

Material Management

Foreman's Development Series



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OBJECTIVES

- To examine the various problems associated with ordering and handling jobsite materials.
- To study a series of Best Practices that will result in better Material Management on your project.





Carlton
AMSON & SESSIONS
sessions.com

Blue...

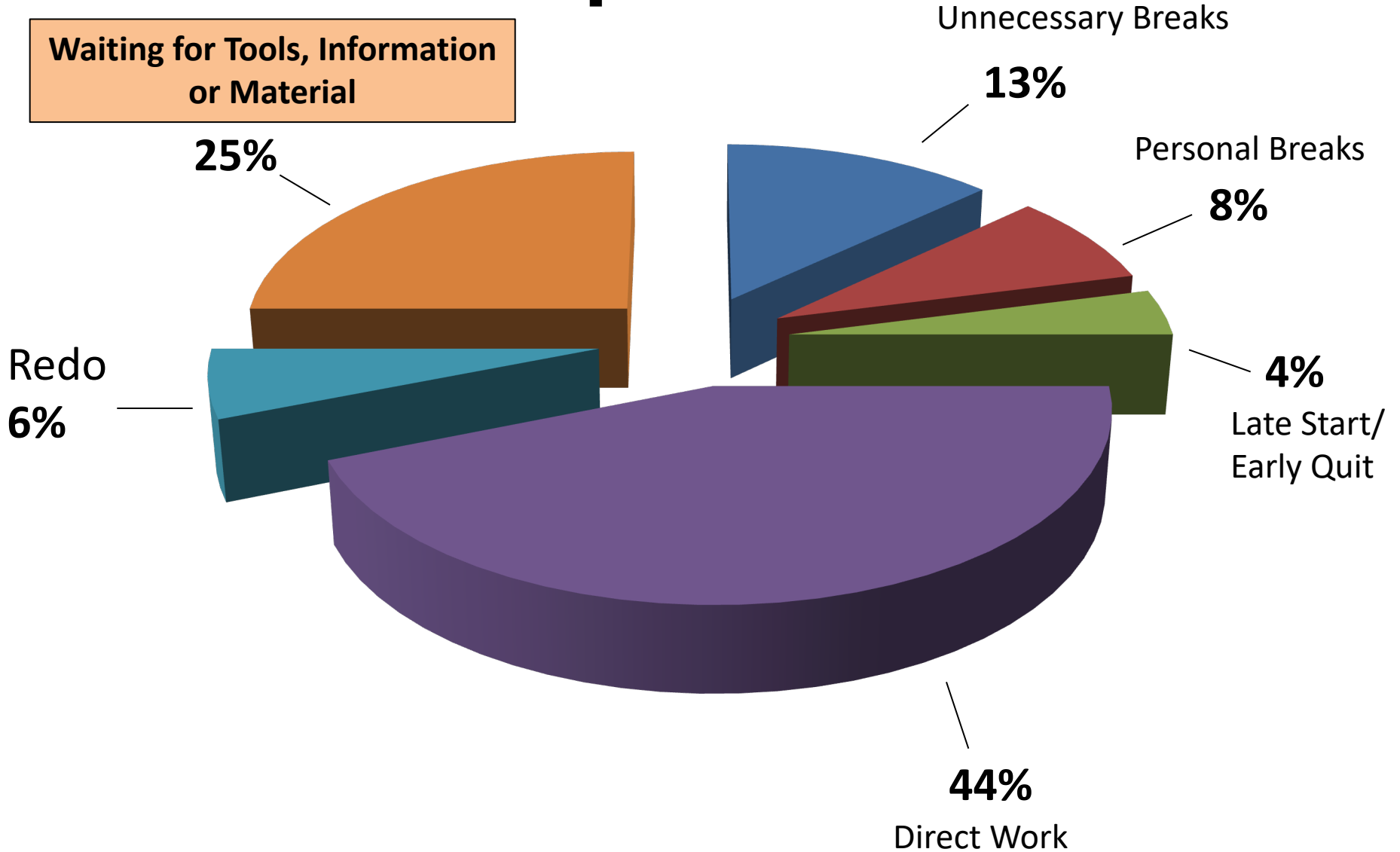
Group Activity - #1

A Nightmare Scenario:

- What went wrong?
- Why did things go wrong?
- What could have been done differently?



Time Spent (per work day)

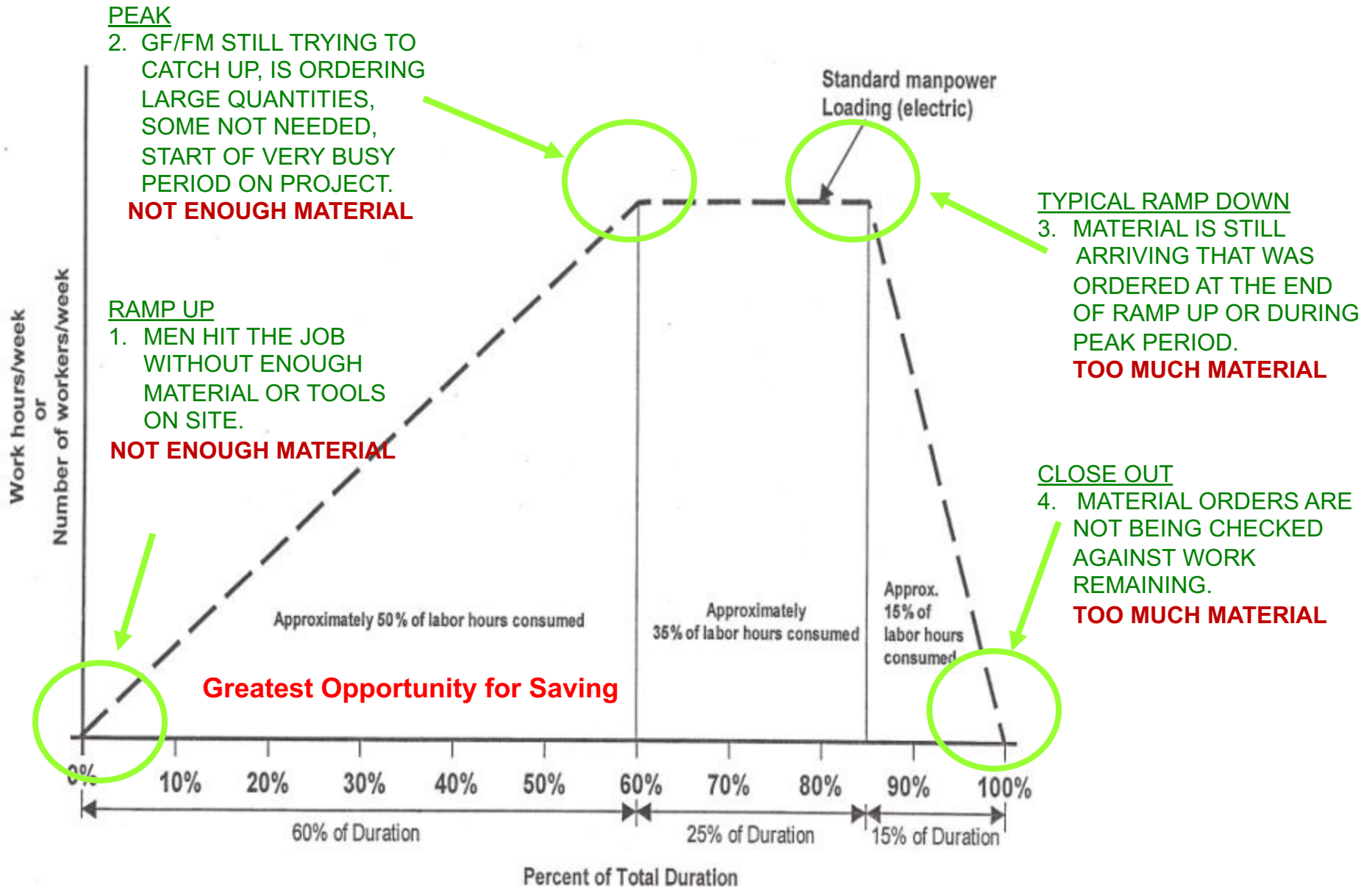


Overall Job Costs

For different sizes of Electrical Projects:

	Small	Medium	Large
Material	36.2%	35.0%	32.5%
Labor	32.1%	37.2%	41.0%
Overhead	21.6%	18.0%	15.0%
Job Expenses	4.0%	4.0%	4.5%
Subcontracts	3.8%	3.5%	4.4%
Profit	1.8%	1.5%	1.7%
Taxes	0.5%	0.8%	0.9%

Manpower Graph



Let's Set some Major Goals!

- 1) 8 hours of material within 10 feet of Installer.
- How many of you have seen this happen?
- 2) Handle your materials as few times as possible.

On average how many times do you think material is moved on the job before it is installed?

8 Times!

(Based on study by the University of New Mexico and Texas A&M)

How do we achieve these goals? Get a System!



Stop the Men from Walking!!

1. Make sure they have **Everything** they *need!*
2. Walking is **Non-Productive** Time!
 - “Use your head – **NOT** your feet”
3. Have your **TIM** - **ERS** right there within 10’



Effective Material Management

Ordering

- Know the correct material to order (Per specs & submittals).
- Order for timely delivery/installation.

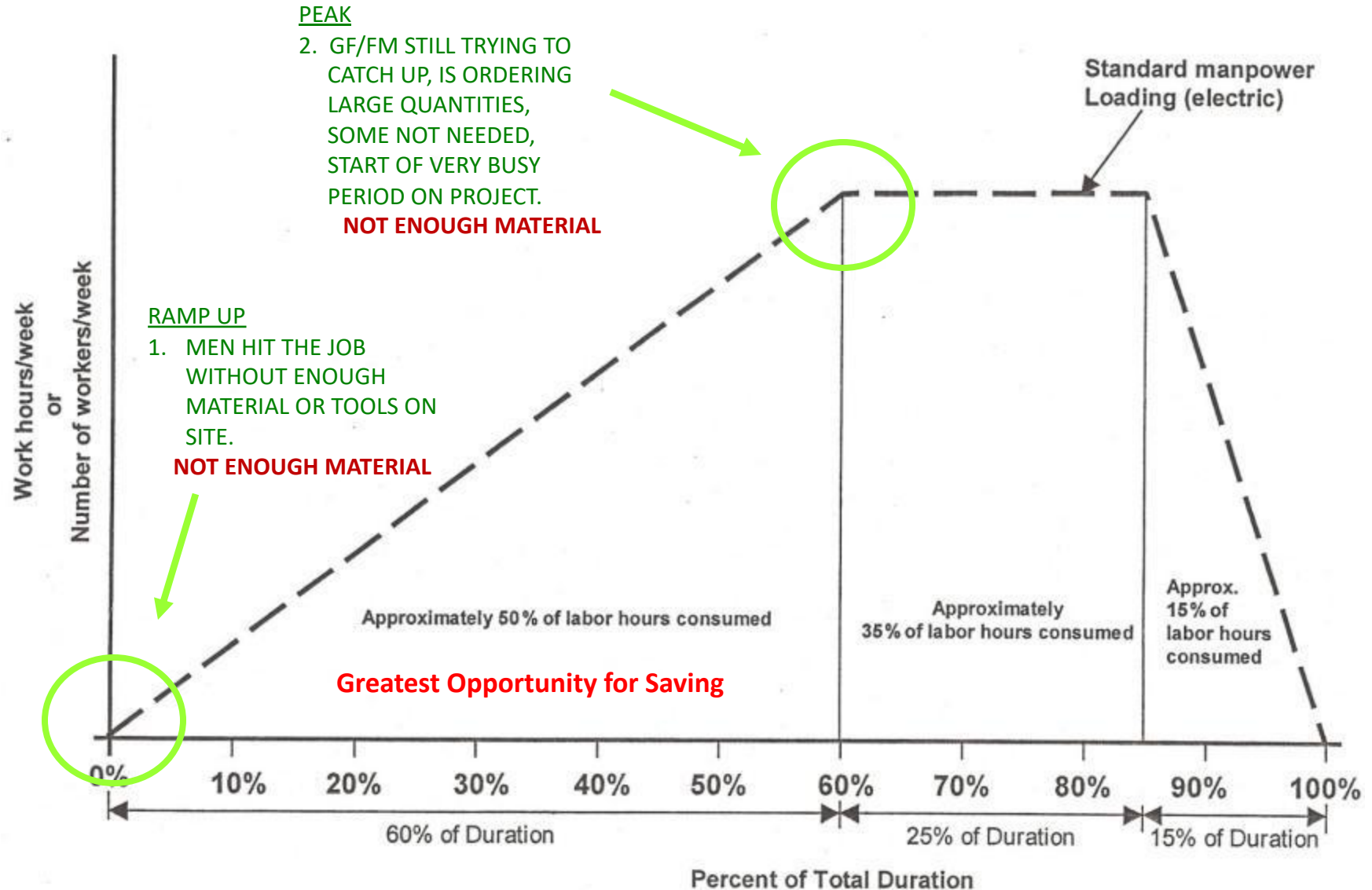
Handling

- Inspect material when delivered.
- Locate material close to the installer.
- Protect material from theft/damage.

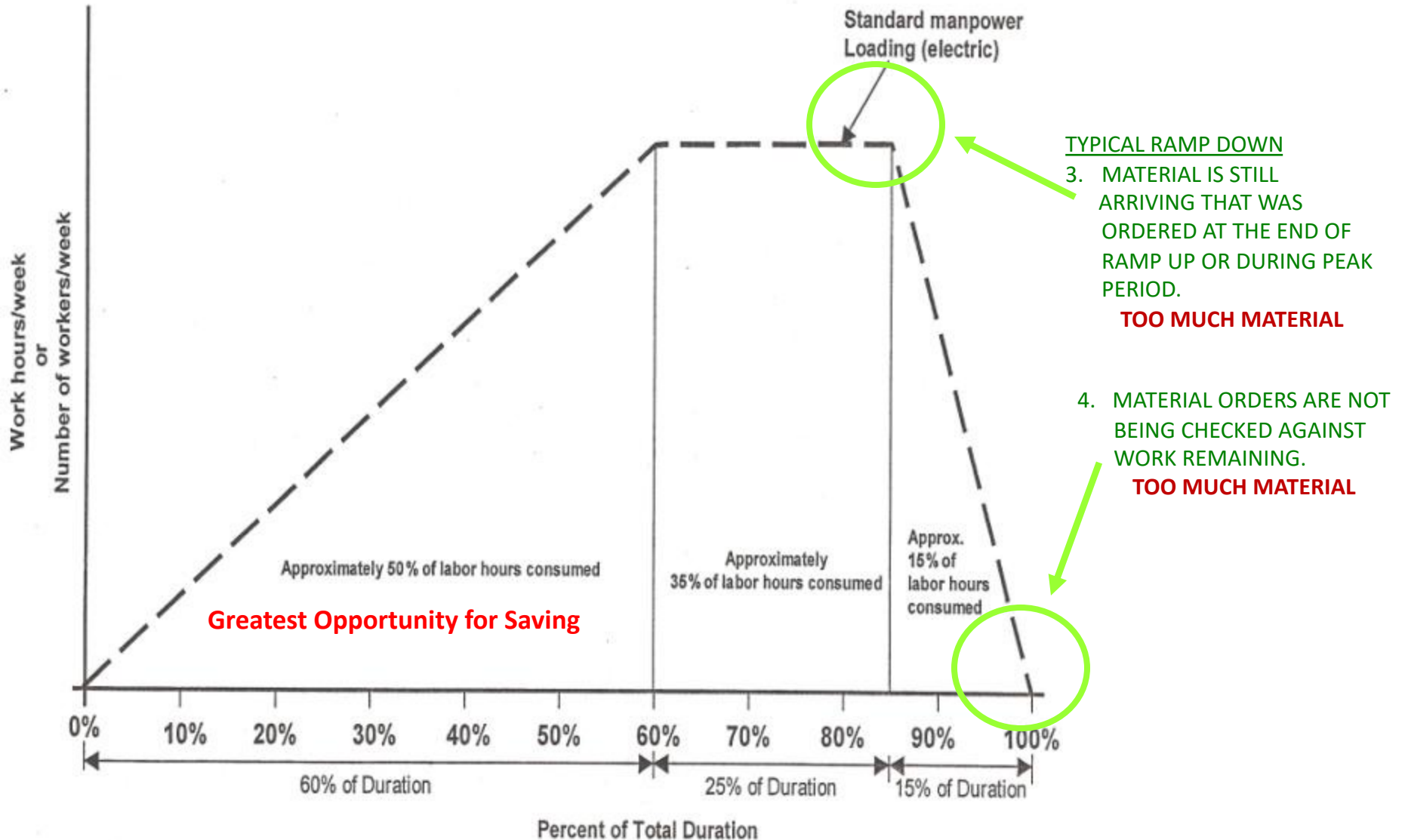
Removing

- Immediately return incorrect material.
- Get scrap material/unused material off the site in a timely manner.

Manpower Graph / Ramp-Up



Manpower Graph / Ramp-Down



MATERIAL FLOW CHART

JOB # 39006	PA Matt Damon	PM Scott Speedman	DATE REV
JOB NAME Hertz	FOREMAN Wolfman Jack	SUPT Kim Basinger	5/1/09

MATERIAL DESCRIPTION	QTY	DATE REQ'D	DATE REC'D	NOTES
Switch gear -MSB 2	1	6/1/09		Ship completely assembled No Splits. Need lifting eyes on gear. Ship on open Flat Bed Truck
-MCC-3A	1	12/2/09		Sections can not be wider than 36" Each section will need to be able to withstand laying them down

↑
Good Catch!

Basic Flow Chart Materials

- **Panels**
 - Cans, Interiors, Trims
- **Light Fixtures**
 - Cans, Trim and Lamps
- **Owner Furnished**
 - Equipment
- **Bus Duct**
- **Systems**
 - FA, Security
- **Generator**
- **ATS**
- **Transformers**
- **Switchgear**
- **Manholes / Vaults**



Site Material Management Plan

**Come up with a site-specific Material Management Plan
– simple and to the point.**

- 1) How much room do you have to store materials on the jobsite?**
 - Lots of room, only 1 week's storage or no on-site storage at all?
- 2) What will you store and protect your tools and materials in?**
 - Conexs, Semi-trailers, gang boxes?
- 3) On-site storage usually means having to move stored materials multiple times.**
- 4) Be aware of the many hazards of on-site storage.**



Site Material Management Plan

5) How and where is material delivered to the jobsite?

- Who orders it?
- Who receives it?
- Where is it going to be unloaded?
- How is it going to be unloaded?
- How does it get to where it is needed?

• **Example: Light Fixture Storage**

- Stored at shop? Just-in-time delivery?
Palletized by area?
- Bonded Warehouse?



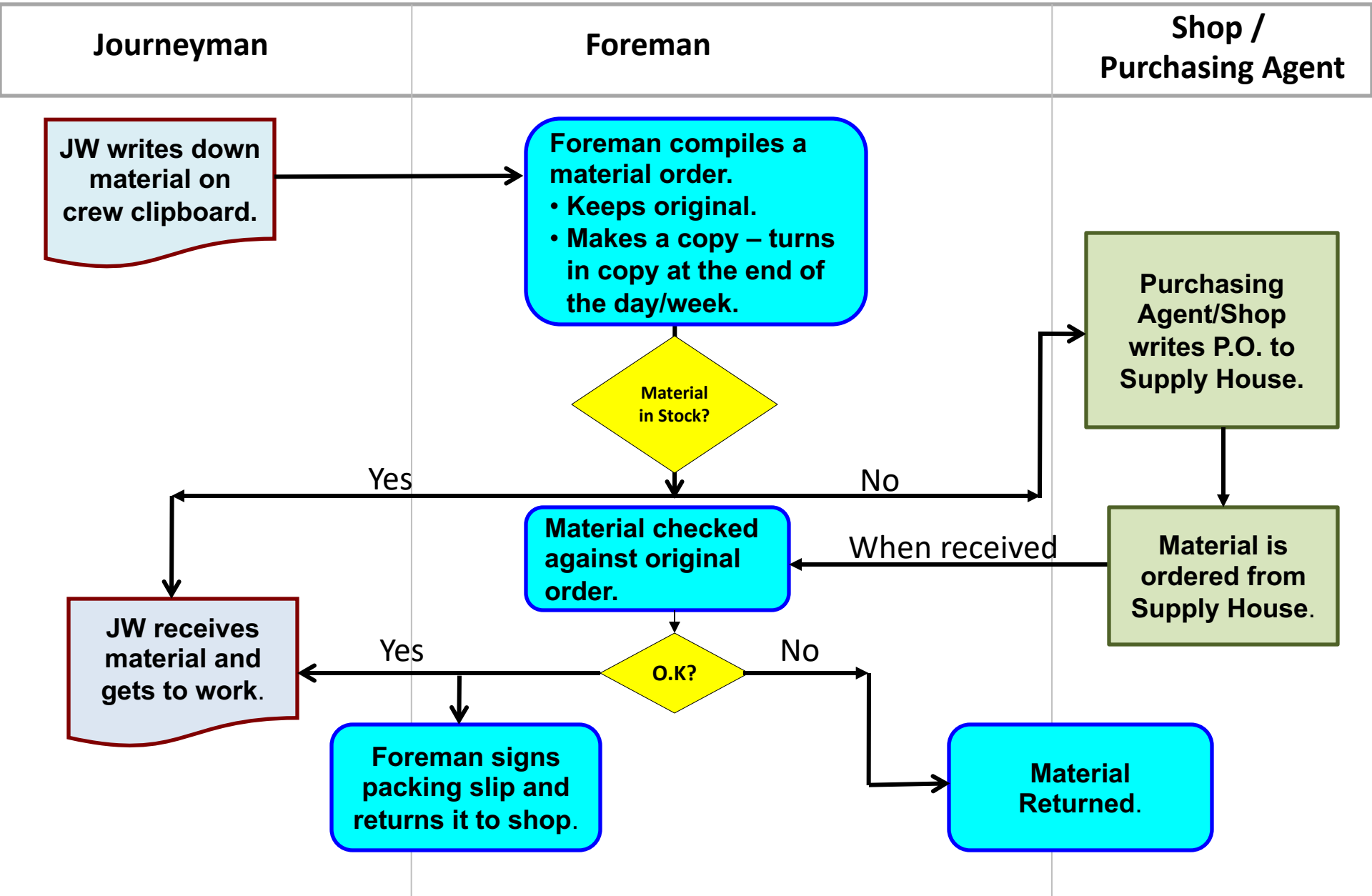
Receiving Material

- Use a Qualified Person.
- Compare your original Material Order Sheet to Packing Slip.
- Notify Foreman and Distribute Material.

Who is the most qualified person?
– the one who ordered the material!

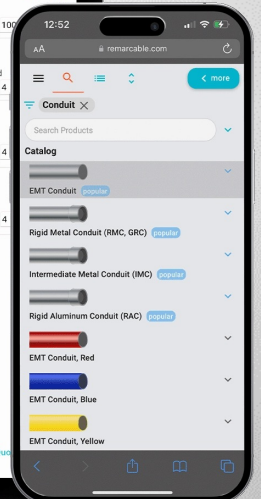
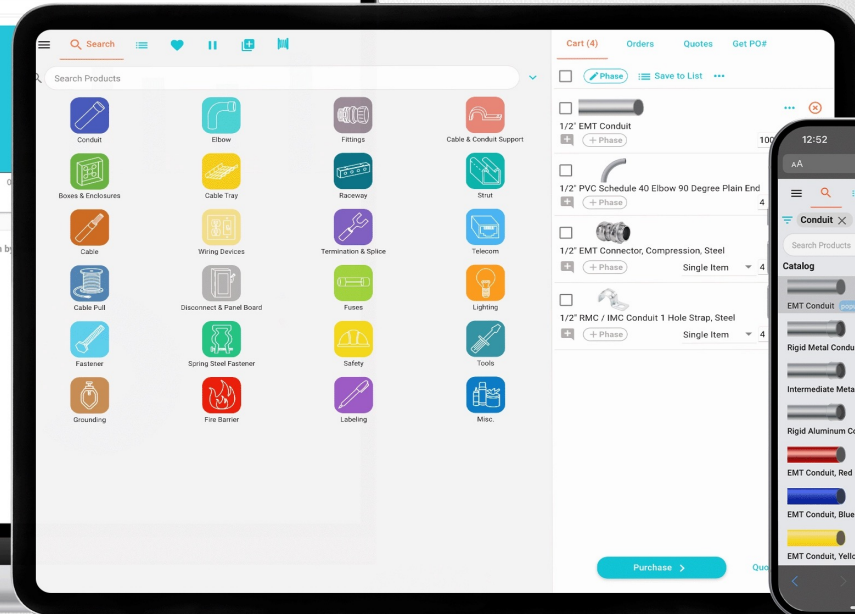
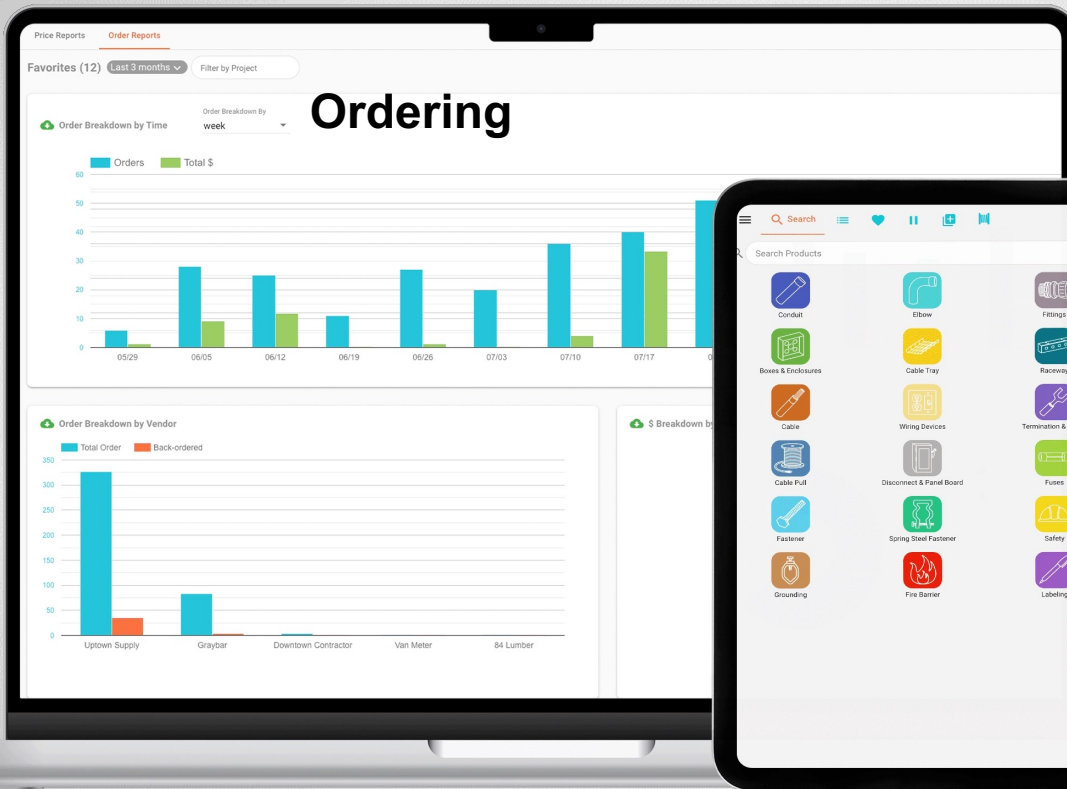


Material Ordering Process




Material Ordering Software?

Remarcable Software offers an all-in-one platform for contractors to manage their procurement, warehouse, and inventory needs.



Electrical Catalogs



INTEGRITY
SERVICE EXCELLENCE
TEAMWORK
LEADERSHIP
INNOVATION
CONTINUOUS IMPROVEMENT
ADVANCED LOGISTICS
STRATEGIC TECHNOLOGY
RESPONSIVENESS

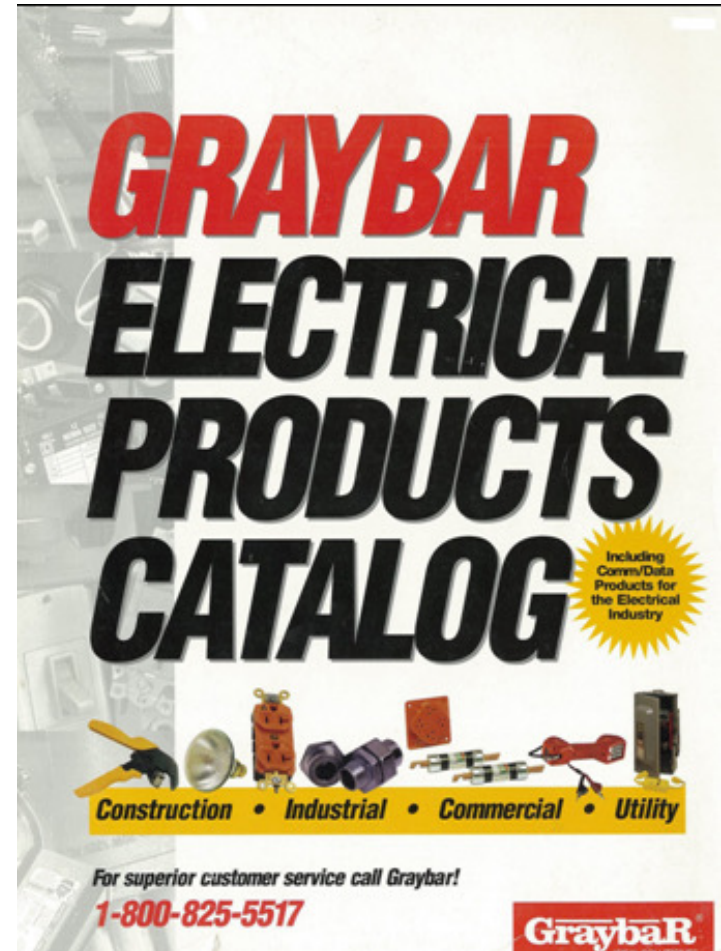
SUMMIT ELECTRIC SUPPLY

UL
800-607-0171
Registered to ISO 9002
Price Centers
Certificate
12968

COMPUTER TO
ELECTRONIC DATA INTERCHANGE
COMPLETE
ELECTRONIC ORDERING
OPERATIONS
ELECTRONIC PAYMENTS
ELECTRONIC MESSAGING

800-607-0171

Summit Electric Supply features a large yellow logo on the left side of the cover. The background is a collage of images including a warehouse interior with high ceilings and industrial equipment, a white delivery truck, and a computer monitor displaying data. The text is arranged in a vertical list on the left and a central graphic area on the right.



GRAYBAR
ELECTRICAL
PRODUCTS
CATALOG

Including Comm/Data Products for the Electrical Industry

Construction • Industrial • Commercial • Utility

For superior customer service call Graybar!
1-800-825-5517

Graybar
ELECTRICAL SUPPLY

The Graybar catalog cover features a background of various electrical components. The title is in large, bold, red and black letters. Below the title, there is a yellow starburst graphic containing the text 'Including Comm/Data Products for the Electrical Industry'. A row of electrical products, including a pair of pliers, a light fixture, a transformer, and a power supply, is shown above a yellow banner with the text 'Construction • Industrial • Commercial • Utility'. At the bottom, there is a red banner with the Graybar logo and the text 'For superior customer service call Graybar! 1-800-825-5517'.

MATERIAL ORDER FORM

JOB NAME/NUMBER:

#1294 - Socorro High School

Date: 6/21

YOUR NAME:

Tom Ross

QNT

DESCRIPTION, CATALOG #, SIZE, ETC

RUSH?

YOUR PO#

✓ 1000	1/2" Emt	✓ + 400 couplings		
✓ 3000	3/4" Emt	✓ 4000		
1250		couplings	die corn	
✓ 400		converters	insulated	✓ 400
✓ 100	Arkington # Emt-75	plastic	bus	7/02
✓ 300	1" Emt		couplings	✓ 300
✓ 20	Arkington # Emt-100			
✓ 30	1/2" Rigid 90s			
✓ 30	" " couplings			
✓ 300	" PVC			
✓ 30	" " Female Adapters			
✓ 28	1" Rigid 90s			
✓ 28	" " couplings			
✓ 200	" PVC			
✓ 28	" " Female Adapters	✓		7/02
✓ 1	2" Rigid 90			
✓ 1	coupling			
✓ 1	PVC Female Adapter			
✓ 4000	12/2 mc			
✓ 2500	12/3 "			
✓ 1000	12/4 "	✓		7/02
✓ 250	10/2 "			
✓ 2000	10/4 "			

Need ASHP

A Purchase Order

Boondock Electric
7211 N/W Highway
Texico, NM 57342
(400) 555-1212

PURCHASE ORDER #1338-31102-M008

JOB # 1338

Page 2 of 4

March 31, 2009

VENDOR:

SHIP TO:

ITEM	QTY	DESCRIPTION	PRICE	PER	AMOUNT
CABLE TRAY					
1.	147	MPHUSKY #WB24-8-120 4"D x 8"W x 120"L Wire Basket Tray with Splice Conn			
2.	60	MPHUSKY #WBCS-8 Center Support for 8"W Tray			
3.	150	MPHUSKY #WBSWLU-8 Smart Tab Wall Bracket for 8"W Tray			
4.	14	MPHUSKY #WBEP-4-8 End Plate for 8"W Tray			
5.	10	MPHUSKY #WBD-8 Drop Outs for 8"W Tray			
6.	35	MPHUSKY #WB24-12-120 4"D x 12"W x 120"L Wire Basket Tray w/ Splice Conn			

**Notice that the Field copy
has had the unit pricing
and total costs deleted.**

Supply House Invoice

CUSTOMER COPY



Delivery Receipt

www.summit.com

SHIP TO	SOLD TO	PURCHASE ORDER 1338 - 56	ACCOUNT NUMBER	SALES ORDER
		ORDERED BY	SCHEDULED DATE	SCHEDULED TIME
		DELIVERY NUMBER	08/19/2009	Before 9:00 AM
		FREIGHT TERMS Prepaid & Charge	SERVICE CENTER	
		SHIP VIA Summit Truck		

Printed: 08/19/2009 07:50:28 PM

PAGE TOTAL 1

1338-128

OPEN QUANTITY	SHIPPED QUANTITY	MANUFACTURER PART NUMBER, ITEM DESCRIPTION	UNIT PRICE	UOM	EXTENSION	TAX
		CONTACT IS TIM PEEL @ 507-1281				
0	30	CONDUIT NIPPLE 3/4 INCH X CLOSE RIGID ✓				
		CONDUIT NIPPLE 3/4 INCH X CLOSE RIGID GALVANIZED				
0	10	PWM-PK-3 ✓				
		BRADY PWM-PK3 WIRE MARKER BOOK 1 THRU 45, 10 MARKERS OF EACH LEGEND ✓				
9	0	PWM-PK-14				
		BRADY PWM-PK14 WIRE MARKER BOOK, 46- 90 LEGENDS, 10 OF EACH				
0	10	CDOWTG-25 ✓				
		STEEL CY CDOW-TG-25 SWITCH BOX, 3X2 IN. GANGABLE, 2-1/2 INCH DEEP, W/ FL LSH EARS & OLD WORK BRKTS ✓				

recieved

Trucker's Bill of Lading



016783540

DATE		PRO LABEL NUMBER	
INTERLINE PRO		TRAILER 7055	
CUSTOMER NUMBER NS	P.O. NUMBER	CUSTOMER NUMBER	B/L NUMBER
ORIG TERM 09	DEST TERM 08	ROUTE	
CONSIGNEE	SHIPPER	ACCESSORIAL SERVICES PERFORMED <input type="checkbox"/> Inside Delivery <input type="checkbox"/> Lift Gate <input type="checkbox"/> Sort & Segregate <input type="checkbox"/> Detention <input type="checkbox"/> Residential-Limited Access <input type="checkbox"/> Other	
No. OF PCS	DESCRIPTION OF COMMODITIES	WEIGHT IN LBS.	RATE
2	PC W5 LGHT FIX FUEL SURCHARGE *** LESS DISCOUNT ----- ***C/O ***** FREIGHT CHARGES PREPAID TYPE W.	639	
2		639	
CONSIGNEE COPY-DELIVERY RECEIPT		2568	
Due Interline	BILL TO	ALL EXCEPTIONS MUST BE NOTED ON THE CARRIER COPY	
Due Carrier		SIGNATURE	DATE: 5-5-09 IN TIME: 5:08 OUT TIME:
S/W INTACT UNLESS OTHERWISE NOTED	CUSTOMER #	DELIVERY DRIVER Robert M	

You are only signing for # of pieces and weight

Freight Damage





Bill Of Lading

NOT NEGOTIABLE

Shipper No. HT30573

Carrier No. _____

Date: _____

Name of Carrier **PLUMLEY**

TO: Consignee <u>MOOB</u>	FROM: Shipper
Street	Street
Destination	Origin
	Vehicle #

No. Shipping Units	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (subject to correction)	Class
	CALL KELLY IRWIN 24 HRS B4 DELIVERY 505-884-0155 NO FRIDAY DELIVERIES		
3	SKIDS STEEL CABLE TRAY (182)	2731	121X30X62 121X30X66 121X29X49
1	CRATE STEEL SUPPORTS,DPOUTS,ENDPLTS,HDWR	461	34X25X27
4			

You are signing for 4 pieces – 3 skids + one crate

<p>Note -- Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding</p> <p>\$ _____ per _____</p>	<p>This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation</p> <p>_____ Signature</p>	<p>Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the cosignor, the cosignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.</p> <p>_____ Signature of Cosignor</p>	<p>Freight Charges</p> <p>PREPAID</p>
---	---	---	---

RECEIVED, subject to the classification and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination as to each party at any time interested in all or any property that every service to be performed hereunder shall be subject to all Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he or she is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself as his assigns.

SHIPPER MPHUSKY, LLC.	CARRIER
PER	PER
	DATE

Cable Tray Packing Slip

PACKING LIST

PAGE 1

MPHUSKY PLANT

SOLD TO.
SUMMIT ELECTRIC SUPPLY CO

SHIP TO:

Customer P.O.#
Job Number HT30573 Shipment 0001
Ship Date
Carrier PLUMLEY/COMPLETE
Weight 2894.270
Entered By SSW863

SHIP ITEM CATALOGUE #	RELEASE	ITEM	QTY ORDERED	QTY SHIP	BACK ORDR
Note: EQUIPMENT TO BE INSTALLED IN ACCORDANCE WITH NEMA STANDARD VE-2					
1 WB24-8-120 WIRE BASKET 4"DP 8"WD 120"L MARK: 1338-31102-M008	HT30573	0010	147.000	147.000	0.000
2 WBCS-8 CENTER SUPPORT CHANNEL MARK: 1338-31102-M008	HT30573	0020	60.000	60.000	0.000
3 WBSWLU-8 SMART TAB WALL BRACKET	HT30573	0030	150.000	150.000	0.000
4 WBEP4-8 END PLATE, 4"DP, 8"WD MARK: 1338-31102-M008	HT30573	0040	14.000	14.000	0.000
5 WBD-8 DROP OUTS MARK: 1338-31102-M008	HT30573	0050	10.000	10.000	0.000
6 WB24-12-120 WIRE BSKET 4"DP 12"WD 120"L MARK: 1338-31102-M008	HT30573	0060	35.000	35.000	0.000

Plan Ahead

Poor planning on your part
does not constitute an
EMERGENCY
on my Part!

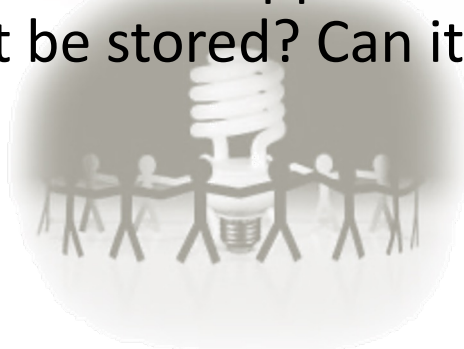


Group Activity - #2 - Handout #3

Be Creative!

Make some assumptions about the type of construction involved and materials to be used for the building you are working on. Base your answers on these assumptions.

- 1) Make a list of tools and material that will be required for each of these activities before your crew begins their work.
- 2) How is this material supposed to get to the work area? Where will it be stored? Can it be moved as the activity moves?



But what is the Difference??

CRASH COURSE STUDY SKILLS

PLANNING & ORGANIZATION

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
STUDY	READ	GYM READ	STUDY GYM	READ STUDY RELAX	GYM READ RELAX	STUDY READ CLEAN GYM

Tools

PVC Cutter



Battery KO Set



Stud Punch

Material Gang Boxes



Crew Clipboard



Material Gang Box



Electrician's Material Cart (organized)



Mobile Pipe Rack



Mobile Material Shelves



Mobile Material Cribs



Graybar "Smart Reel"



SIMpull (No Lube)



Southwire[®]

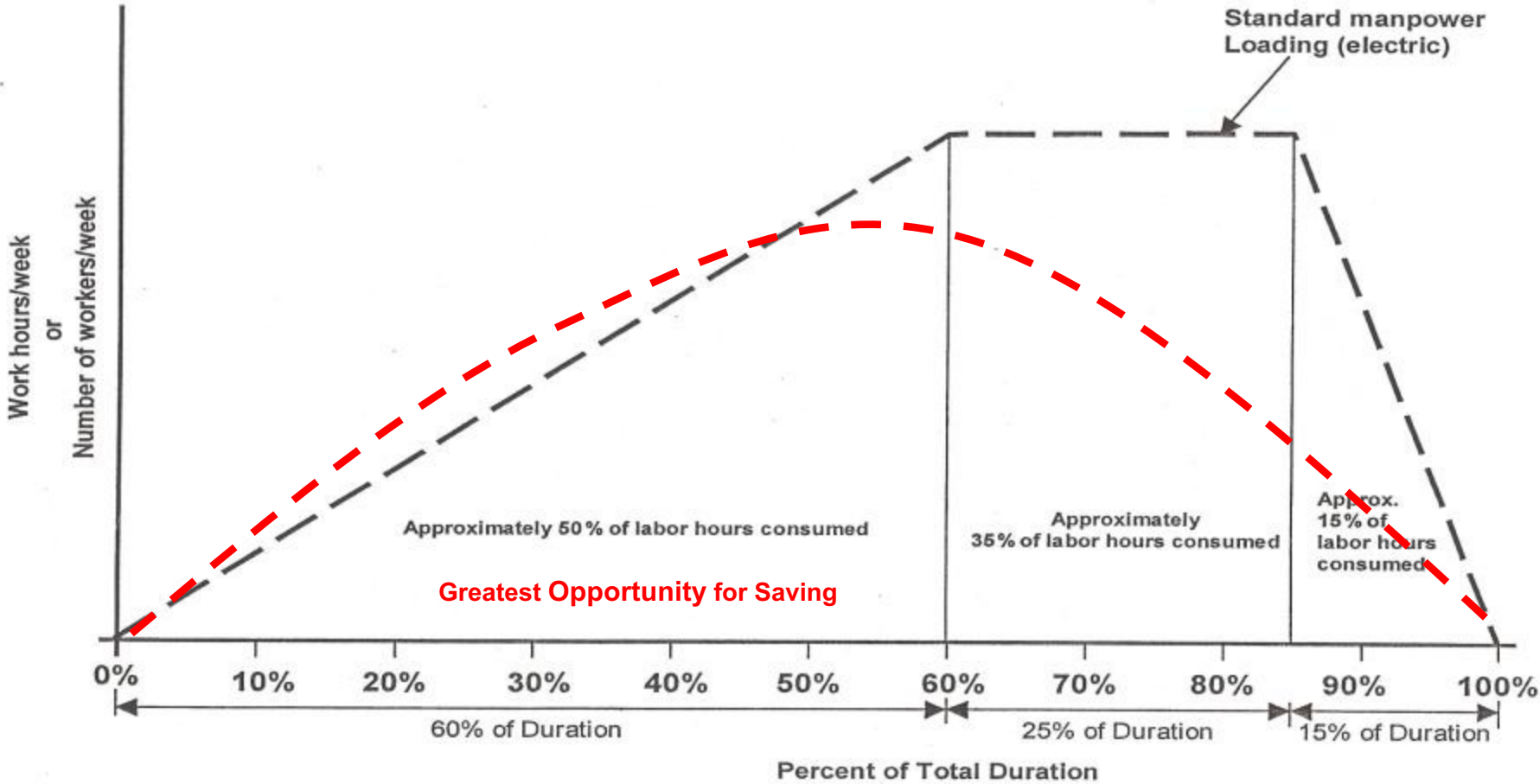
**SIMpull HEAD[®]
PULLING GRIPS**



**BUILT FOR DURABILITY.
BUILT FOR RELIABILITY.
BUILT FOR WORK[™]**



Pre-Fab



Group Activity - #4

**What kind of things could we
Pre-Fab on a job?**



PRE-FAB CHECKLIST

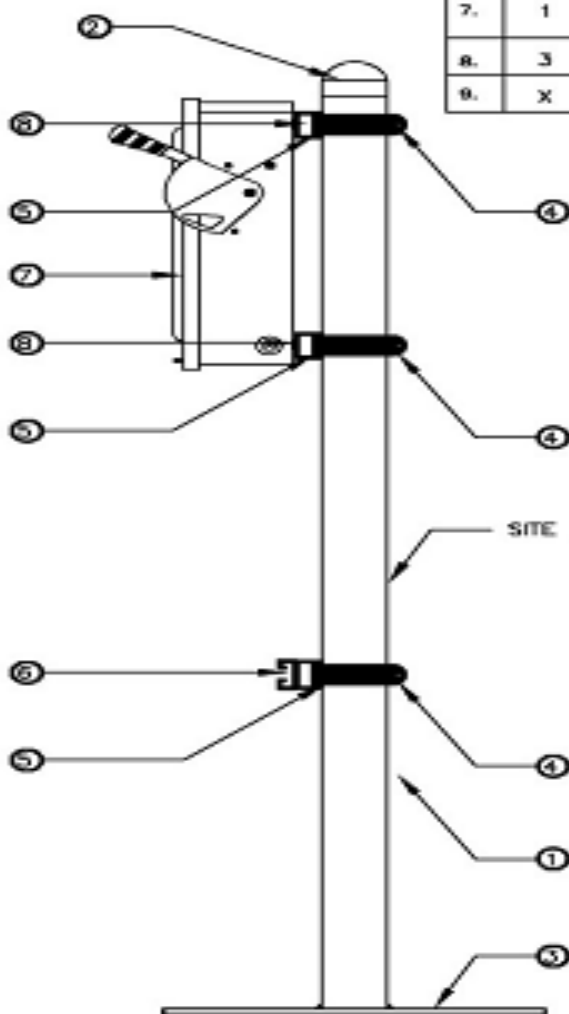
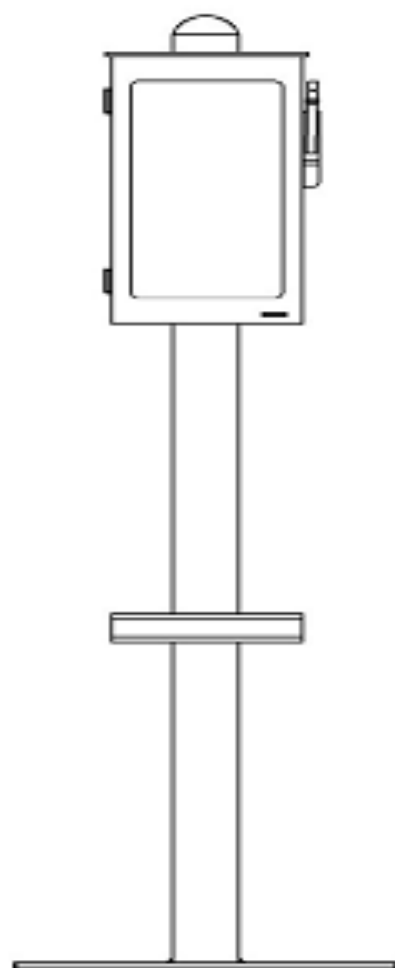
Handout #6

Job Name: _____
Job #: _____
Date: _____

Supt: _____
GF/FM: _____
PM: _____

- | | |
|---|--|
| <input type="checkbox"/> Review Pre-Fab Booklet | <input type="checkbox"/> FA Panels / Backboards / FSD |
| <input type="checkbox"/> Quick-Pull | <input type="checkbox"/> Duct Banks / Donuts Spacers / Snap-in Spacers |
| <input type="checkbox"/> Wire Mold | <input type="checkbox"/> Vaults (Term-A-Duct) |
| <input type="checkbox"/> Panels / XFMR / Ltg. Control | <input type="checkbox"/> Motor & XFMR Term Kits |
| <input type="checkbox"/> MC Whips / Flex Whips | <input type="checkbox"/> PVC Coated – MC / Kraloy / PVC |
| <input type="checkbox"/> Receptacles on Ring w/ Tails | <input type="checkbox"/> Temp Ltg. / Area Ltgs |
| <input type="checkbox"/> Fixture Backing | <input type="checkbox"/> Disconnects Stanchion (Roof, Panels) |
| <input type="checkbox"/> Pre-order Flex on Fixtures? | <input type="checkbox"/> O/Z Ged. Flexel |
| <input type="checkbox"/> Strut Racks | <input type="checkbox"/> Pre-Fab Offsets (Branch & Feeder) |
| <input type="checkbox"/> Lighting Fixture J-Boxes | <input type="checkbox"/> Label Trim (by Room) |
| <input type="checkbox"/> Panels Pre-Punched | <input type="checkbox"/> Ceiling J-Boxes |
| <input type="checkbox"/> Panel Skirts | <input type="checkbox"/> ⚡ in Walls |
| <input type="checkbox"/> Switchgear Frames | <input type="checkbox"/> Data Stub-Ups |
| <input type="checkbox"/> 12 x 12 Home Run Boxes | <input type="checkbox"/> ENT with Wire Installed |
| <input type="checkbox"/> Ltg. Pole Boxes | <input type="checkbox"/> Panel Stanchions |
| <input type="checkbox"/> Clydes Rigid 90° & FA (PVC) | <input type="checkbox"/> |

	QTY	SIZE	DESCRIPTION
1.	1	4"	EMT
2.	1	4"	FENCE POST
3.	1	12x12	STEEL PLATE 3/16"
4.	3	4"	4" PIPE CLAMP (2 PIECE)
5.	2	1 5/8"	1 5/8" SOLID UNISTRUT
6.	1		BACK TO BACK 3/8" UNISTRUT
7.	1		PANEL, DISCONNECT STARTER OR ENCLOSURE (NOT EXCEEDING 150 LBS.)
8.	3	#12	TEXS SCREWS
9.	X	X	CONDUIT ENTRY/EXIT



SITE DWG.100.001 ASSEMBLY.

ALWAYS VERIFY MATERIALS MEET JOB SPECIFICATIONS

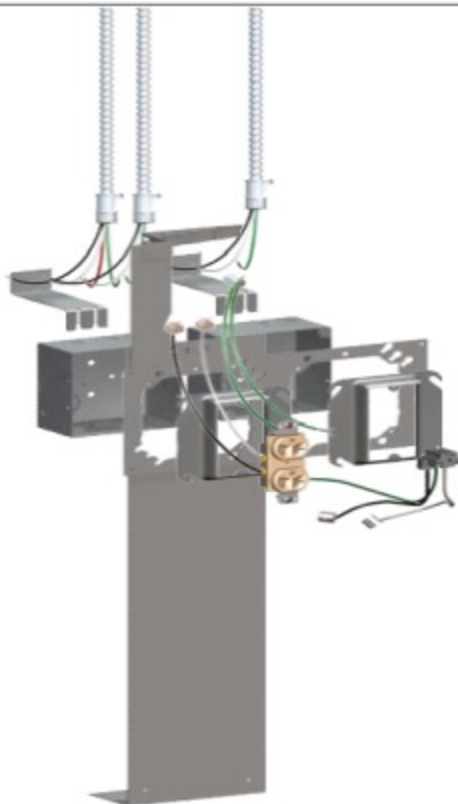
SPECIAL INSTRUCTIONS:

DIMENSIONS SHOWN FOR BRAND PANELS. CHECK UNDERSIDE OF PANEL ON MOUNTING HEIGHT IF OTHER THAN 34"



FAS Power Floor Assembly

CF218-R-RPT-058-350-MC203MC62-1-MC202-2



Floor or Wall mounted:	Floor	CF218	⊕
Number of openings:	2		
Box Height:	18"		
1st position wiring components:	Duplex Outlet	R	⊕
MC Cable: Solid	20' of 12/3 MC Cable	MC203	
MC Cable: Solid	6' of 12/2 MC Cable	MC62	⊕
2nd position wiring components:	Plugtail for Duplex Outlet	RPT	
MC Cable: Solid	20' of 12/2 MC Cable	MC202	
MC Cable: none	0' of 12/2 MC Cable		
Device style/ Amperage rating:	standard-20amp*		
Plaster Ring Raise:	5/8" raise	058	
Wall depth:	3 1/2" wall depth	350	
Voltage:	120 volt		
Bracket Material:	16 gage galvanized steel		
UL Listing or ETL Report:	UL Listed E132099		

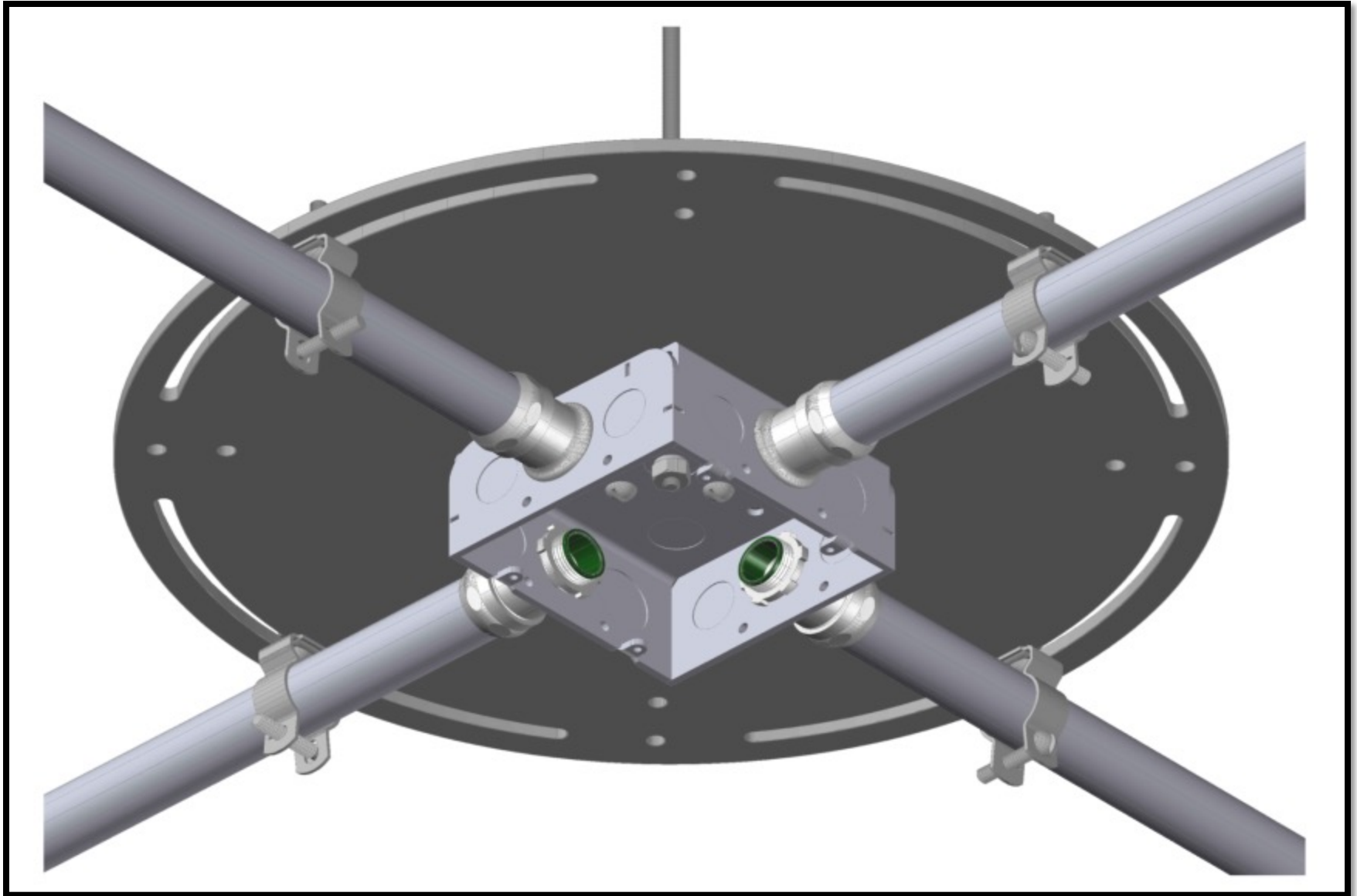
*All power outlets include protective cover.

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Trim Package



Suspended Box Support



Panels and Homeruns



Packaging by Floor



Pre-Packaged



Summary

Every Foreman struggles with Material Management!

— There are no perfect solutions

When you go back to work tomorrow:

Is there anything you want to do differently on your job when it comes to how you manage your materials?

Materials.

