



Transportation Electrification Permitting & Procurement

FMEA Energy Connections Conference

Austin Smith
Electrical Engineer – Burns & McDonnell

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ABOUT BURNS & MCDONNELL



Who We Are



#1 in Power

#1 in Transmission & Distribution

#7 in Design-Build

#12 in Program Management

Engineering News Record 2022

Where we are





**UTILITY CLIENTS
WE SERVE**
we know how to get
service upgrades
completed

STEPS TO ELECTRIFICATION

Electrification Roadmap

FRONT END PLANNING

Electrification represents a fundamental shift in fleet operations. We can help you analyze your existing operations to understand what it will take to electrify your fleet, no matter your starting point.

FLEET ASSESSMENT

Analyze daily vehicle mileage and overnight dwell locations. Determine energy requirements.



TECHNOLOGY EVALUATION

What EV models and types of charging meet your fleet's needs?

DETERMINE FACILITY NEEDS

Is a new utility service needed? What backup power & storage requirements are there?

BEGIN UTILITY COORDINATION

CONCEPTUAL DESIGN

Charger and electrical layouts; conceptual one line; decide on charging hardware.

PROCURE LONG-LEAD ITEMS

Switchgear, transformers, DCFC

DESIGN DETAILS

Final site plans; detail sheets; plans for future expansion

PERMITTING

DESIGN & CONSTRUCTION & OWNERS ENGINEER

COMMISSIONING

CONSTRUCTION



Municipal Electrification

Understanding the procurement and permitting processes can help municipal utilities support electrification in the following areas:

Public Charging

- Charger procurement
 - Reliability
 - Ease of use
 - Network interoperability
- Permitting
 - Local AHJ requirements

City Fleet

- Charger standardization across city fleet
 - Refuse
 - Emergency response
 - Water
- Engage with the city-wide plan

Commercial Fleets

- Understanding C&I customer schedule constraints
- Support phased deployments



PROCUREMENT

General Process and Considerations

What can I expect?



What are
your capabilities?

- Bandwidth
- Vendor Relationships
- Utility Contacts
- Service Agreements



What are
your needs?

- Timing – engaging early
- Prepare to compare
- Be flexible in the design
- Partnerships



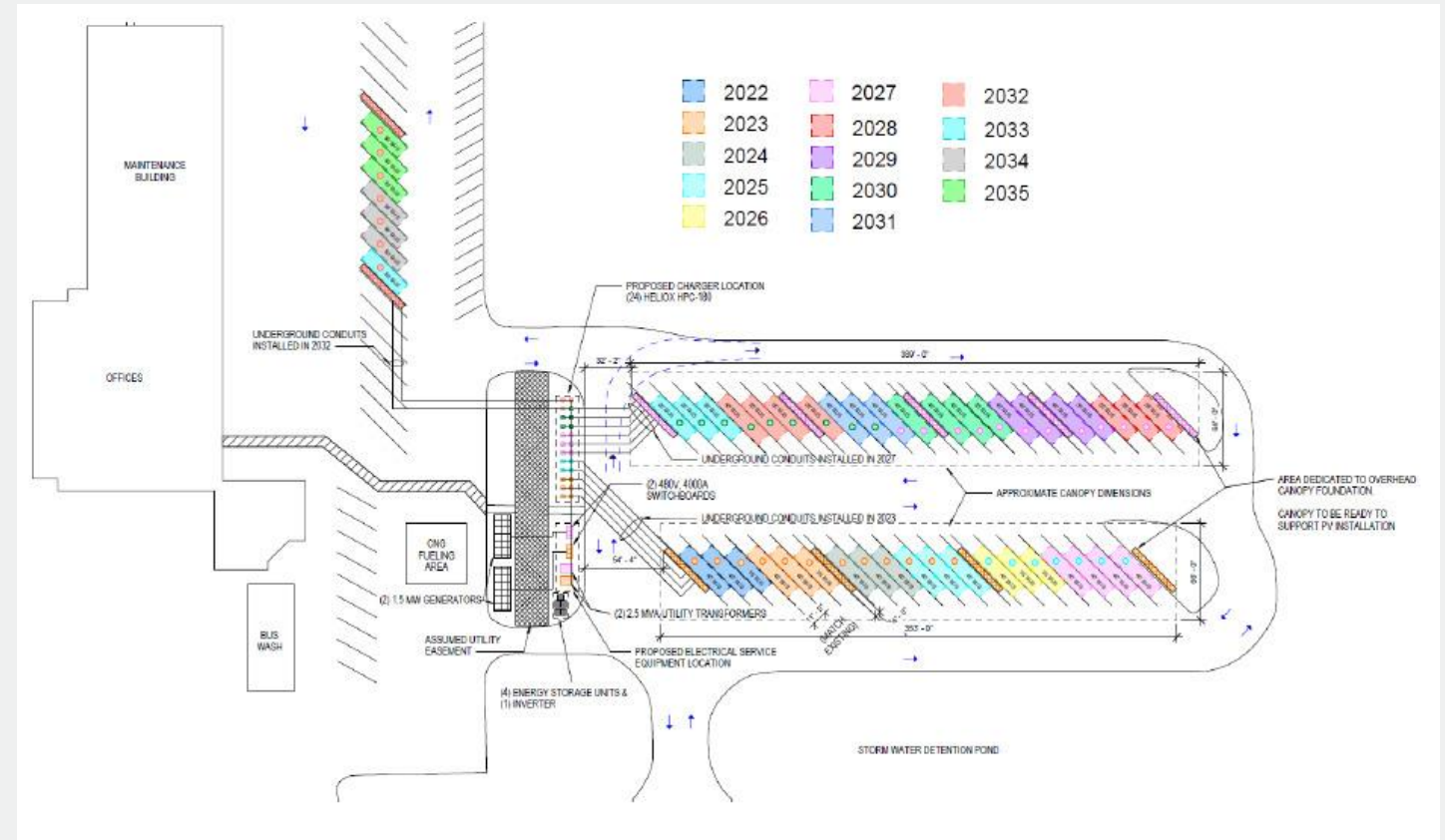
Future Proofing / Make Ready

Where can we plan ahead?



What are your long term goals?

- Available spend
- Available space
- Sizing of equipment for future needs
 - Gear size
 - Foundations
 - Conduits
- Infrastructure now, install later?
- Phasing plan



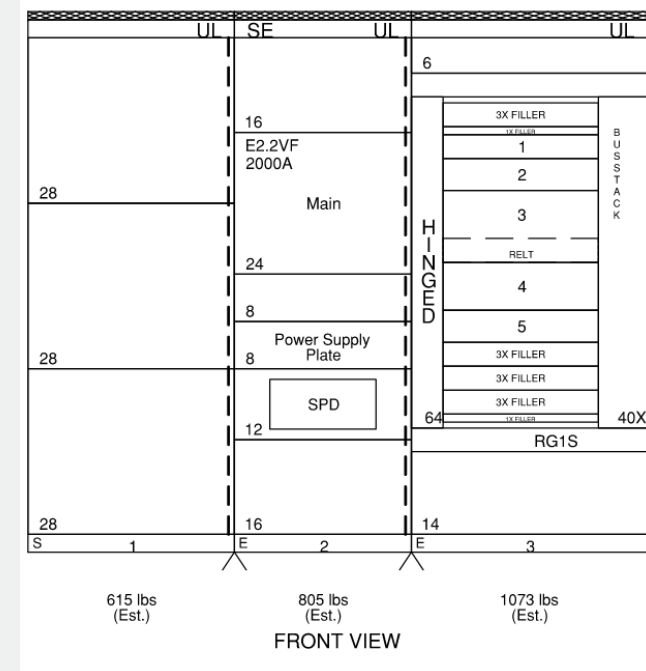
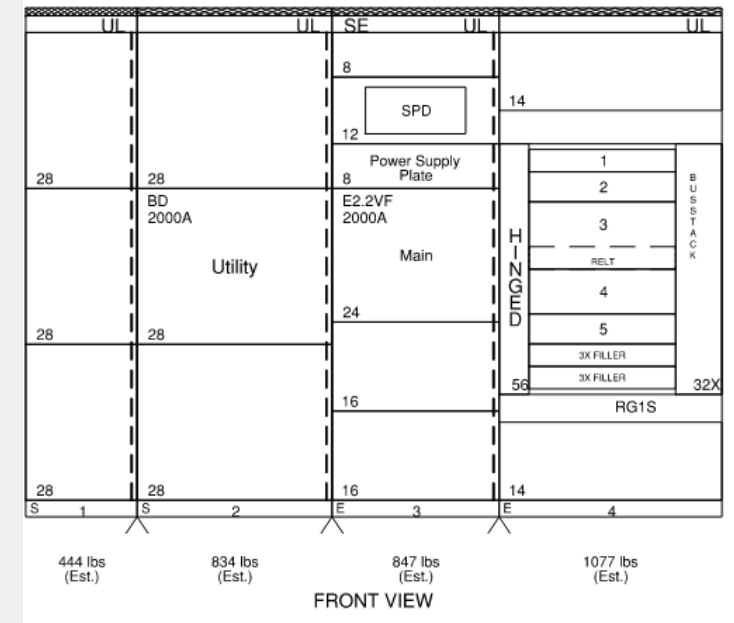
Lead Times/Challenges

What should I look out for?



Lead times vary,
But industry wide averages:

- Chargers
 - Level 2 ~6 weeks
 - DCFC ~18 weeks
- Panelboards ~20 weeks
- Switchboard/Transformers ~70 weeks
- Expediting?
 - Example:
 - ABB offers an eXCELERATE Offering
 - 2000A, 480/277V, 3P, 4W Switchboard
 - Standard offering 200 days - \$227,000
 - eXCELERATE offering 125 days - \$273,000
 - 20% Premium
 - No Utility section
 - No Copper Ground

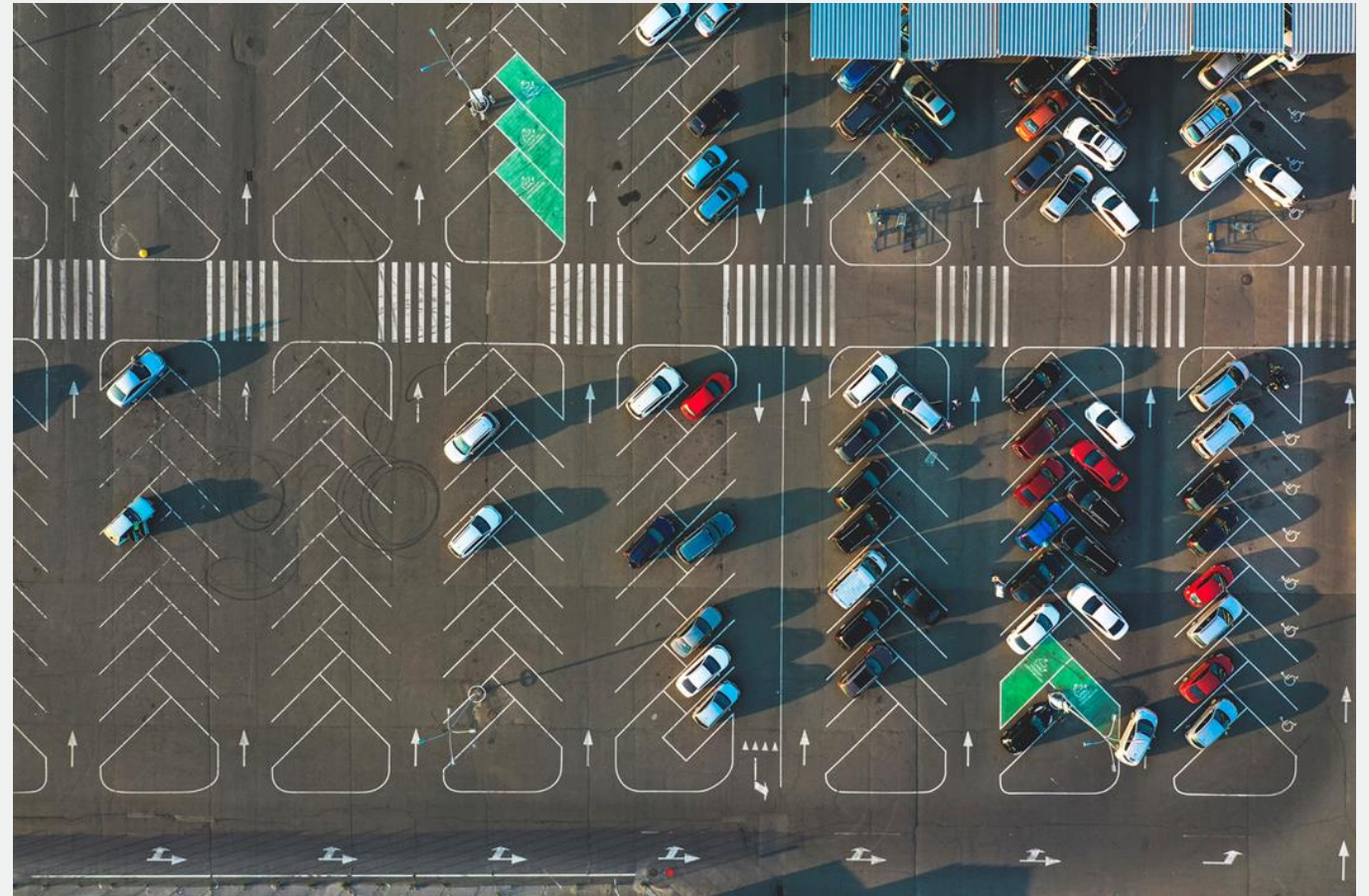


PERMITTING

Prepositioning and Planning with the AHJ

“We’re still working on our process”

- Early engagement
 - EV infrastructure projects are still new
 - Online permitting and application portal
 - Determining which permits are required
 - Contractor valuation of project
 - Online fee payment portals
-
- Additional permits
 - Gate/Fencing
 - Dust
 - Canopy/Structure
 - Additional considerations
 - Landscaping
 - Impervious area



Permitting Roadmap

- Early communication
 - Engage during design
 - Contacts online
 - Process explanation
- Finding the balance
 - Contractor relationship
 - CX details vs “TMI”
 - Supporting calculations
- EPC partner and/or local contractor
 - Drawing revision or phone conversation?
 - Local requirements
- Design considerations
 - Landscaping
 - Impervious area
 - Impacts to existing property
 - Simple avoid overdesign



Case Study

“Fleet EV location with chargers, canopy & fencing”

Issues

Discipline	Title	Status
ZONING	Charger usage (public/private)	OPEN
ZONING	New landscaping	OPEN
ZONING	CLEARANCE	OPEN
CIVIL	Contingent upon Land Use Approval from Comprehen...	ACCEPTED
STRUCTURAL	Soils Report - Digital Signatures	ACCEPTED
STRUCTURAL	Concrete Special Inspection	ACCEPTED
STRUCTURAL	Digital Signature	ACCEPTED
STRUCTURAL	Equipment Anchorage	ACCEPTED
STRUCTURAL	Equipment Foundations	ACCEPTED
STRUCTURAL	Structural Observations	ACCEPTED
STRUCTURAL	Design Soil Load Bearing Value	ACCEPTED
STRUCTURAL	Concrete Compressive Strength	ACCEPTED
STRUCTURAL	Structural Calculations	ACCEPTED
ZONING	Land use required	CLOSED

Issues

Discipline	Title	Status
STRUCTURAL	Withdraw Permit	OPEN
STRUCTURAL	Chain Link Fence Design	CLOSED
ELECTRICAL	DO NOT REUPLOAD ALL PAGES.	ACCEPTED
ELECTRICAL	E-004 specifies a 480-volt, three-phase gate system. T...	ACCEPTED
STRUCTURAL	Engineer's Digital Signature	ACCEPTED
STRUCTURAL	Digital Signature	ACCEPTED
STRUCTURAL	Structural Observations	ACCEPTED
STRUCTURAL	Soil Design Data	ACCEPTED
STRUCTURAL	Concrete Compressive Strength	ACCEPTED
STRUCTURAL	Structural General Notes	ACCEPTED
STRUCTURAL	Structural Calculations	ACCEPTED
FIRE PREVENTION	Provide a plan showing the AVI Loop and material data...	ACCEPTED
FIRE PREVENTION	Provide dimensions to verify that the fire access lane is...	ACCEPTED
FIRE PREVENTION	Confirm gate type.	ACCEPTED
ZONING	Land use required	OPEN
CIVIL	CONTINGENT UPON APPROVAL OF [REDACTED]	ACCEPTED
ELECTRICAL	Provide a simple electrical site plan for the gate or revi...	ACCEPTED
ELECTRICAL	Upload manufacturer's specifications for the gate mot...	ACCEPTED
ELECTRICAL	In the space being provided below, LIST the electrical ...	ACCEPTED
ELECTRICAL	Electrical pages are not being named correctly.	CLOSED
ELECTRICAL	Provide a sheet index.	ACCEPTED



Questions