



FOCUS
ON THE
FUNDAMENTALS

IPA GEARHEAD Presentation

David Jones

2019

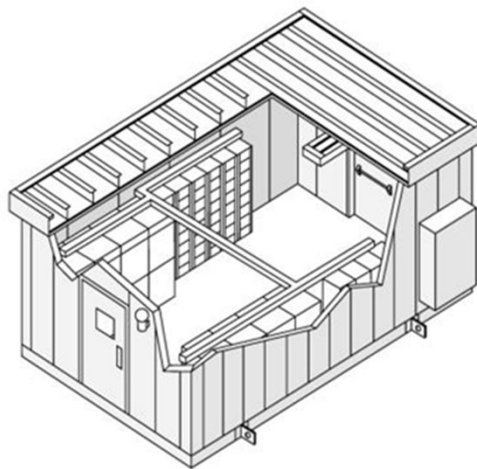
Integrated Power Assembly

(a.k.a. ElectroCenters, PDCs, and Houses)

What is an Integrated Power Assembly (IPA) ?

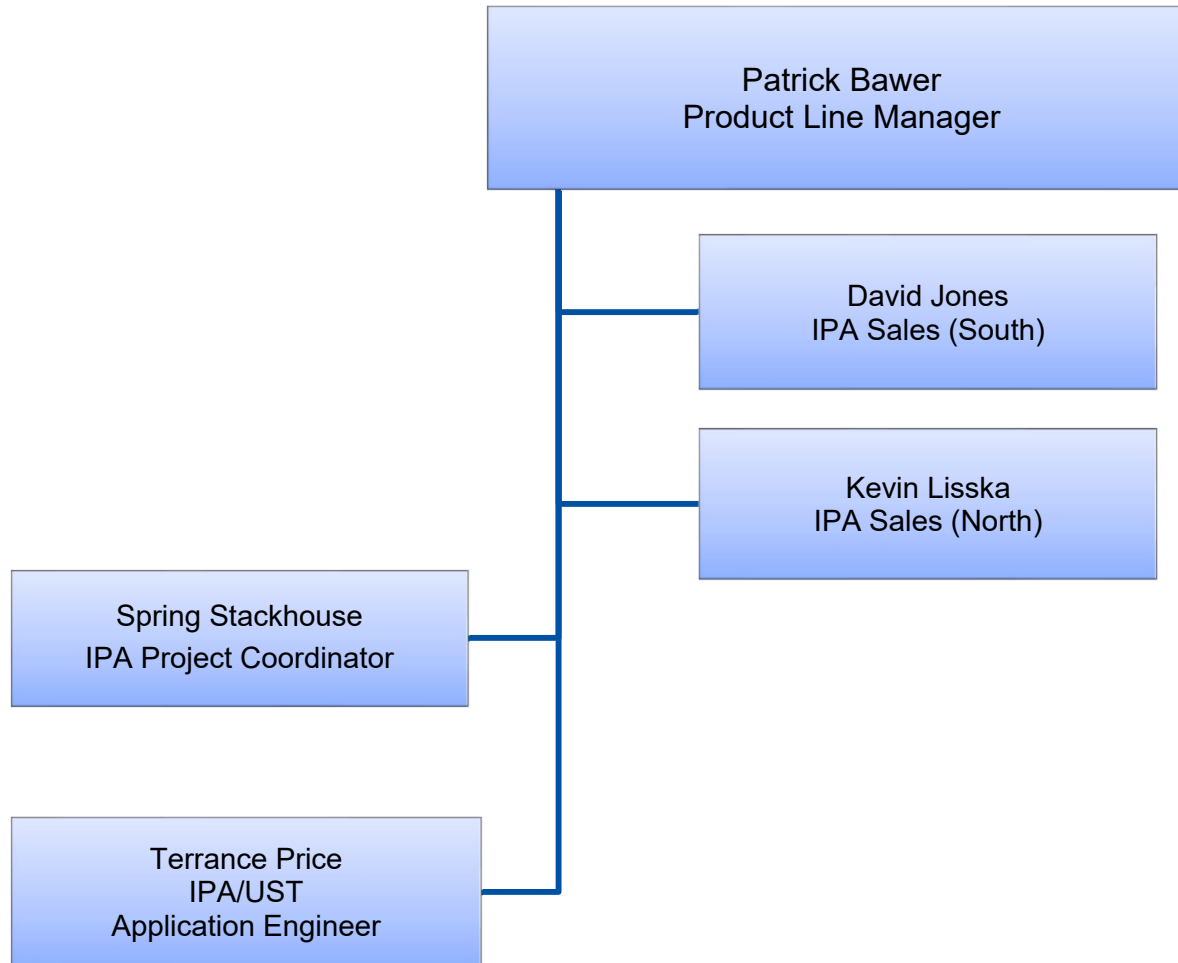
Large enclosures which house multiple pieces of electrical equipment.

- IPA typically includes:
 - Custom Steel Base with Insulated Walls & Roof
 - HVAC System
 - Power and Control Interconnects Between Equipment



IPA Business Overview

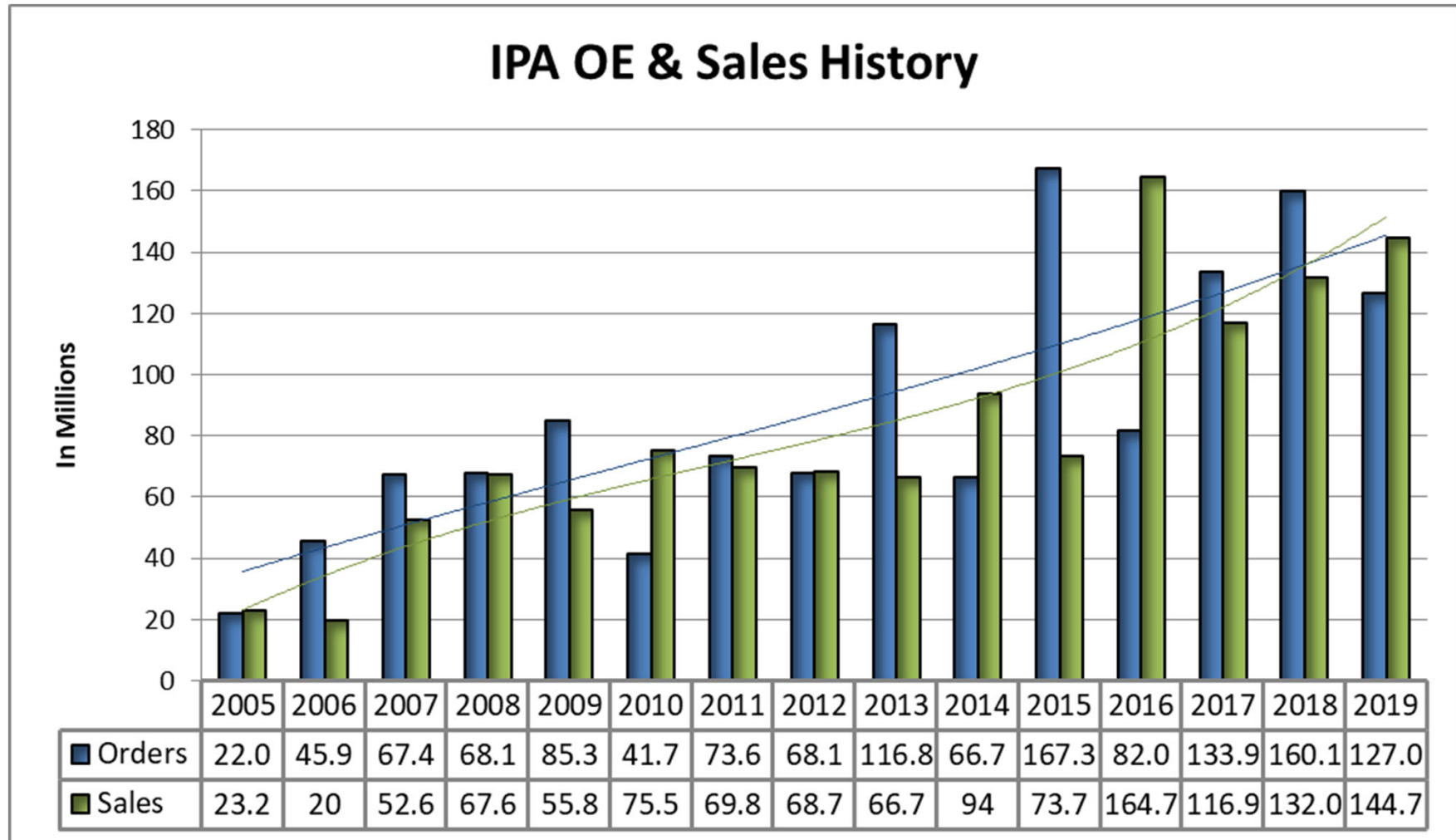
IPA Organizational Chart



IPA History

- Powerhouse concept started with Westinghouse in Buffalo, NY.
- Product manufacturing moved to Asheville, NC in 1977, but ceased in 1985 due to market conditions.
- Current IPA Business Model of sourcing enclosures began in 1991 with sales of \$3M.

IPA Orders and Sales – 2005 to Present



Why an IPA ??

Eaton Outdoor Enclosure Offerings

Gear Type	EATON	
	Non-Walk In	Walk In
LVA NEMA3R	YES	YES
LVA Stainless	Portland	
LVA ARC Resistant		
MVA NEMA3R	YES	YES
MVA Stainless	Portland \$\$\$	
MVA ARC Resistant		
Ampgard NEMA3R	YES	
Ampgard Stainless		
Ampgard ARC Resistant		
MV VFD NEMA3R		
MV VFD Stainless		
MV VFD ARC Resistant		
LV MCC NEMA3R	YES	YES
LV MCC Stainless	Portland	
LV MCC ARC Resistant		
SWBD NEMA3R	YES	
SWBD Stainless	Sattelite	
ATS NEMA3R	YES	
ATS Stainless	YES	

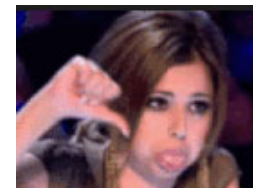
Features not available:

- HVAC systems
- Insulated Walls
- Class1 Div 2
- Elevated w/ Stairs & Platforms
- Special Paint

What an IPA is NOT

- “Empty” building
- Enclosure for NON-EATON equipment
- Generator building
- A commodity!

\$/sq. ft.



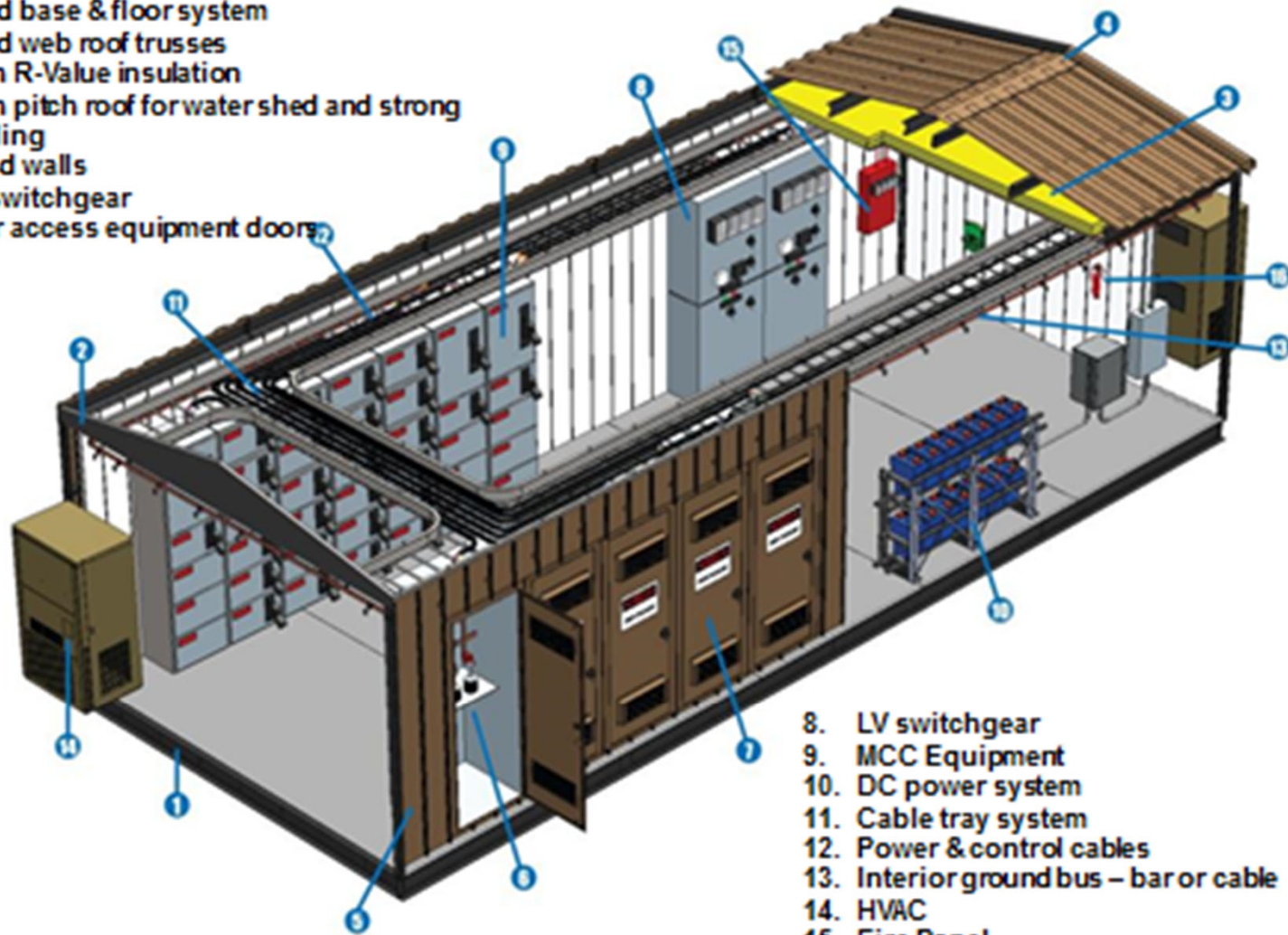
IPA Manufacturers: Where Are They?



IPA Construction

Overview

1. Solid base & floor system
2. Solid web roof trusses
3. High R-Value insulation
4. High pitch roof for water shed and strong loading
5. Rigid walls
6. MV switchgear
7. Rear access equipment doors



8. LV switchgear
9. MCC Equipment
10. DC power system
11. Cable tray system
12. Power & control cables
13. Interior ground bus - bar or cable
14. HVAC
15. Fire Panel
16. Man safety equipment



Materials

- Galvanized Steel
- Aluminum
- 304 & 316 Stainless Steel
- Concrete
- Fiberglass
- Base is generally painted steel or hot-dipped galvanized.

Base



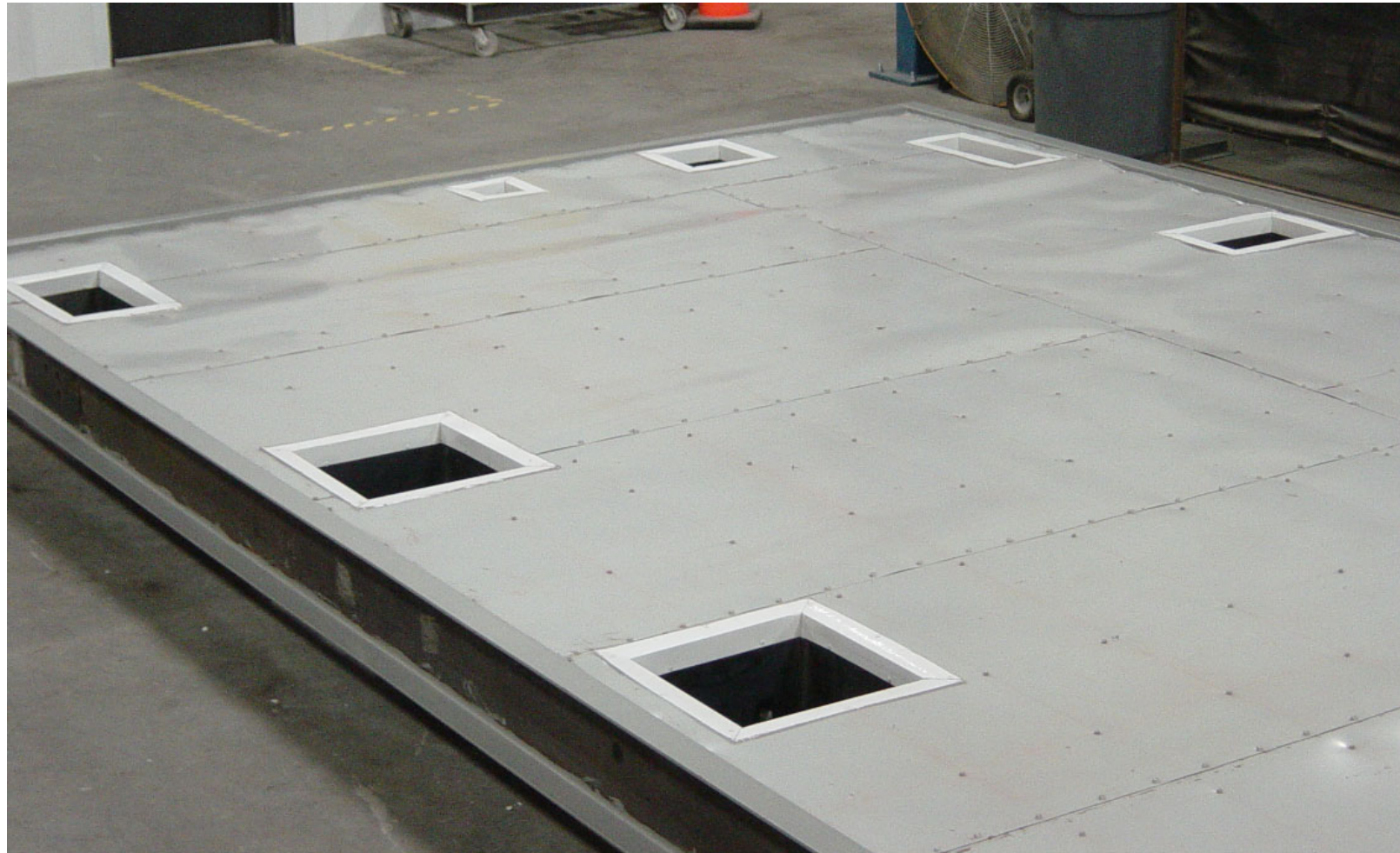
Base – con't



Base – Undercoating



Base – Floor Cutouts



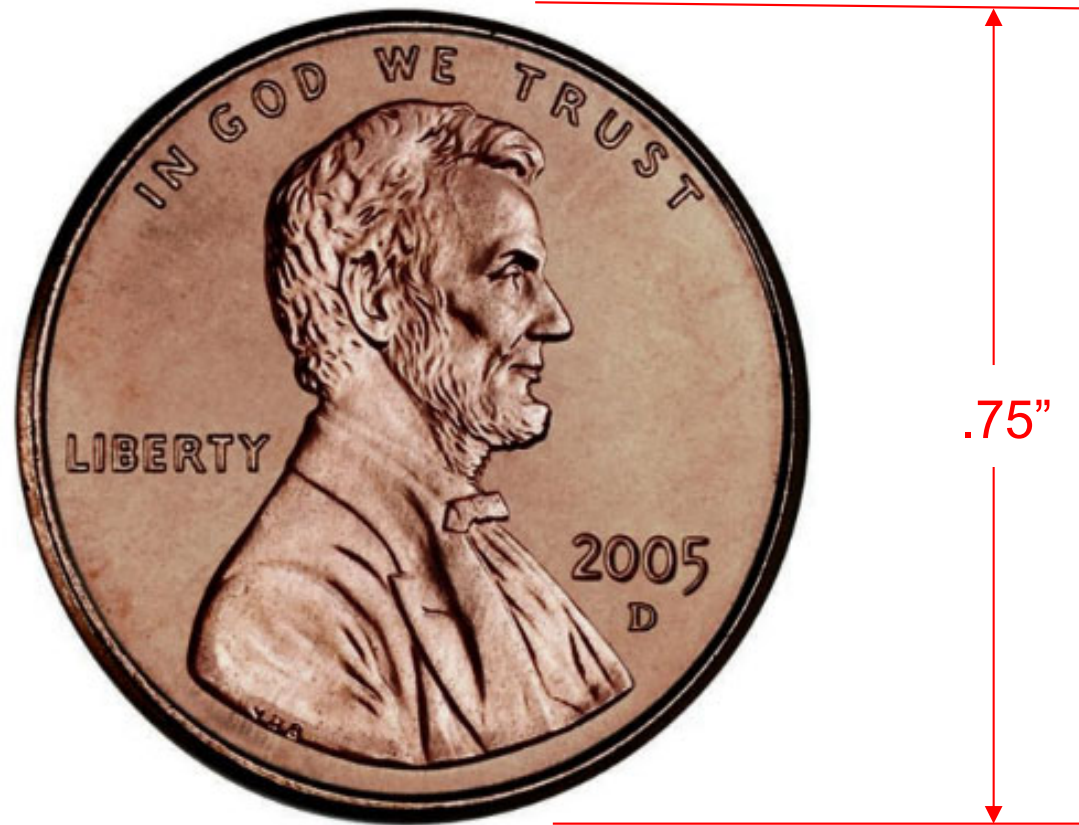
Walls – Interlocking Panels



11 to 22 gauge (with 16 gauge most common)

16 gauge is .0635 (~ 1/16" thick)

US Penny is **.0610"** thick



Walls – con't



Walls – con't



Concrete Walls



Walls - Insulation



Interior Wall Panels



Interior – Multi-Section IPA



Equipment Doors (Inside)



Rear Doors with Equipment conduit race cut outs

Equipment Doors (Outside)



Equipment Integration - NEC Condition 2



Equipment Integration - NEC Condition 3



Panel & DTT (typically IPA supplied)



Mimic Panels



MVA Arc Plenum & Exhaust



Arc Exhaust Over Walkway



Arc Exhaust Over IPA



HVAC Duct



Wall, Roof or Pad Mount HVAC



Loading for Shipment



Jobsite: Placing on Concrete Pad ...



...or on Steel or Concrete Piers



IPA Product Portfolio

Stairs & Platforms



Drop-Over



2-Story Buildings



Removable Roof for 38kv Arc Resistant



Class 1 Division 2



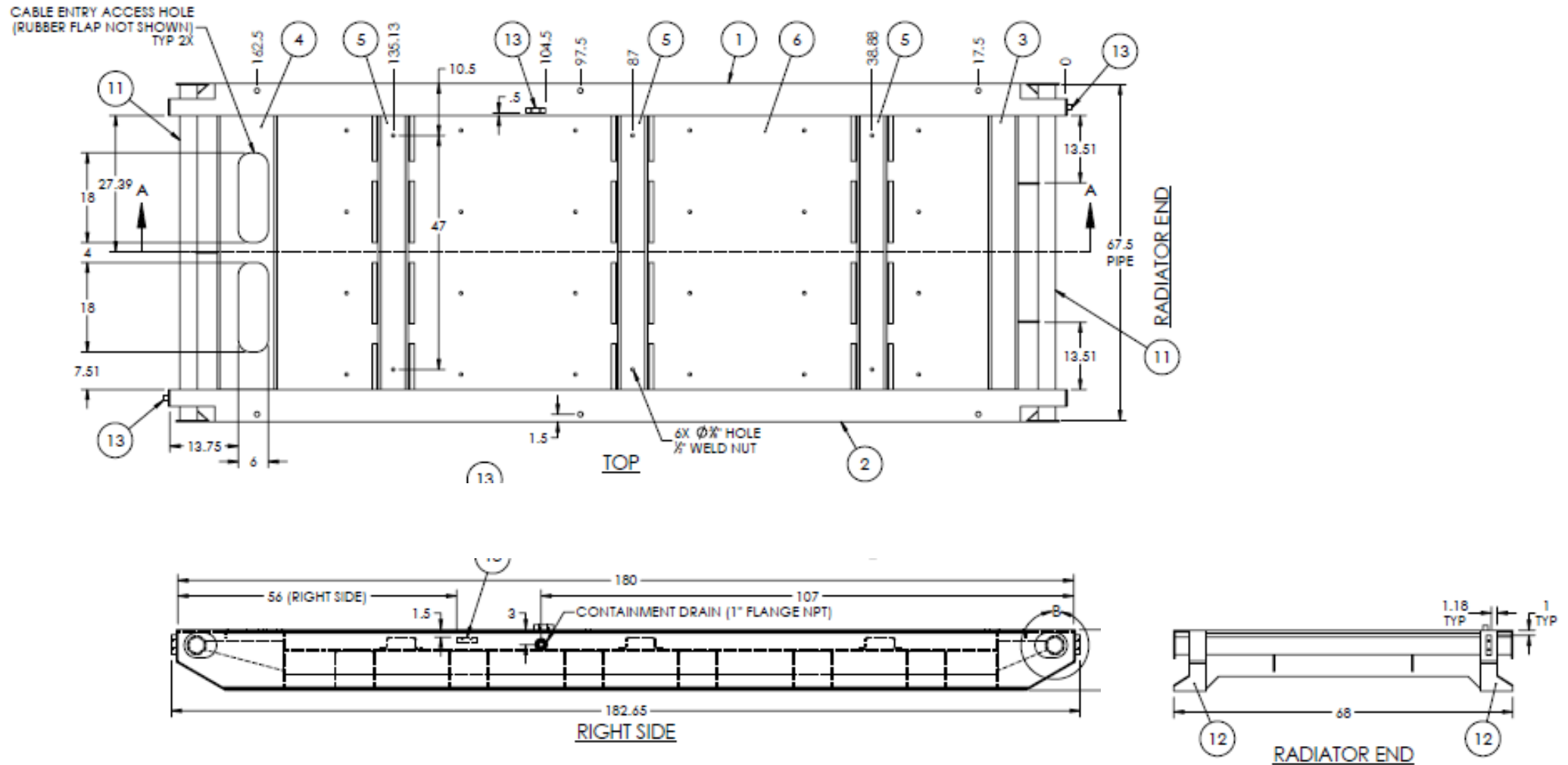
Prefabricated & Site Erected Design



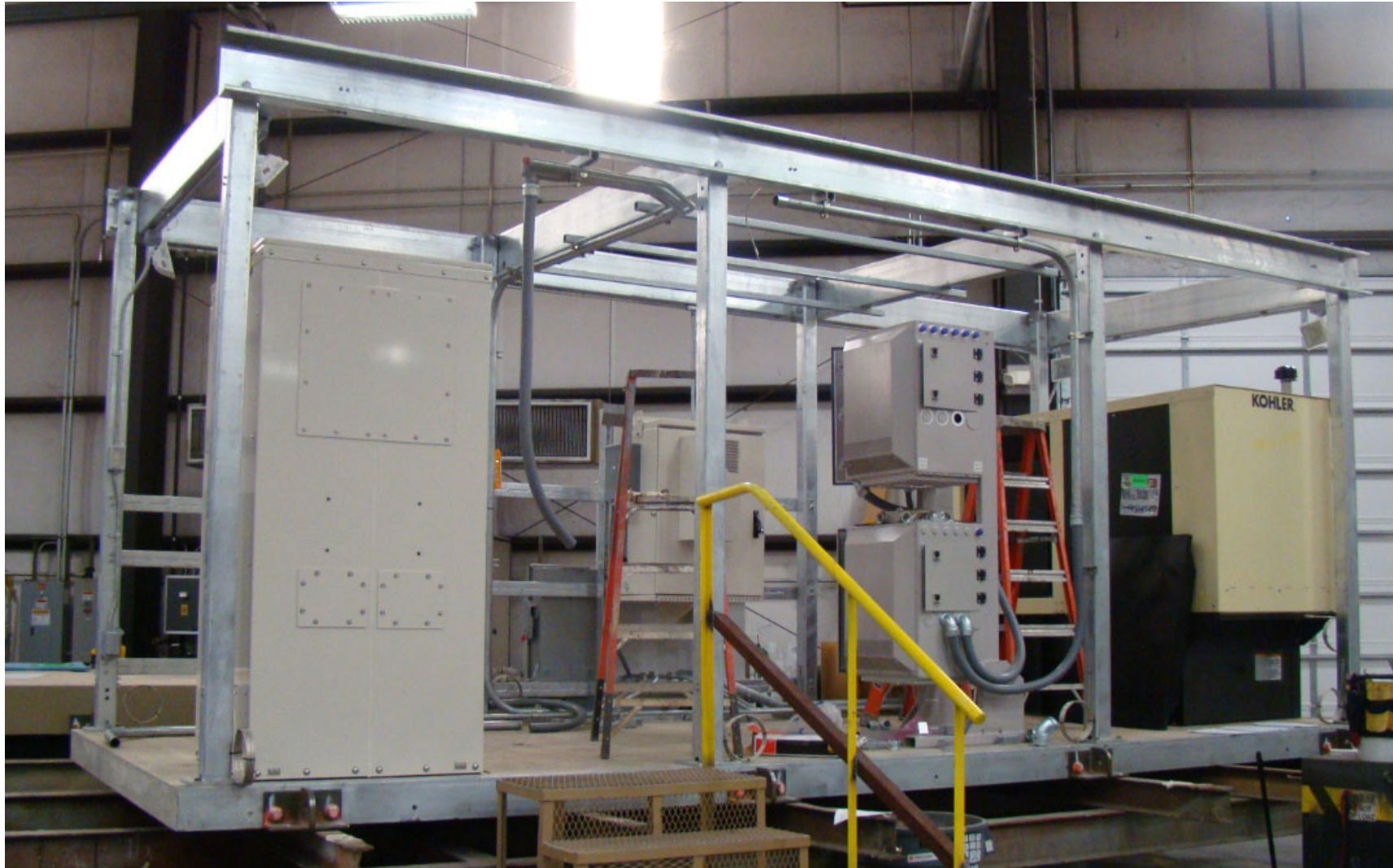
Outdoor Equipment Skid



Drag Skid



Indoor Skid & Frame



Extended Base



Control Bldg. w/ Hurricane Shutters & Patio



Brick Veneer



We Can Do Any Color You Need !



Hideous Green

Electroshock Yellow



Concrete Enclosure



- Potentially reduce the house cost and lead time by up to 25%
- Inherent corrosion & blast resistant properties with higher wind ratings

Hybrid Concrete Base with Steel



Other Available Options and features

- **Blast & bullet resistant buildings**
- **ISO Shipping Container**
- **Battery & UPS systems (in separate room if required)**
- **Work areas and restrooms**
- **Relay panels, RTU, SCADA cabinets**
- **HMI and PLC integration**
- **Fire detection & suppression**

NO Bridge-Proof Design yet!! ☹️



Plan B



Final Points

IPA Value Proposition

- ✓ Total responsibility for coordination from design to shipment
- ✓ Equipment coordination and integration – IPA arrives *Plug & Play*
- ✓ Experienced supplier Project Management resources
- ✓ Known cost and schedule up front
- ✓ EESS for commissioning & maintenance
- ✓ No weather delays, extra congestion, or “finger pointing” between multiple construction trades at jobsite
- ✓ Multiple manufacturing sites to maximize flexibility and reduce costs
- ✓ CHAMPS: Single point for negotiation, purchase order, terms, & warranty
- ✓ Accelerated asset depreciation (7 years vs. 39 years)**

** Source: Internal Revenue Service, Publication 946, *"How To Depreciate Property"*

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