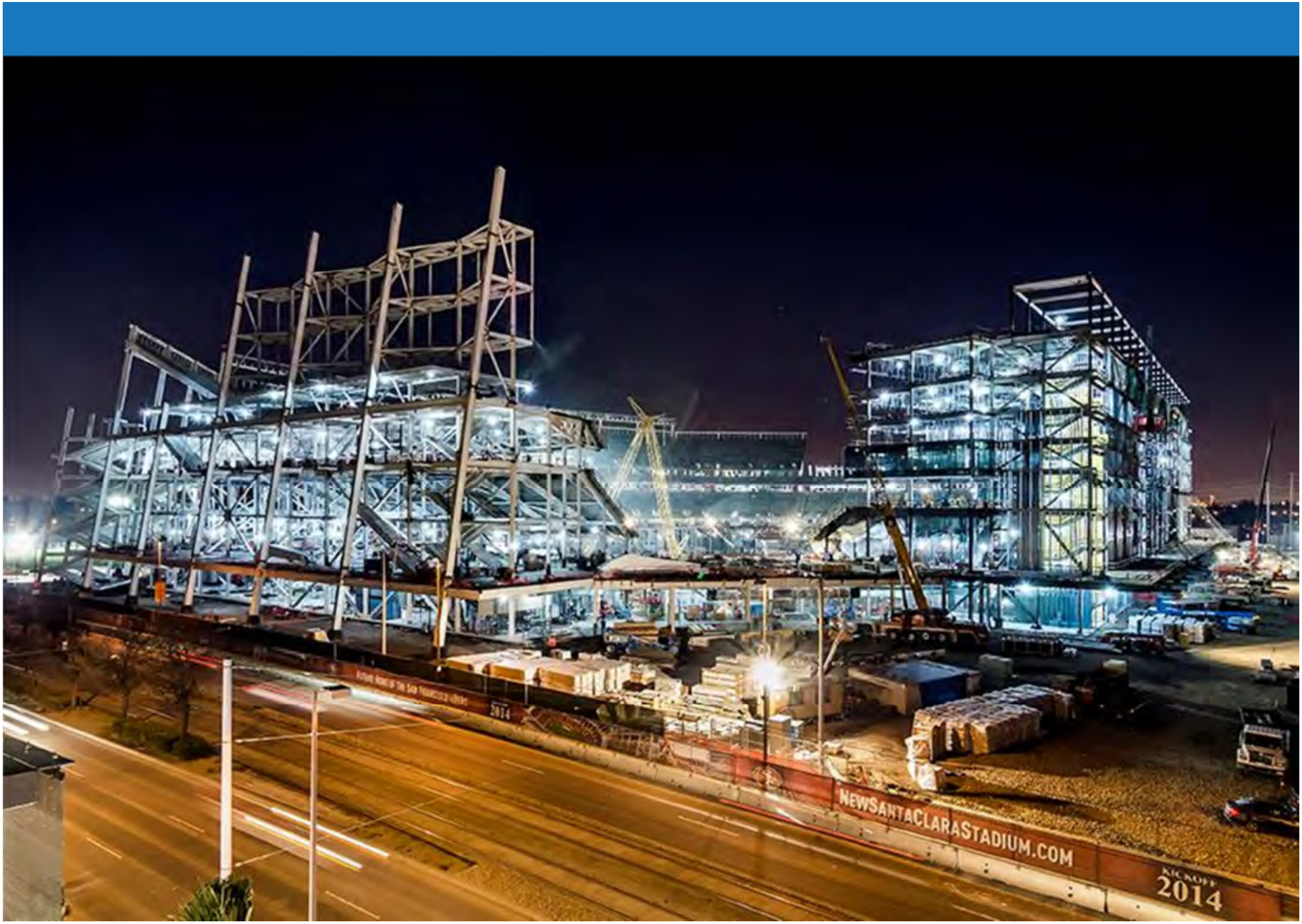
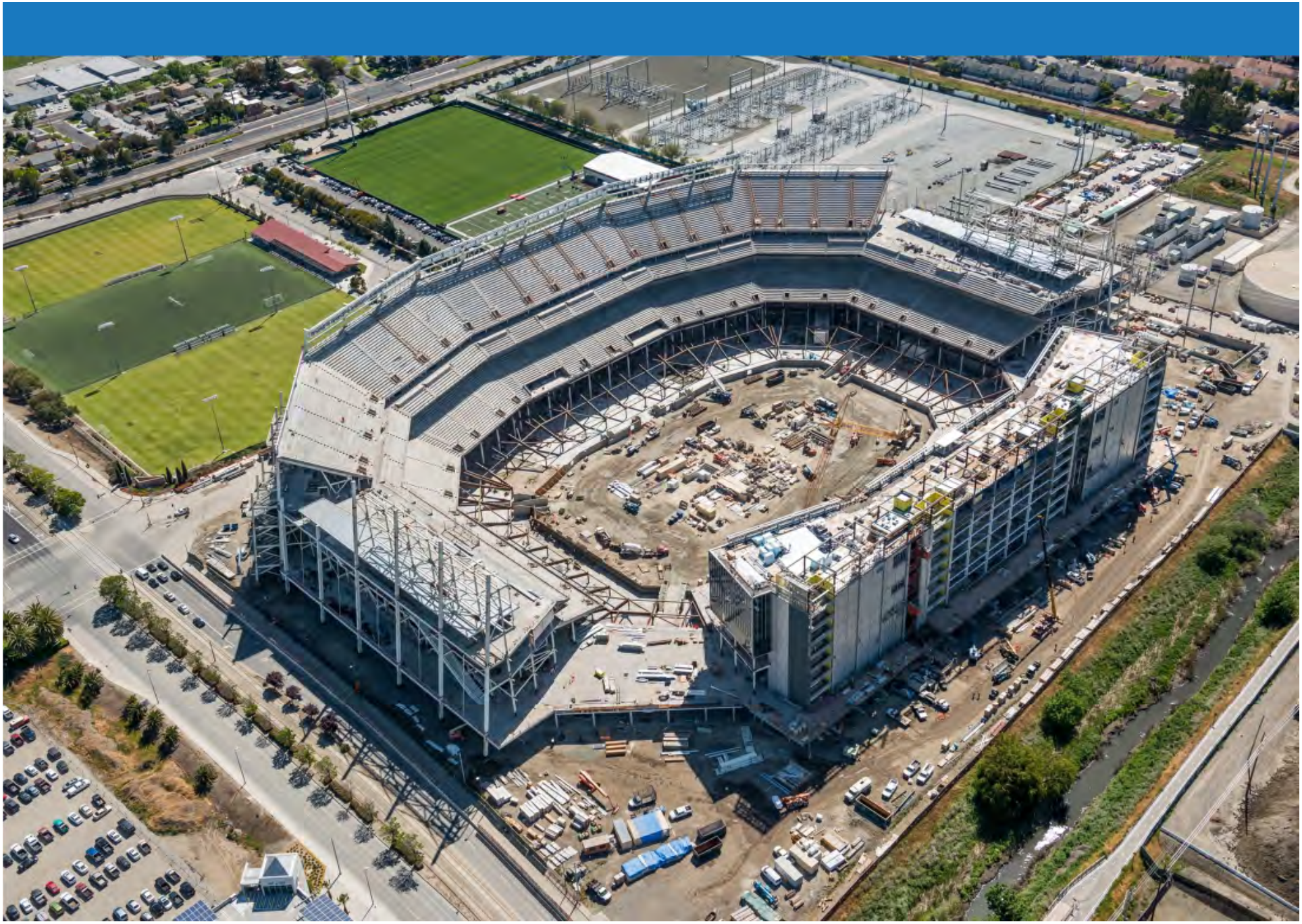
CUPERTINO ELECTRIC INC.

New Santa Clara Stadium Facility Design

Dan Boresch


NEWSANTACLARASTADIUM.COM
KICKOFF
2014



Cupertino Electric (CEI) Overview

- **Services:** Engineering & construction
- **Founded:** 1954
- **Employees:** ≈ 1,500 (field + office)
- **Revenue:** $570 million (2012)
- **Safety:** AGC “Safety Awards of Excellence” (2011 & 2012)
- **Customers:** Fortune 100 companies
- **Reach:** National

CUPERTINO ELECTRIC INC.

Outline

- Stadium
  - Primary Gear
  - Substations
  - Scoreboards
- Superbowl
  - Event
  - Solution

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NEW SANTA CLARA STADIUM

(LEVI'S STADIUM)

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Design Parameters

- Maximize Uptime
- Event Considerations
  - 8 Football
  - 12 Other Events
- Longevity
- Budget

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Facts

- 300 Drawings
- 52 Miles Feeders
- 350 Miles Conduit
- 45 Miles PVC Underground
- 500 Miles Low Voltage Cable
- 1st ALL Exterior LED Stadium*
- 500 Power Panels (12,000 Breakers)
- 17,000 Luminaires

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Just Numbers

- Connected = 27MVA
- Diversity = 45%
- Demand = 12MVA
- Single Point Failure when Tie Closed

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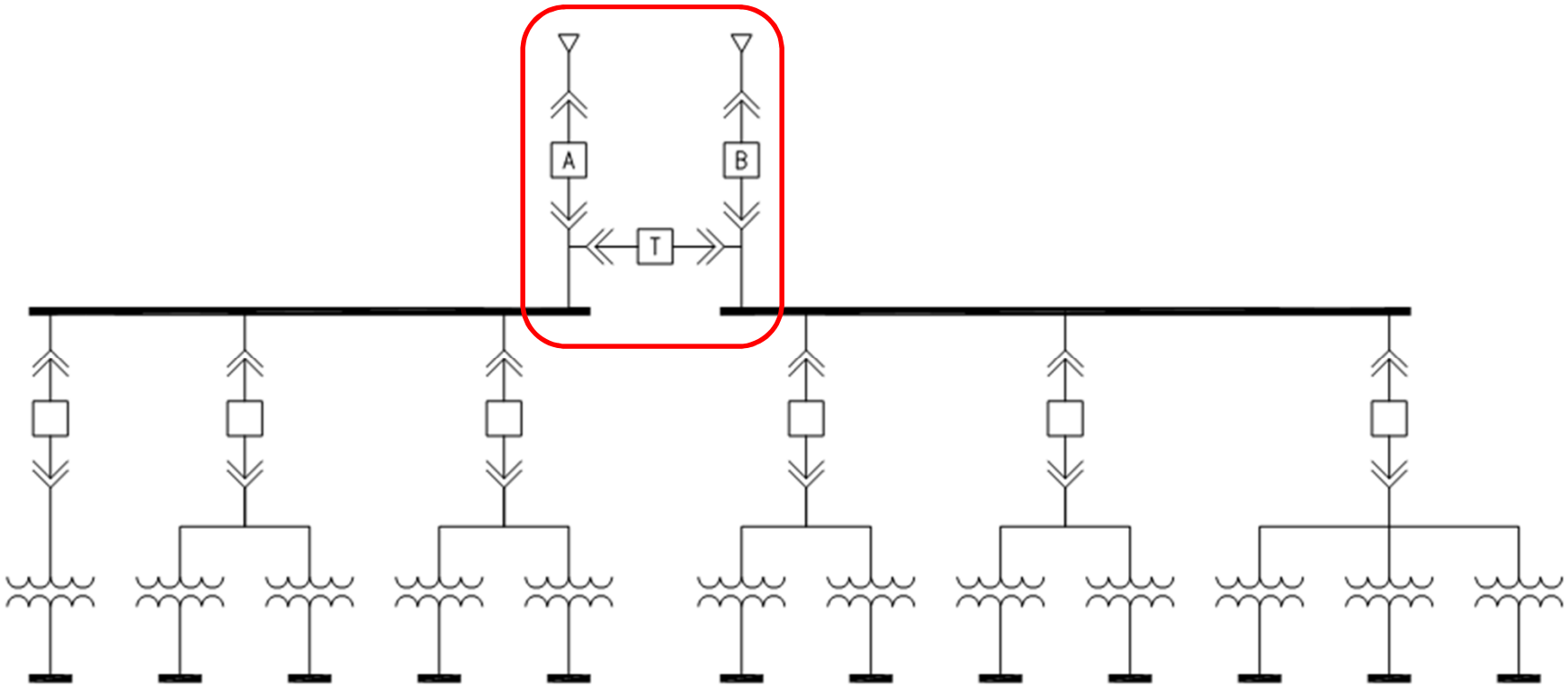
Primary Gear



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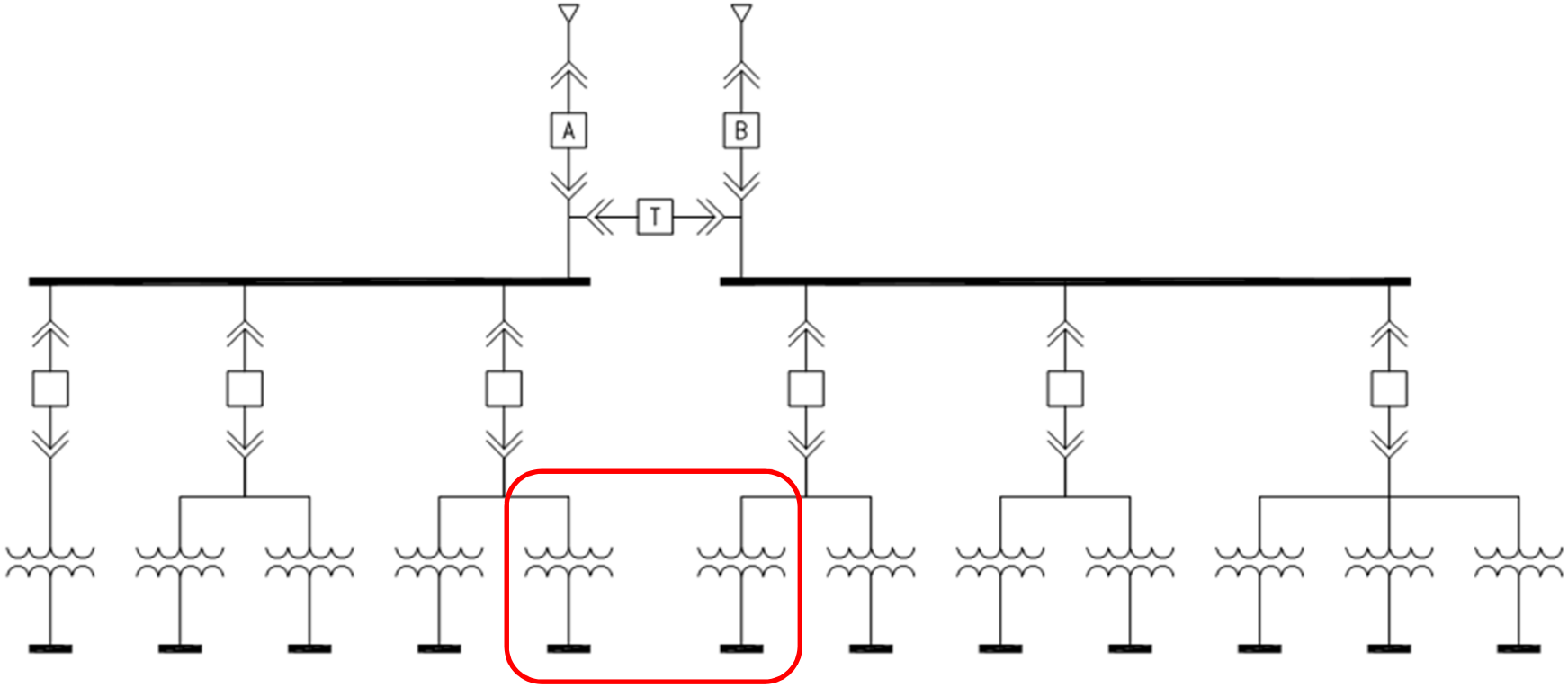
Main A
Tie
Main B
DANGE
HIGH
VOLTAG
KEEP O

Secondary Distribution



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IEM
DANGER
HIGH
VOLTAGE
KEEP OUT


Quad A
Quad D

Sports Lighting

- Voltage Sag Tolerance 42%
- Power Loss Tolerance 1/4 cycle

(648)1500W
Metal Halide

(24)2000W
Hot Restrike

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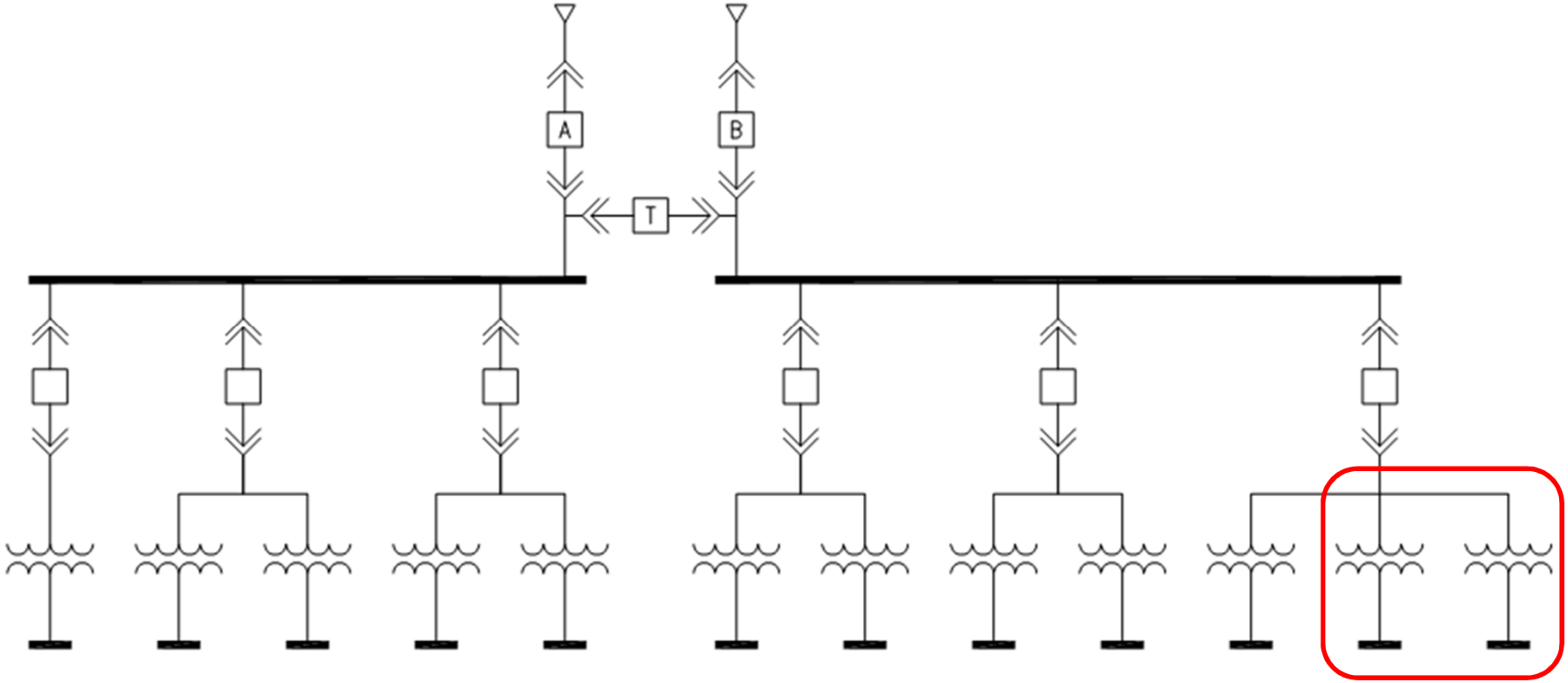
Scoreboards



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Two of a Kind

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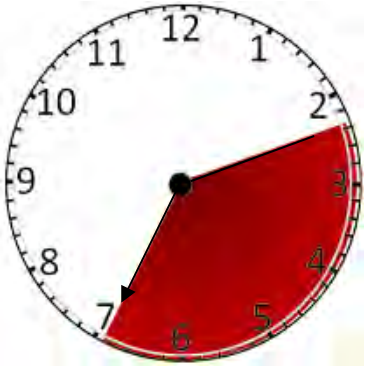
~~**Blackout**~~

What Really Happened?

- Study by Palmer Engineering and Forensics
  - 13.8 kV S&C switch operated as designed but..
  - Improper LT settings

Power

Sports Lights



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Contractor's Engineering Guide

Budget

Simple

Schedule

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Low-Hanging Fruit

- Second Harmonic Restraint at Mains
  - Blackout Restart Inrush
  - 2 Layer 50 Relay
- VLF-Tested 12 kV Cables

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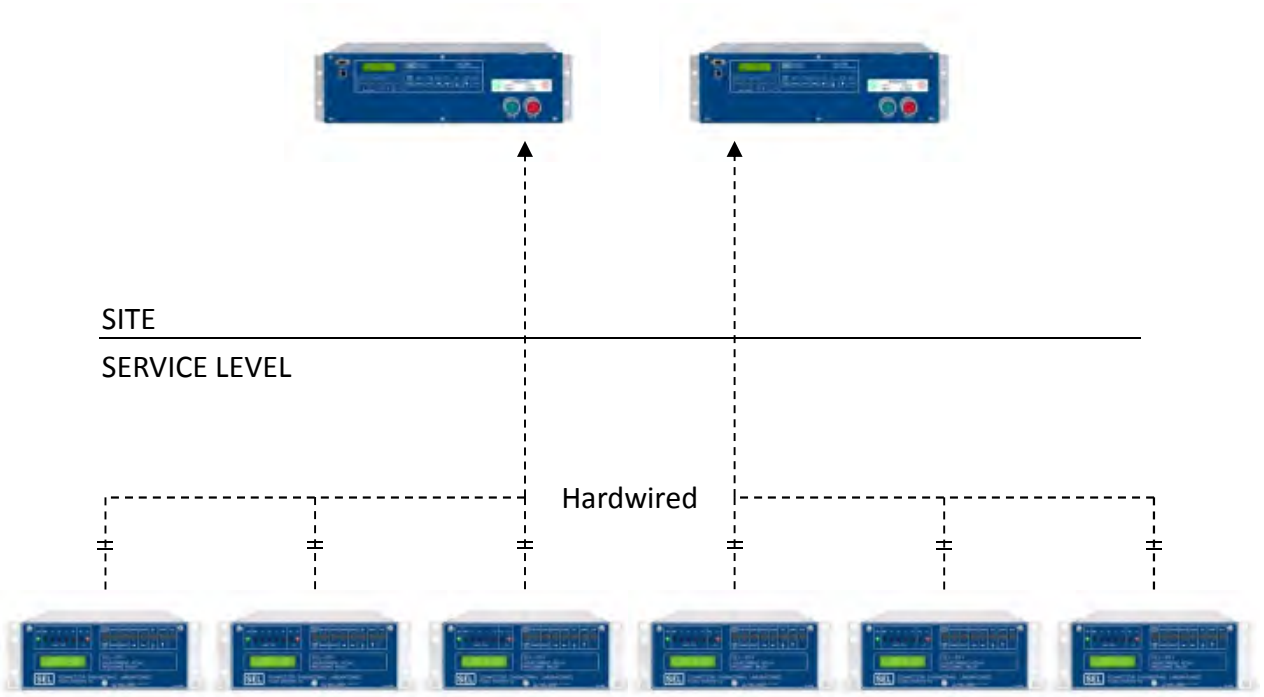
Goose Lite



Images by Schweitzer Engineering Laboratories, Inc.

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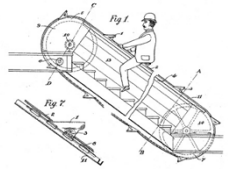
Basic Load Shed

11.8MVA

SUNBELT CONTROLS

VAV Air Handlers
1.7MVA Connected
1.0MVA Demanded

+



Escalators
= 600HP

Broadcast
= 300kVA

Manual Shed
300kVA

10.5MVA

Meter Images by Schneider Electric

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Q&A

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