NECA San Diego Sep 28 – Oct 1 2024

Unlocking Efficiency

The Power of Electrical Prefabrication Standards

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This session is eligible for 1 Continuing Education Hour.

For these hours to appear on your certificate, you must:

- Have your badge scanned at the door
- Attend 90% of this presentation
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Kyle Krueger

NECA-*Executive Director, Codes and Standards*

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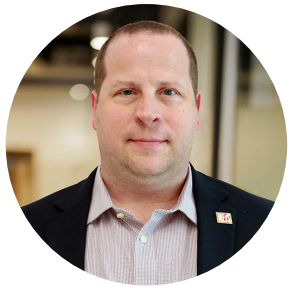

Jeff Noren

NECA-*Manager, Codes and Standards*

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Objectives

- Introducing NECA-5
- Prefabrication Processes
- Pre-Con Planning and Prefab
- Lessons Learned and Improvement
- Measuring Prefab
- Electrical Inspections

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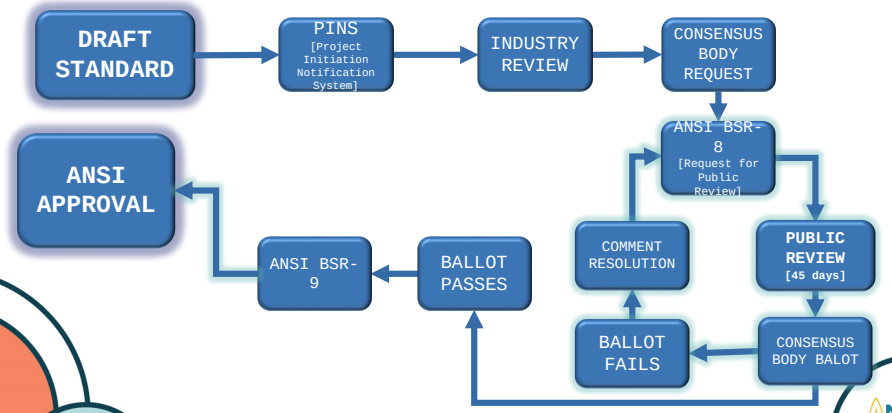
The NEIS Development Process



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NEIS TITLES

- **NECA 91**, *Recommended Practice for Maintaining Electrical Equipment*
- **NECA 417**, *Recommended Practice for Designing, Installing, Operating, and Maintaining Microgrids*
- **NECA 600**, *Standard for Installing and Maintaining Medium-Voltage Cable*
- **NECA 700**, *Standard for Installing Overcurrent Protection to Achieve Selective Coordination*

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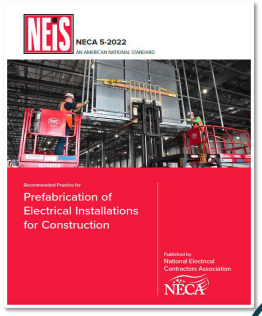
NEIS/NECA 5-2022

- NECA 5-2022, *Recommended Practice for Prefabrication of Electrical Installations for Construction.*
- Provides recommended on-site and off-site practices for prefab of electrical installations
- Defines a minimum baseline of quality and workmanship for performing prefabrication of electrical installations in construction.



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What is Prefabrication?

Prefabrication

A manufacturing process that generally takes place at a specialized facility, other than the building site, where materials are joined to form a component part of a final installation.

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Why prefab?

- Cost-Effective
- Speed up Timelines
- Increased Productivity
- Controlled Build Environment = Safety
- Decreased Labor Costs
- Need to be Competitive

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Prefabricated Electrical Essentials

Prefabrication Processes

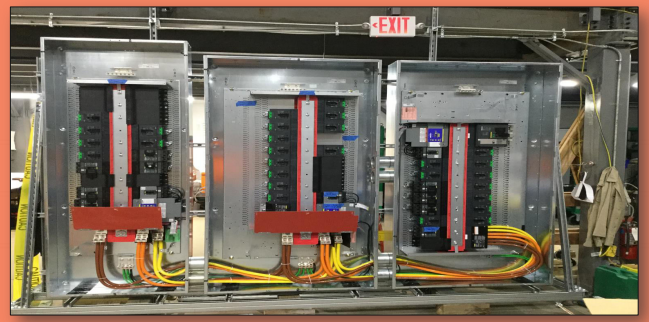

Image Courtesy of Forest Electric, New Jersey

Prefabrication Processes

To assure an effective, reliable, and frictionless prefab process:

- Independent of the project/project site.
- Mapping and alignment of material, work and information
- Align prefab and jobsite expectations
- Avoid redundant activities/functions

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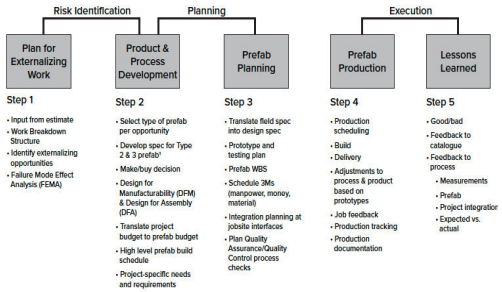
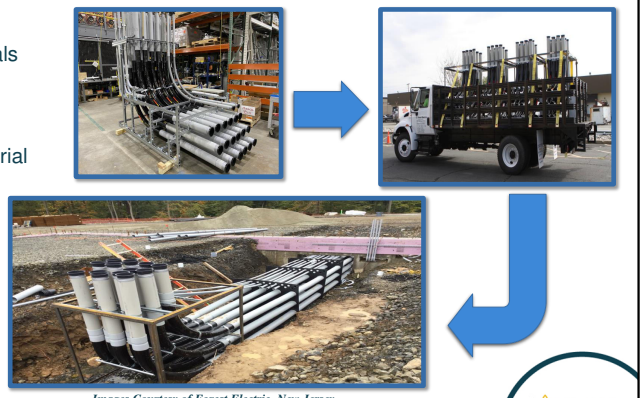
Elements of the Prefab Process

- Material Flow
- Information Flow
- Workflow



Prefabrication Processes – Material Flow

- Predetermined mapping of materials
- Late deliveries/shipments impact efficacy
- Design efficient and effective material flow



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Information Flow

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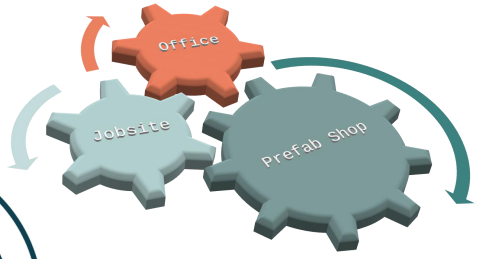
Prefabrication Processes – Information Flow

The “Information Flow” needed to support prefab requires structure/design.



Prefabrication Processes - Workflow

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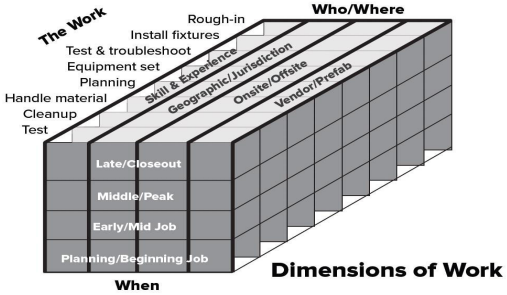
Prefabrication Processes – Workflow

WHO, does **WHAT, WHEN** and **WHERE?**



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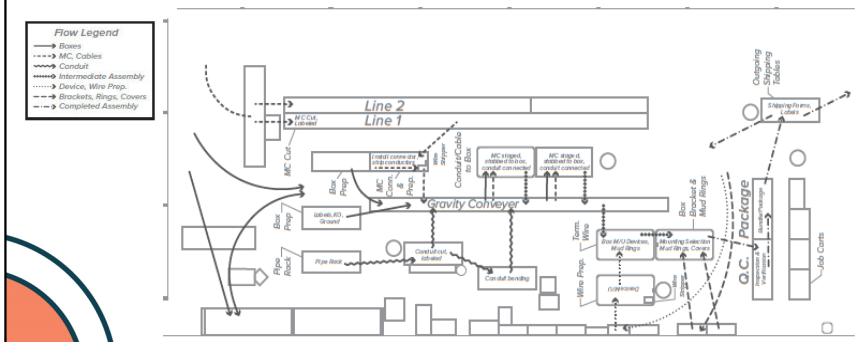
Prefabrication Processes – Workflow



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Pre-Construction Planning and Prefab

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Preconstruction Planning - General

- General Project Overview
- Identify Prefab Opportunities
- Work Breakdown Structure (WBS)
- Multi-Trade Prefab

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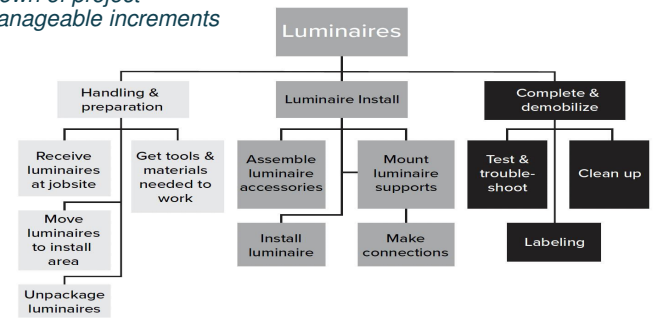
Preconstruction Planning – Work Breakdown Structure (WBS)

Work Breakdown Structure (WBS):

The process of creating a structured and hierarchical breakdown of project deliverables into manageable increments prefab activities…..



Preconstruction Planning – Prefab Opportunities

Prefab work can be categorized into three (3) types:

Type 1 – Common Prefab Items

Type 2 – Work Specific Prefab Items

Type 3 – Build to Order Prefab Items

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Prefab Opportunities – Type 1

Common Prefab Items (Type 1)

- Common among all jobs
- Preferred method
- No BIM required.
- Vendor supplied
- May have pre-existing cut sheets

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Prefab Opportunities – Type 2

Work-Specific Prefab (Type 2)

- BIM not required but may be needed when specified
- Sometimes Vendor Supplied

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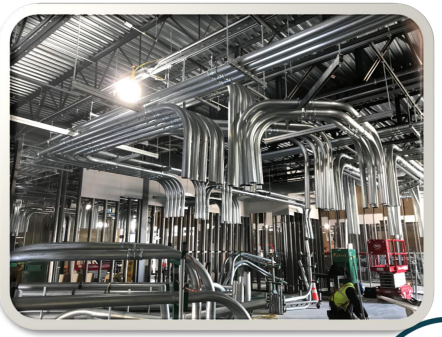
Prefab Opportunities – Type 3

Build-to-Order (Type 3)

- Customized assemblies
- Multi-Trade Prefab
- BIM is critical for Type 3



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Preconstruction Planning – Inspections

- **Code Compliance Inspections**
  - Local ordinances
  - National Electrical Code (NEC®)
  - National Building Codes

- **Quality Control *(QC)* / Quality Assurance *(QA)***
  - System and performance
  - Contractual/Specification

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Lessons Learned and Improvement

Lessons Learned and Improvement - Feedback

- The success of prefabrication work is determined by its ongoing ability to maintain competitiveness.
- Establishing a process for continuous evaluation and improvement are essential to long-term success.

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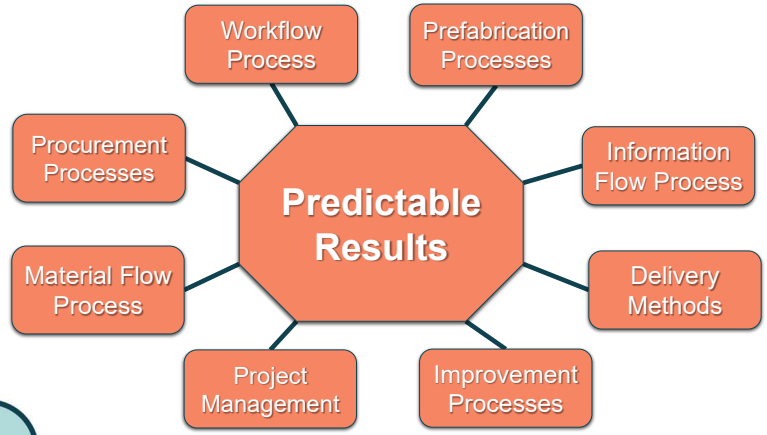
Lessons Learned and Improvement –Standardization



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Lessons Learned and Improvement – Standardization

- Continuous improvement
- Catalogued for Future
- Issue Resolution
- Standardization

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Measuring Prefab Success

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Measuring Prefabrication – The Process

Table 1: Measuring Prefabrication *(Courtesy of MCA Inc.)*

Method	Measurement	Advantages	Disadvantages
SIMPLE	Overall and/or company composite rate	• Data already available in accounting • Takes into account the most important cost-related advantage of prefab	• Prefab's impact on composite rate (vs. other factors managed onsite) is assumed, rather than viewed separately
INTERMEDIATE	Track all prefab activities in one dedicated prefab cost code	• Easy to setup in databases • One "Bucket" for planning and tracking	• No segregated production or production rate information
ADVANCED	Develop prefab-specific labor codes, that coincide with field install labor codes	• Coinciding progress tracking between fields & prefab • Data available for analyzing productivity with and without prefab	• Difficult to segregate activity tracking in prefab according to field labor codes • Leads to poor data quality
	Method for measuring	• High data quality	• More complex to

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QUESTIONS?

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Please complete the Online Evaluation

https://www.surveymonkey.com/r/NECA2024SanDiegoConvention

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