED: 7/150 = 046                     |  |
|                                                                                                                                                                                                        |  |                                           |  |
|                                                                                                                                                                                                        |  | TOTAL REQUIRED: 3.58 / 2 = 1.78 (2) EA.   |  |
|                                                                                                                                                                                                        |  | PROVIDED:                                 |  |
|                                                                                                                                                                                                        |  | MALE: 3                                   |  |
|                                                                                                                                                                                                        |  | FEMALE: 3                                 |  |
|                                                                                                                                                                                                        |  |                                           |  |
|                                                                                                                                                                                                        |  | DRINKING FOUNTAINS:                       |  |
|                                                                                                                                                                                                        |  | 2 PROVIDED:                               |  |
|                                                                                                                                                                                                        |  | HIGH-LOW HANDICAPPED ACCESSIBLE           |  |
|                                                                                                                                                                                                        |  | REQUIRED SERVICE SINK:                    |  |
|                                                                                                                                                                                                        |  | REQUIRED: 1                               |  |
|                                                                                                                                                                                                        |  | PROVIDED: 1                               |  |
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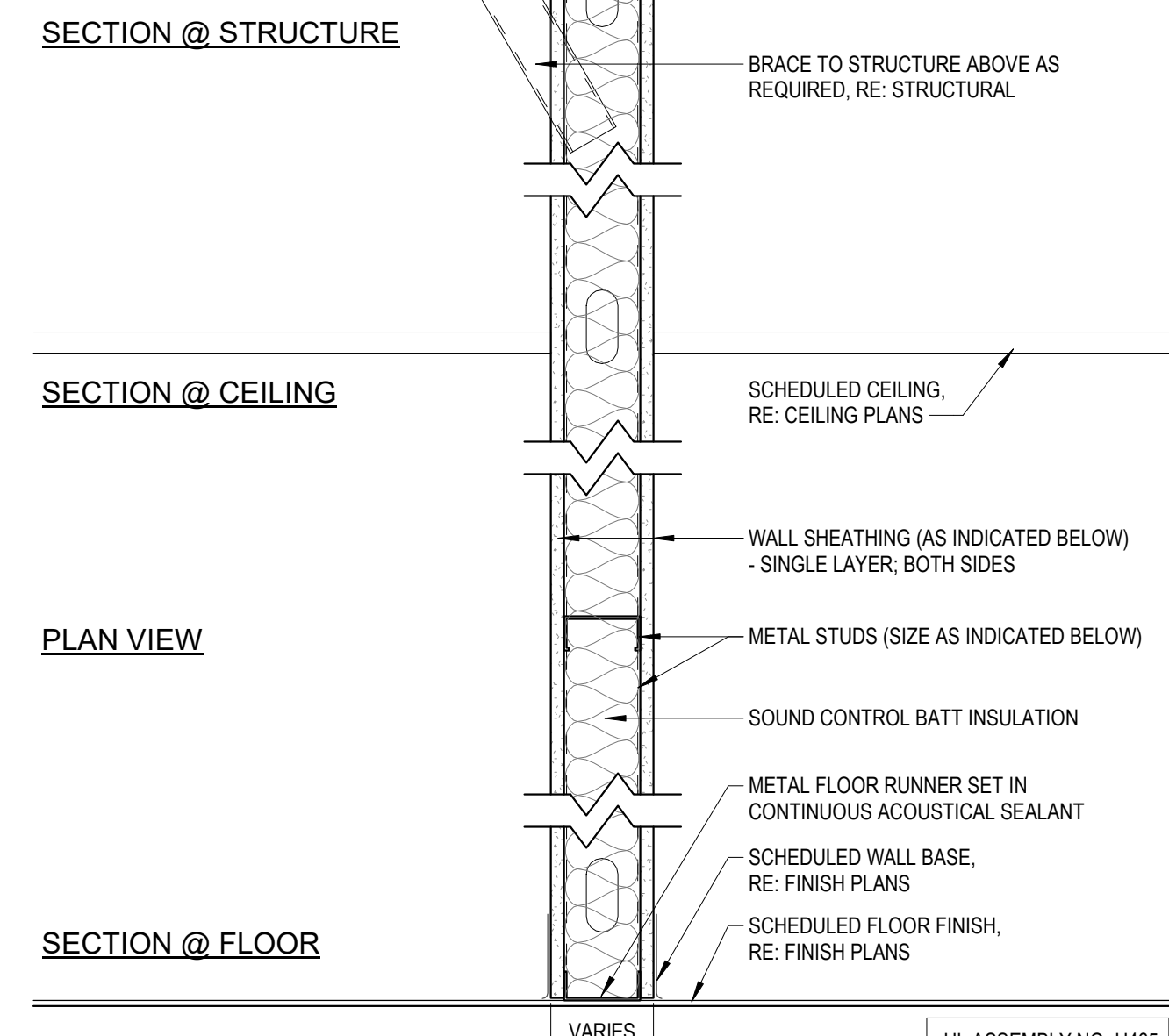
## LEGEND



NOTE:  
THE CONTRACTOR IS TO PROVIDE AND INSTALL FIRE EXTINGUISHERS THROUGHOUT THE PROJECT AS REQUIRED BY THE LOCAL FIRE MARSHAL. CONTRACTOR IS TO VERIFY TYPES, QUANTITIES AND LOCATIONS WITH THE LOCAL FIRE MARSHAL. PROVIDE PORTABLE FIRE EXTINGUISHERS THROUGHOUT THE BUILDING AS REQUIRED BY THE APPLICABLE BUILDING AND FIRE CODES. SIZE AND LOCATE FIRE EXTINGUISHERS IN ACCORDANCE WITH NFPA 10. STANDARD FOR PORTABLE FIRE EXTINGUISHERS SHALL BE 10LB, TYPE ABC IN ALL NON KITCHEN AREAS. FIRE EXTINGUISHERS IN KITCHEN AREAS TO BE CLASS K RATED.

## GENERAL NOTES:

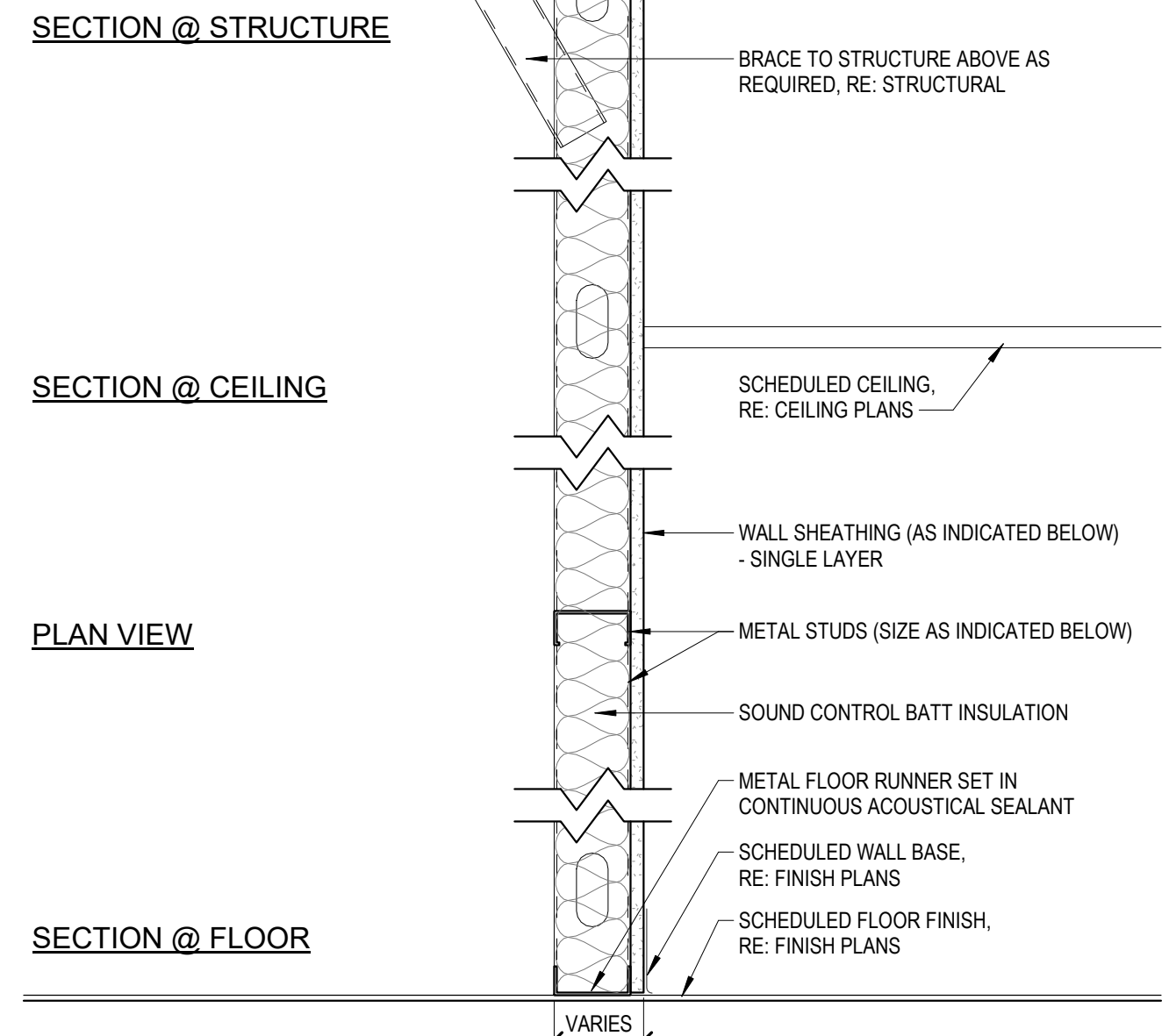
- FLOOR:  
ADJUST BASE HEIGHT FOR THICKNESS OF FLOOR FINISH AS REQUIRED
- STUDS:  
• 22 GAUGE STEEL (MIN); INCREASE GAUGE AS REQUIRED FOR SPECIFIC HEIGHT REQUIREMENTS, RE: STRUCTURAL  
• SPACING AT 16" O.C. TYPICAL, U.N.O.  
• BRACE TO STRUCTURE ABOVE AS REQUIRED  
• PROVIDE DEEP SLOTTED TRACK TO ALLOW FOR 1" VERTICAL DEFLECTION AT ROOF ONLY
- SHEATHING:  
• USE TYPE 'X' GYPSUM WALL BOARD (GWB) TYPICAL, U.N.O.  
• PROVIDE MOISTURE RESISTANT GWB (GREENBOARD) AT ALL RESTROOM WALLS  
• PROVIDE CEMENT BOARD AT ALL CERAMIC TILE APPLICATIONS, U.N.O.  
• 5/8" THICK, U.N.O. (AS INDICATED PER WALL TYPE TABLE)
- INSULATION:  
• FORMALDEHYDE FREE FIBERGLASS EQUAL TO JOHNS MANVILLE OR OWENS CORNING  
• TYPICALLY OCCURS IN DEMISING WALLS BETWEEN TENANT SPACES  
• PROVIDE THERMAL BATT'S AT EXTERIOR WALLS AS INDICATED ON PLAN DETAILS AND WALL SECTIONS
- FIRE RATING:  
• PROVIDE FIRE RATED CONSTRUCTION ONLY WHERE INDICATED ON PLANS



| WALL TYPE | STUD SIZE | WALL SHEATHING | WALL THICKNESS | INSULATION TYPE |
|-----------|-----------|----------------|----------------|-----------------|
| A1        | 3 5/8"    | 5/8" GWB       | 4 7/8"         | SOUND BATTS     |
| A2        | 6"        | 5/8" GWB       | 7 1/4"         | SOUND BATTS     |
| A3        | 8"        | 5/8" GWB       | 9 1/4"         | SOUND BATTS     |
| A4        | 12"       | 5/8" GWB       | 1'-1 1/4"      | SOUND BATTS     |

FULL HEIGHT PARTITION  
(FULL HEIGHT STUD / FULL HEIGHT GWB)

Wall Type 'A'  
1 1/2" = 1'-0"



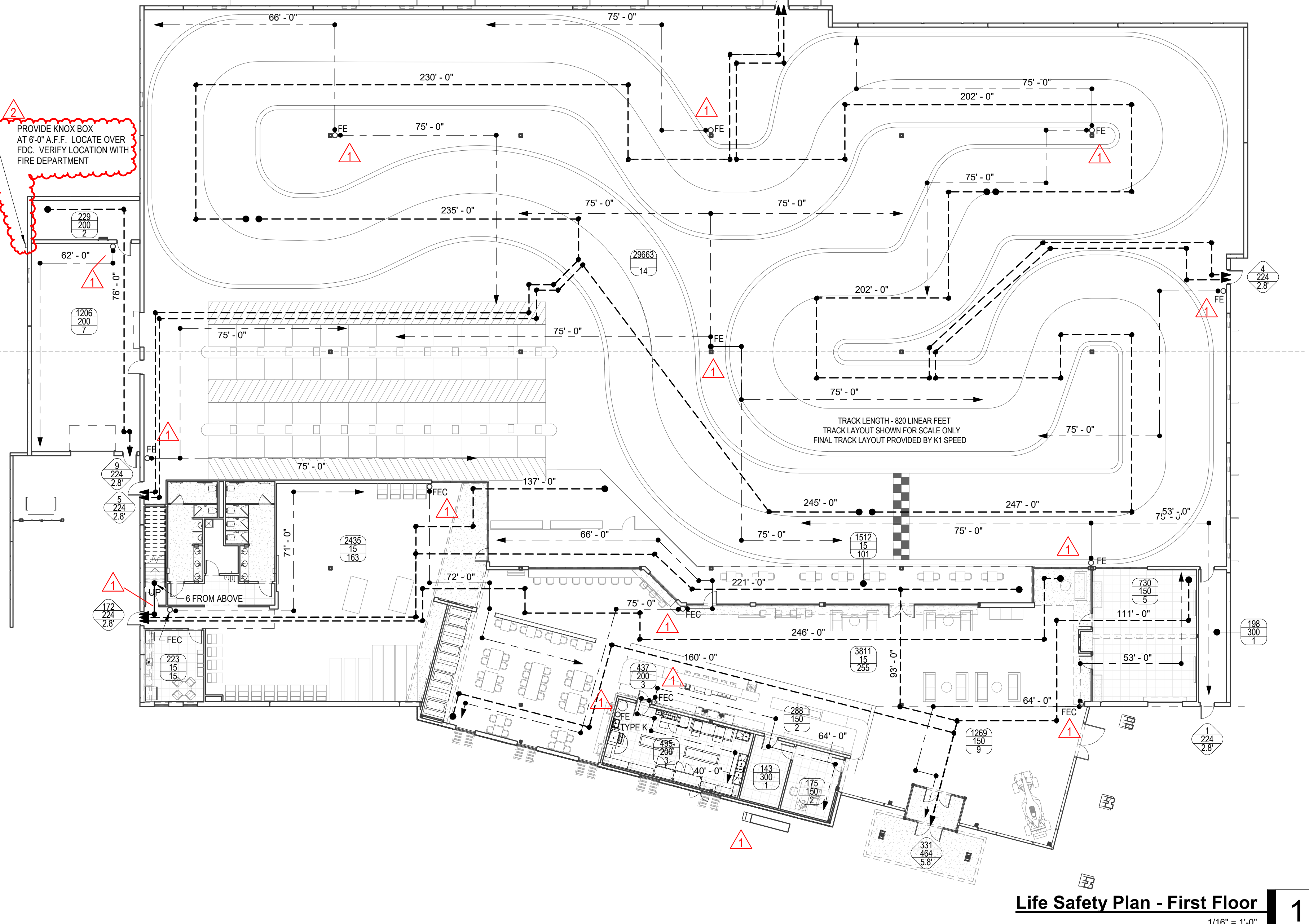
| WALL TYPE | STUD SIZE | WALL SHEATHING | WALL THICKNESS | INSULATION TYPE |
|-----------|-----------|----------------|----------------|-----------------|
| C1        | 7/8"      | 5/8" GWB       | 1 1/2"         | SOUND BATTS     |
| C2        | 1 5/8"    | 5/8" GWB       | 2 1/4"         | SOUND BATTS     |
| C3        | 2 1/2"    | 5/8" GWB       | 3 1/8"         | SOUND BATTS     |
| C4        | 3 5/8"    | 5/8" GWB       | 4 1/4"         | SOUND BATTS     |
| C5        | 6"        | 5/8" GWB       | 6 5/8"         | SOUND BATTS     |
| C6        | 8"        | 5/8" GWB       | 8 5/8"         | SOUND BATTS     |

FULL HEIGHT FURRING  
(FULL HEIGHT STUD / FULL HEIGHT GWB)

Wall Type 'C'  
1 1/2" = 1'-0"

## DRAWING SYMBOL LEGEND

| SYMBOL         | NAME                                          | DESCRIPTION                                                                                                                                                                                                                                                                                   |
|----------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XXX            | NEW DOOR IN NEW WALL                          | NEW DOOR (XXX) AND FRAME IN NEW OR EXISTING WALL. SEE DOOR SCHEDULE FOR DOOR INFORMATION                                                                                                                                                                                                      |
| AF#            | STOREFRONT OR HOLLOW METAL VIEW FRAME IN WALL | INTERIOR ALUMINUM STOREFRONT OR HOLLOW METAL FRAME IN WALL. SEE FRAME TYPE ELEVATIONS FOR DETAILS. AF# OR HM# INDICATES FRAME # ON FRAME TYPES SHEET.                                                                                                                                         |
| SF#            | STOREFRONT CURTAIN WALL                       | EXTERIOR ALUMINUM STOREFRONT OR EXTERIOR ALUMINUM CURTAIN WALL. SEE FRAME TYPE ELEVATIONS FOR DETAILS. SF# OR CW# INDICATES FRAME # ON FRAME TYPES SHEET.                                                                                                                                     |
| FEC            | FULLY RECESSED FIRE EXTINGUISHER CABINET      | FULLY RECESSED ALUMINUM FIRE EXTINGUISHER CABINET w/ SOLID DOOR PANEL AND VERTICAL BLACK DECAL. MOUNT TOP OF CABINET AT 60" A.F.F. MAX. (A.D.A.). CLEAR ANODIZED ALUMINUM FINISH w/ CLEAR GLASS. PROVIDE FIRE EXTINGUISHER EQUAL TO J.L. COSMIC #6E. INSPECTION TAGS SHALL BE PROVIDED BY GC. |
| FE             | FIRE EXTINGUISHER AND BRACKET                 | WALL MOUNTED FIRE EXTINGUISHER AND BRACKET AS REQ'D BY LOCAL FIRE CODE OFFICIALS. MOUNT TOP OF EXTINGUISHER AT 48" A.F.F. MAX. (A.D.A.). INSPECTION TAGS SHALL BE PROVIDED BY GC. PROVIDE SPECIFIED SIGNAGE ABOVE FIRE EXTINGUISHER AT 72" A.F.F.                                             |
| DS             | DOWNSPOUT                                     | 6"x6" PREFINISHED (KYNAR 500) ALUMINUM SHOP-FABRICATED BOX DOWNSPOUT FROM GUTTER OR SCUPPER ABOVE. CONTINUE TO UNDERGROUND STORM DRAIN SYSTEM PER CIVIL DRAWINGS U.N.O. SEE EXTERIOR ELEVATIONS FOR EXTERIOR FINISHES. HIDDEN SEAM - TYPICAL.                                                 |
|                | ELEVATION                                     | HEIGHT ABOVE FINISH FLOOR ELEVATION.                                                                                                                                                                                                                                                          |
| 2-HOUR X 3'-6" | WALL TYPE TAG                                 | WALL TYPE SYMBOL INDICATES TYPE OF WALL CONSTRUCTION WITH FIRE RATING AND HEIGHT WHERE APPLICABLE. REFER TO WALL TYPES (SHEET A-002) FOR DETAILS.                                                                                                                                             |
| XXX (2'-0")    | CEILING TAG                                   | INDICATES CEILING TYPE AND HEIGHT FROM FLOOR BELOW.                                                                                                                                                                                                                                           |
| X XX           | ENLARGED PLAN OR DETAIL TAG                   | ENLARGED DETAIL SYMBOL. INDICATES A PORTION OF THE DRAWING WHICH IS ENLARGED OR DETAILED. REFER TO SHEET AND DRAWING # INDICATED FOR ASSOCIATED DRAWING.                                                                                                                                      |
| X XX           | INTERIOR ELEVATION TAG                        | INTERIOR ELEVATION SYMBOL. INDICATES DIRECTION VIEWED. REFER TO SHEET AND DRAWING # INDICATED FOR ASSOCIATED ELEVATION.                                                                                                                                                                       |
| X XX           | EXTERIOR ELEVATION TAG                        | EXTERIOR ELEVATION SYMBOL. INDICATES DIRECTION VIEWED. REFER TO SHEET AND DRAWING # INDICATED FOR ASSOCIATED ELEVATION.                                                                                                                                                                       |
| X XX           | WALL SECTION TAG                              | SECTION SYMBOL. INDICATES LOCATION OF SECTION CUT AND DIRECTION VIEWED. REFER TO SHEET AND DRAWING # INDICATED FOR ASSOCIATED SECTION.                                                                                                                                                        |
| X XX           | BUILDING SECTION TAG                          | SECTION SYMBOL. INDICATES LOCATION OF SECTION CUT AND DIRECTION VIEWED. REFER TO SHEET AND DRAWING # INDICATED FOR ASSOCIATED SECTION.                                                                                                                                                        |
| X X            | GRID LINE MARKER                              | STRUCTURAL GRID MARKER. REFERS TO STRUCTURAL ENGINEERING DRAWINGS' GRID LINE NUMBERING SYSTEM.                                                                                                                                                                                                |
| CH DS          | THRU-WALL SCUPPER AND CONDUCTOR HEAD          | PREFINISHED (KYNAR 500) SHOP-FABRICATED METAL THRU-WALL OVERFLOW SCUPPER SLEEVE AND CONDUCTOR HEAD.                                                                                                                                                                                           |
| EW             | SURFACE MOUNTED ELECTRIC WATER COOLER         | SURFACE-MOUNTED STAINLESS STEEL SELF-CONTAINED ELECTRIC REFRIGERATED B/E-LEVEL, WALL-MOUNTED BARRIER-FREE WATER COOLER w/ GREY POLYMER CABINET.                                                                                                                                               |

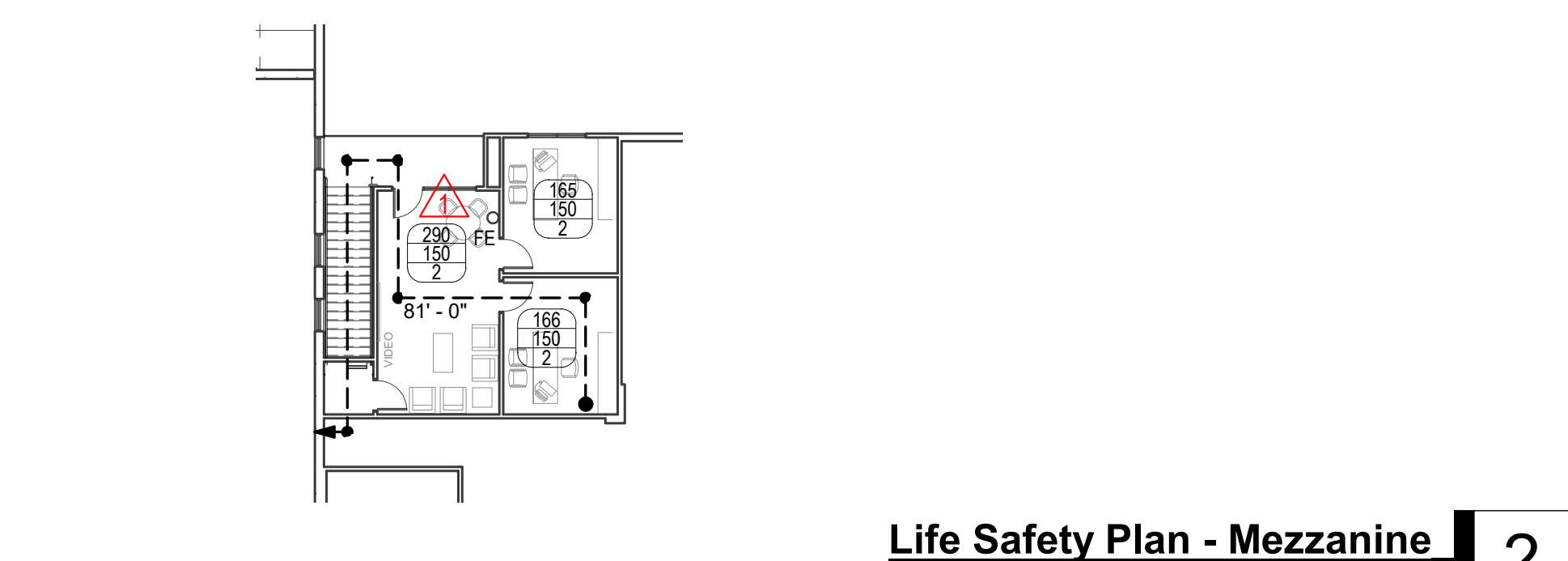


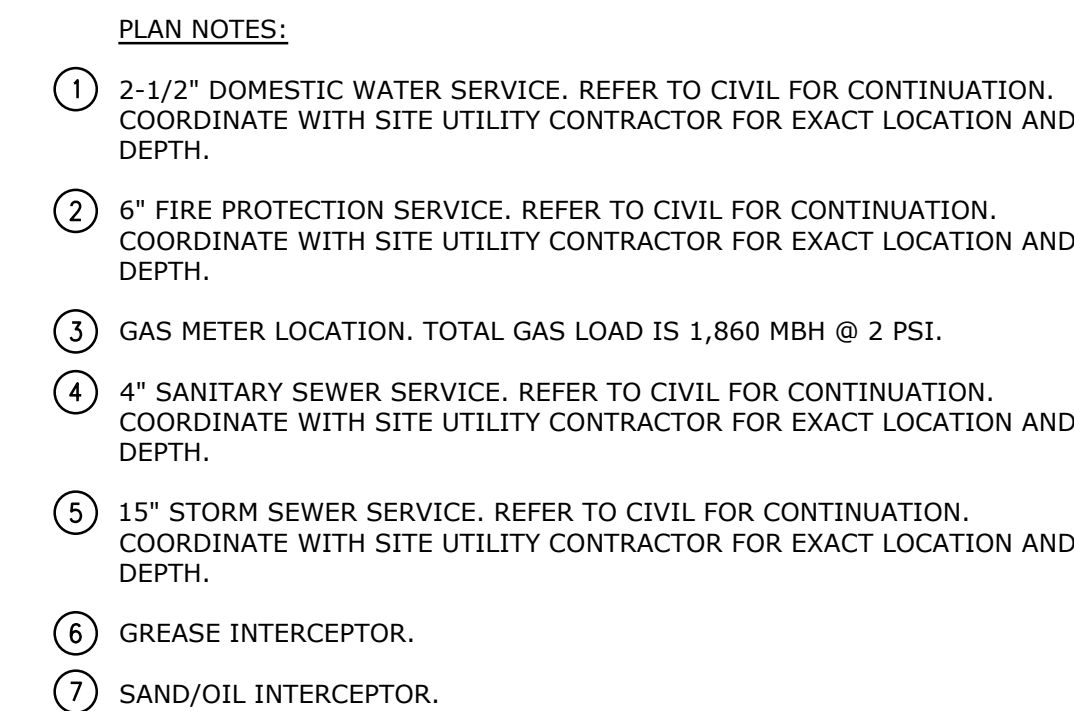
Life Safety Plan - First Floor  
1/16" = 1'-0"

## GENERAL NOTES

- ALL NEW CONSTRUCTION SHALL MEET LATEST EDITIONS OF ALL APPLICABLE NATIONAL, STATE, AND LOCAL BUILDING CODES.
- BUILDING PERMIT WILL BE REQUIRED FOR THE PROJECT. PERMIT SHALL BE OBTAINED AND PAID FOR BY THE GENERAL CONTRACTOR.
- CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL REVIEW THE CONTRACT DOCUMENTS TO FAMILIARIZE HIMSELF WITH THE REQUIREMENTS AND INTENT OF THE SCOPE OF WORK PRIOR TO BID. ANY DEFICIENCIES OR DISCREPANCIES DISCOVERED SHALL BE REPORTED TO THE PROJECT MANAGER OR THE ARCHITECT FOR REVIEW AND CLARIFICATION PRIOR TO COMMENCING ANY WORK.
- EACH CONTRACTOR AND SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF HIS WORK WITH THE WORK OF SUB-CONTRACTORS OR OTHER CONTRACTORS.
- WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY. QUALITY MATERIALS SHALL BE USED THROUGHOUT. ALL WORK SHALL BE DONE IN A MANNER SO AS TO MATCH ADJACENT WORK AND FINISHES AND AS APPROVED BY OWNER.
- CONTRACTORS SHALL BE RESPONSIBLE FOR CONTAINING THEIR WORK WITHIN THE WORK AREA AND PROTECTING THE PUBLIC FROM INJURIES AT ALL TIMES. CONTRACTOR SHALL SECURE THE WORK AT THE END OF EACH WORK DAY.
- KEEP PREMISES BROOMED CLEAN AT ALL TIMES FROM FOREIGN MATERIAL CREATED UNDER THE CONTRACT. PROVIDE TARPULINS TO PROTECT ALL FINISHES, SURFACES, AND EQUIPMENT.
- AREAS FOR MATERIAL STORAGE, TRASH DISPOSAL, WORKMENS PARKING, ETC., SHALL BE COORDINATED WITH THE OWNERS REPRESENTATIVE.
- ALL WOOD BLOCKING AND PLYWOOD BACKING SHALL BE FIRE RETARDANT TREATED.
- ALL DIMENSIONS SHALL BE VERIFIED BY CONTRACTOR.

Life Safety Plan - Mezzanine  
1/16" = 1'-0"



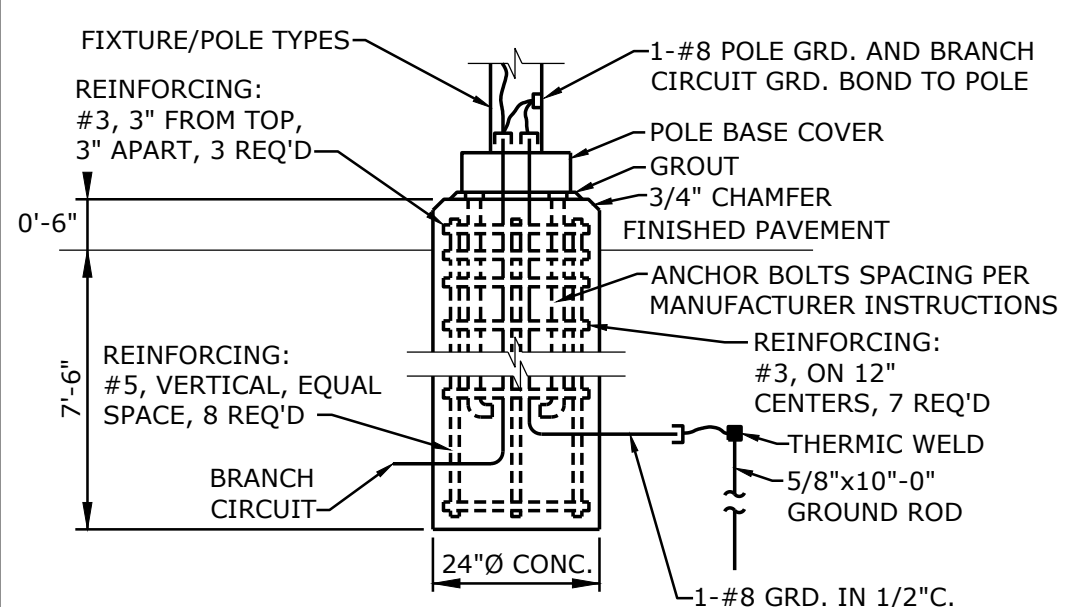


ELECTRICAL GENERAL NOTES:

1. ALL SITE LIGHTING CIRCUITS TO BE FED WITH (2)#8, #8G., IN 1" CONDUIT.

ELECTRICAL PLAN NOTES:

- 1 ROUTE LIGHTING THROUGH LIGHTING RELAY PANEL "LRCP" IN THE ELECTRICAL ROOM. REFER TO SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION.
- 2 REFER TO ONE-LINE DIAGRAM FOR PRIMARY SIDE CONDUIT.
- 3 SECONDARY UNDERGROUND CONDUIT RUN TO C.T. CABINET. REFER TO ELECTRICAL ONE-LINE AND FLOOR PLAN FOR MORE INFORMATION. INSTALL PER LOCAL UTILITY REQUIREMENTS.
- 4 TRANSFORMER PAD LOCATION.
- 5 (23") CONDUITS FOR PHONE/DATA/FIBER TO BUILDING SERVICES. STUB INTO STORAGE ROOM WITH IT RACK LOCATED WITHIN. REFER TO SHEET E202 FOR EXACT LOCATION. EXTEND CONDUITS TO PROPERTY LINE AND COORDINATE EXACT TERMINATION POINT WITH LOCAL TELECOM UTILITIES.
- 6 PROVIDE POWER FOR MONUMENT SIGN. COORDINATE EXACT LOCATION PRIOR TO TROUGH-IN.



NOTES:

1. CONCRETE BASES SHALL BE 4000 PSI COMPRESSIVE STRENGTH AIR ENTRAINED CONCRETE MINIMUM, CAST IN PLACE OR PRE-CAST. REINFORCING # 7IES SHALL EXTEND FULL LENGTH OF BASES ST 12" O.C., WITH ADDITIONAL TIES AT TOP.
2. ANCHOR BOLTS AND BASE PLATE TEMPLATE SHALL BE PROVIDED BY LIGHTING POLE MANUFACTURER TO VENDOR FOR BASES PRIOR TO CONSTRUCTION.

**POLE BASE DETAIL**  
SCALE: NOT TO SCALE

**K1 SPEED LEE'S SUMMIT**  
Entertainment Complex

2911 NE Independence Ave.  
Lee's Summit, MO 64064

[illegible]

Project #: 211107

**CONSTRUCTION  
DOCUMENTS**  
July 19, 2022

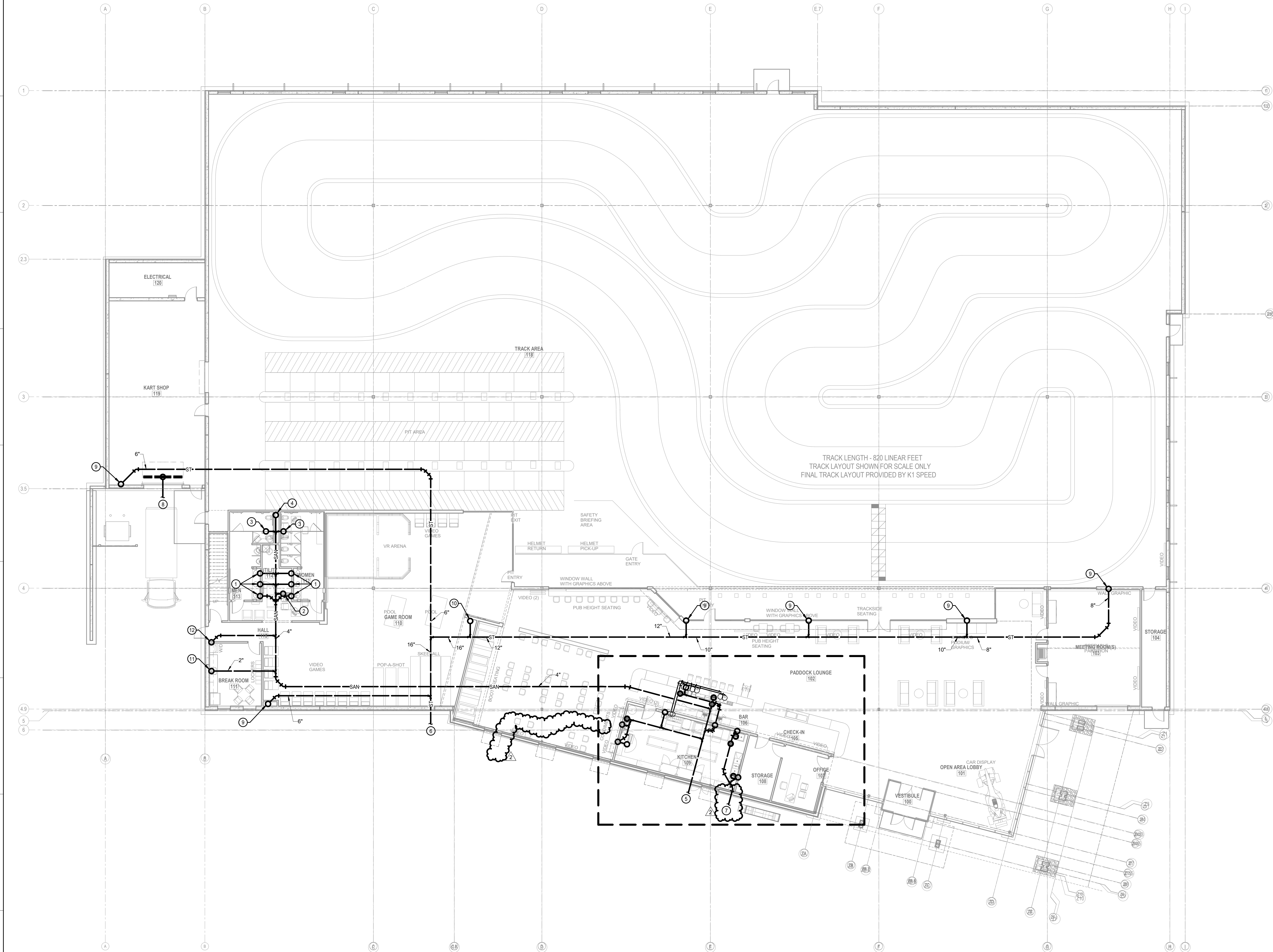
**SITE PLAN - MECH. AND  
ELEC.**

# ME201

**MECHANICAL AND ELECTRICAL - SITE PLAN**  
SCALE: 1"=30'-0"

SCALE: 1"=30'-0"

PROJECT NAME: 2214800 K1 Speed - Lees Summit, Mo  
AUTOCAD FILE LOCATION \ NAME: X:\2214800\Drawings\01-2214800\_ME201.dwg  
Jongenfeld Thursday, September 1, 2022 4:37:02 PM  
Jared Longenfeld Thursday, September 1, 2022 4:38:15 PM  
PLOTTED BY DATE TIME:



- GENERAL NOTES:**
1. INFORMATION SHOWN ON THE DRAWINGS IS INTENDED TO CONVEY SCOPE AND IS ARRANGED FOR DRAWING CLARITY. IT IS NOT TO BE TAKEN AS AN AS-BUILT CONDITION. THE SYSTEM INSTALLATION SHALL BE COORDINATED WITH STRUCTURE, CEILING, WALLS, AND ALL OTHER TRADES TO PROVIDE FOR A COMPLETE AND WORKING SYSTEM.
  2. CAREFULLY COORDINATE PIPE ROUTING WITH NEW AND EXISTING STRUCTURE AS WELL AS ALL OTHER TRADES.
  3. COORDINATE ALL PIPING PENETRATIONS WITH STRUCTURAL PRIOR TO CORE DRILLING.
  4. REFER TO RISER DIAGRAM FOR ADDITIONAL PLUMBING INFORMATION.
- PLAN NOTES:**
- 1 2" SAN UP TO LAVATORY
  - 2 2" SAN UP TO DRINKING FOUNTAIN
  - 3 2" SAN UP TO FLOOR DRAIN
  - 4 4" SAN UP TO CHASE SERVING WATER CLOSETS
  - 5 4" SANITARY SEWER SERVICE. REFER TO SITE PLAN FOR CONTINUATION.
  - 6 16" STORM SEWER SERVICE. REFER TO SITE PLAN FOR CONTINUATION.
  - 7 4" GREASE TO GREASE INTERCEPTOR. REFER TO SITE PLAN FOR CONTINUATION.
  - 8 4" SAND/OIL TO SAND/OIL INTERCEPTOR. REFER TO SITE PLAN FOR CONTINUATION.
  - 9 6" ST UP THRU FLOOR IN WALL/CHASE.
  - 10 8" ST UP THRU FLOOR IN WALL/CHASE.
  - 11 2" SAN UP TO SINK.
  - 12 2" SAN UP TO WASHING MACHINE BOX.



**K1 SPEED LEE'S SUMMIT**  
**Entertainment Complex**

2911 NE Independence Ave.  
Lee's Summit, MO 64084

| Revisions: |               |
|------------|---------------|
| 1          | CITY COMMENTS |

Project #: 211107

**CONSTRUCTION DOCUMENTS**  
July 19, 2022

**UNDERSLAB PLUMBING PLAN**  
**P-100**



⑧ 1/2" CW DOWN TO KITCHEN EQUIPMENT.



COORDINATE EXACT GREASE TRAP LOCATION  
WITH CIVIL & MEP DWGS

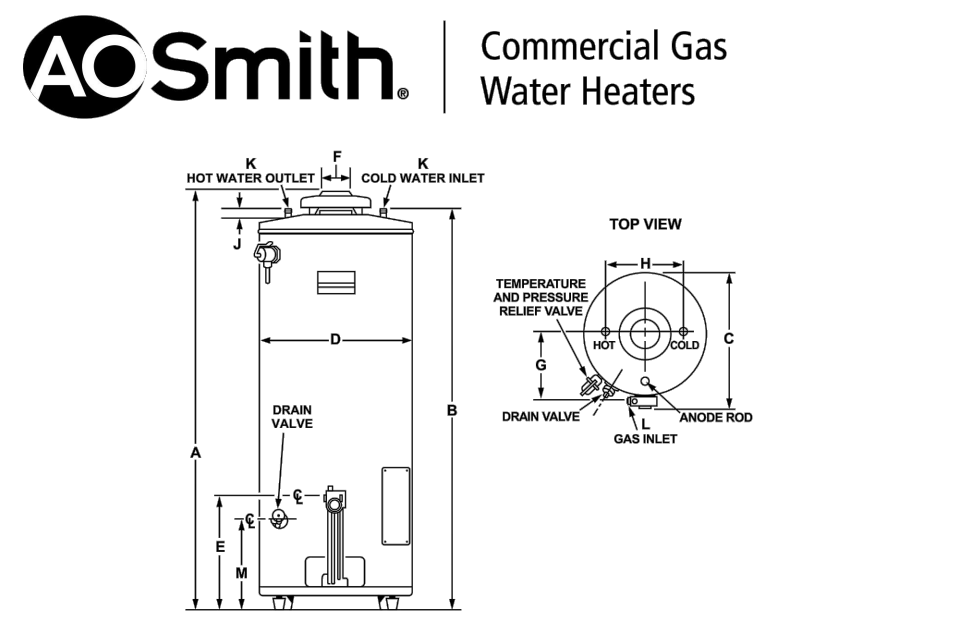
## PROTECTIVE ENCLOSURE DETAIL FOR CURB OR BASE MTD EQUIPMENT

| EQUIPMENT SCHEDULE |  |     |     |                                      |                              |                         |         |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
|--------------------|--|-----|-----|--------------------------------------|------------------------------|-------------------------|---------|-------|------|-----|-----|-------|--------|------|--------|--------------------|----------------------|---------------------|------------------------|-----------------------|-------|---------------|--------------------|
| Item No            |  | Qty | By  | Equipment Category                   | Manufacturer                 | Model Number            | Base    | Volts | Amps | KW  | HP  | Phase | Direct | Plug | NEMA   | Remarks            | Cold Water Size (in) | Hot Water Size (in) | Direct Drain Size (in) | Indir Drain Size (in) | MBTUH | Gas Size (in) | Remarks            |
| 1                  |  | 1   | GC  | Gease Interceptor                    | Verify                       |                         | Recss'd |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               | Verify w/ Supplier |
| 2                  |  | Lot | KEC | 25 Lin. Ft. 6 Tier Storage Shelving  | Olympic                      |                         | Posts   |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 3                  |  | 1   | KEC | Freezer, Reach-In                    | True Manufacturing Co., Inc. | T-72F-HC                | Casters | 115   | 12.0 | 1.4 | 1.0 | 1     |        | X    | -5-20P |                    |                      |                     |                        |                       |       |               | Self Contained     |
| 4                  |  | 1   | KEC | Refrigerator, Reach-In               | True Foodservice             | T-49-HC                 | Casters | 115   | 5.4  | 1.1 | 1/2 | 1     |        |      |        |                    |                      |                     |                        |                       |       |               | Self Contained     |
| 5                  |  | 1   | KEC | Ice Maker w/ Bin                     | Manitowoc Ice                | IDT0500A-161 /D-570     | 6" Legs | 115   | 14.2 |     |     | 1     | X      |      |        |                    | 0.375                |                     |                        | 0.5                   |       |               |                    |
| 5                  |  |     |     | Continued                            |                              |                         |         |       |      |     |     |       |        |      |        |                    |                      |                     |                        | 0.75                  |       |               |                    |
| 6                  |  | 1   | KEC | Sink, Mop                            | John Boos & Co.              | PBMS2016-6              | Deck Mt |       |      |     |     |       |        |      |        |                    |                      |                     | 2                      |                       |       |               |                    |
| 7                  |  | 1   | KEC | Faucet, Service Sink                 | Fisher                       | 8253                    | Wall Mt |       |      |     |     |       |        |      |        |                    | 0.5                  | 0.5                 |                        |                       |       |               | Backing By GC      |
| 8                  |  | 1   | KEC | Shelf, Mop & Broom Rack              | John Boos & Co.              | PB-MSS824               | Wall Mt |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               | Backing By GC      |
| 9                  |  | 1   | GC  | 74 Gal. Comm. Water Heater           | AO Smith                     | BT80                    | Curb    | 120   |      |     |     |       |        |      |        | Verify w/ Supplier | 1                    |                     |                        |                       | 75    | 0.5           | Verify w/ Supplier |
| 10                 |  | 1   | KEC | Hand Sink w/ Soap & Towel Disp.      | John Boos & Co.              | PBHS-W-1410-1-SSLR      | Wall Mt |       |      |     |     |       |        |      |        |                    |                      |                     |                        | 1.5                   |       |               | Backing By GC      |
| 11                 |  | 2   | KEC | Table, Work                          | John Boos & Co.              | ST6-3096SSK             | EC      |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 12                 |  | 1   | KEC | Refrigerator, Sandwich/Salad Prep    | True Manufacturing Co., Inc. | TSSU-48-12D-2-HC        | Casters | 115   | 5.8  | 0.7 | 0.3 | 1     |        | X    | 5-15P  |                    |                      |                     |                        |                       |       |               | Self Contained     |
| 13                 |  | 1   | KEC | Cabinet, Holding/Proofing            | Metro                        | C517-FC                 | Casters |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 14                 |  | 1   | KEC | Oven, Microwave/Convection, Combi    | TurboChef                    | I3-9500-1               | Item 15 | 208   | 40.0 | 8.3 |     | 1     |        | X    | 6-50P  |                    |                      |                     |                        |                       |       |               |                    |
| 15                 |  | 1   | KEC | Table, Work                          | John Boos & Co.              | ST6R5-36120SSK          | KEC     |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 16                 |  | 1   | KEC | Oven, Microwave/Convection, Combi    | TurboChef                    | I5-9500-1               | Item 15 | 208   | 46.0 | 9.5 |     | 1     |        | X    | 6-50P  |                    |                      |                     |                        |                       |       |               |                    |
| 18                 |  | 1   | KEC | Sink, Scullery, 1 Compartment        | John Boos & Co.              | 1B16204-1D18R           | Legs    |       |      |     |     |       |        |      |        |                    |                      |                     |                        | 1.75                  |       |               |                    |
| 19                 |  | 1   | KEC | Faucet, Backsplash Mount             | Fisher                       | 13242                   | Item 18 |       |      |     |     |       |        |      |        |                    | 0.5                  | 0.5                 |                        |                       |       |               |                    |
| 20                 |  | 1   | KEC | Sink, Scullery, 3 Compartments       | John Boos & Co.              | 3B16204-2D18            | Legs    |       |      |     |     |       |        |      |        |                    |                      |                     |                        | 1.75                  |       |               |                    |
| 21                 |  | 1   | KEC | Faucet, Backsplash Mount             | Fisher                       | 13218                   | Item 22 |       |      |     |     |       |        |      |        |                    | 0.5                  | 0.5                 |                        |                       |       |               |                    |
| 22                 |  | Lot | GC  | Back Counter                         | Custom Millwork & Stone      |                         | Curb    |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 22.1               |  | 1   | KEC | Dispenser, Liquid Coffee Concentrate | Bunn-O-Matic                 | 38800.0000              | Item 20 | 120   | 11.9 | 1.4 |     | 1     |        | X    | 5-15P  |                    | 0.375                |                     |                        |                       |       |               |                    |
| 23                 |  | 1   | KEC | Refrigerator, Reach-In               | True Foodservice             | TBR84-RISZ1-L-B-GCG-1   |         |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               | Self Contained     |
| 23.1               |  | 1   | KEC | Underbar Refrigeration               | True Foodservice             | TDR108-RISZ1-L-B-SSSS-1 |         |       |      |     |     | 1     |        |      |        |                    |                      |                     |                        | 0.5                   |       |               |                    |
| 24                 |  | Lot | GC  | Front Counter / Bar Top & Die Wall   | Custom Millwork & Stone      |                         | Deck Mt |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 25                 |  | Lot | OW  | POS System                           | Verify                       |                         | Item 24 | 120   | 15.0 |     |     | 1     | X      |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 26                 |  | 1   | KEC | Handsink w/Soap & Towel Dispenser    | Krowne                       | KR24-12ST               | Legs    |       |      |     |     |       |        |      |        |                    | 0.5                  | 0.5                 | 1.5                    |                       |       |               |                    |
| 27                 |  | 1   | KEC | Slim Jim trosh                       | Rubbermaid                   | FG354060GRAY            | Deck Mt |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 28                 |  | 1   | KEC | Underbar Blender Station             | Krowne                       | KR24-12BD               | Legs    | 120   | 15.0 |     |     | 1     | X      |      |        |                    | 0.5                  | 0.5                 |                        | 1.5                   |       |               |                    |
| 29                 |  | 1   | KEC | Underbar Ice Chest                   | Krowne                       | KR19-30DP               | Legs    |       |      |     |     |       |        |      |        |                    |                      |                     |                        | 1                     |       |               |                    |
| 30                 |  | 1   | KEC | Underbar Speed Rail                  | Krowne                       | RS-30                   | Item 29 |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 31                 |  | 1   | KEC | Underbar Liquor Display              | Krowne                       | KR24-18RD               | Legs    |       |      |     |     |       |        |      |        |                    |                      |                     |                        |                       |       |               |                    |
| 32                 |  | 1   | KEC | Underbar Sink                        | Krowne                       | KR19-63C                | Legs    |       |      |     |     |       |        |      |        |                    | 0.5                  | 0.5                 |                        | 1.5                   |       |               |                    |

## WATER HEATER CALCULATIONS

(1) 3 COMP. SINK= 42 GPH  
(1) PREP SINK= 5 GPH  
(1) MOP SINK= 15 GPH  
(5) HAND SINKS= 25 GPH  
(1) WASHER= 10 GPH

TOTAL = 97 GPH @ 60 DEGREE RISE

[illegible]

**SPECIFICATION**

[illegible]

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## FINISH SCHEDULE

| AREA            | C'LING                                                   | WALLS       | FLOOR | BASE |
|-----------------|----------------------------------------------------------|-------------|-------|------|
| REST ROOM       | 2                                                        | 3, 48" HIGH | 5     | 6    |
| KITCHEN/STORAGE | 1                                                        | 2           | 5     | 6    |
| SERVICE         | 1                                                        | 2           | 5     | 6    |
| WET AREAS       | 1                                                        | 3, 96" HIGH | 5     | 6    |
|                 |                                                          |             |       |      |
|                 |                                                          |             |       |      |
| 1               | T-BAR W/ LIGHT COLOR WASHABLE TILES                      |             |       |      |
| 2               | LIGHT COLOR SEMI-GLOSS PAINT OVER 5/8" TYPE X DRYWALL    |             |       |      |
| 3               | "FRP" OVER 5/8" TYPE X DRYWALL                           |             |       |      |
| 4               | COMERCIAL GRADE SHEET VINYL W 3/8" R, 4" HIGH, SELF COVE |             |       |      |
| 5               | SEALED CONCRETE W/ USDA APP'D SEALANT                    |             |       |      |
| 6               | "SLIM FOOT" CERAMIC TILE W/ 3/8" R COVE                  |             |       |      |
| 7               | CERAMIC TILE                                             |             |       |      |
| 8               | CERAMIC TILE W/ 3/8" R COVE                              |             |       |      |
| 9               | QUARRY TILE                                              |             |       |      |
| 10              | QUARRY TILE W/ 3/8" R COVE                               |             |       |      |
| 11              | METAL                                                    |             |       |      |
| 12              | METAL W/ 3/8" R COVE                                     |             |       |      |
| 14              | DECORATIVE, TO BE SELECTED                               |             |       |      |
| 15              | VCT                                                      |             |       |      |

NOTE,  
WALL & CEILING FINISHES IN WORK FOOD PREP. KITCHEN  
& STORAGE AREAS TO HAVE A REFLECTANCE VALUE OF  
70% OR HIGHER

NOTE,  
SUBMIT SAMPLE OF CEILING TILE TO ENVIRONMENTAL  
HEALTH PRIOR TO INSTALLATION

NOTE,  
SUBMIT SAMPLE OF FLOOR COVERING TO ENVIRONMENTAL  
HEALTH PRIOR TO INSTALLATION

NOTE,  
SUBMIT SAMPLE OF "SLIMFOOT" BASE TILE TO ENVIRONMENTAL  
HEALTH PRIOR TO INSTALLATION

| REVISIONS | BY |
|-----------|----|
|           |    |
|           |    |
|           |    |
|           |    |
|           |    |

CONTACT MIDWEST KARTING LLC, ATTN DAVID HILL  
10624 SO. EASTERN SUITE A-975  
HENDERSON, NV 89052  
PHONE 816-953-8323

PHONE

## NEW SNACK BAR

K-1 SPEED  
2911 NW INDEPENDENCE  
LEE'S SUMMIT, MO 64064

1111 GRAND AVENUE  
SAN MARCOS, CA. 92069  
760-471-2761  
FAX 760-471-8647

760-471-2761  
FAX 760-471-8647

**ECONOMY**  
RESTAURANT  
EQUIPMENT & SUPPLY CO.

DATE 7-07-2022

|       |     |
|-------|-----|
| SCALE | N/A |
|-------|-----|

DRAWN BY MAO

|     |       |
|-----|-------|
| JOB | 22227 |
|-----|-------|

SHEET

K-3  
OF 4 SHEET