

“Toto, We’re Not in Kansas Anymore”

Best Practices for Supporting and Obtaining Payment of Change Orders



June 28, 2022

Michael S. Flagg
Curtis A. Hayes
Lincoln Electric

Remember NEDD - Change Claims

1. Change in **Quantity & Character** of the Work
 1. N= Notice
 2. E = Entitlement
 3. D = Damages
 4. D = Don't Waive Your Claims
2. Change in Contract Time: **Delay & Acceleration** Claims
 1. Notice
 2. Entitlement
 3. Damages
 4. Don't Waive Your Claims



NEDD -- NOTICE

- N = Notice
- Notice: Time (5 days?)
 - How given? - certified mail return receipt
 - To whom?
 - What must be included?
 - Who can authorize a CO?
- Failure to provide proper notice could result in waiver of Change Order claims!

Notice

- Upon a preliminary review of {INSERT RFI/ASI/DWG}
- Received on {date} – only do this if you met the notice requirement
- Fabricator hereby notifies you of a change to the contract sum and contract time.
 - Fabricator’s rough order of magnitude for the change is \$____
 - Fabricator’s estimated number of days needed to be added to the schedule is ____
 - Fabricator reserves the right to update this Notice as more information becomes available to the Fabricator.



Give Timely Notice

April 9, 2018



Kyle:

Upon preliminary review of revised IFC design drawings for Permit Package 4 received on April 4, 2018 (see attached), [redacted] Steel would like to provide [redacted] with an Order of Magnitude for the forthcoming Pending Change Order X14.

NEDD -- ENTITLEMENT

- **E = Entitlement**
 - Legal Entitlement
 - Factual Entitlement
 - » Original Drawing
 - » Revised Drawing or RFI
- Tools to prove entitlement:
 - Plans and specifications
 - Code of Standard Practice
 - Building Code



Contract Terms = CoSP 3.1 Structural Design Documents and Specifications

Code of Standard Practice for Steel Buildings and Bridges

April 14, 2010

Supersedes the March 18, 2005 AISC Code of Standard Practice
for Steel Buildings and Bridges and all previous versions.

Prepared by the American Institute of Steel Construction
under the direction of the AISC Committee
on the Code of Standard Practice.



AMERICAN INSTITUTE OF STEEL CONSTRUCTION
One East Wacker Drive, Suite 700, Chicago, Illinois 60601

- “The **structural design documents shall clearly show or note** the work that is to be performed
- and shall give the following information with **sufficient dimensions**
- to accurately convey the **quantity and complexity** of the structural steel to be fabricated:
 - (A) the size, section, material grade and location
 - **(I) The information required in Sections 3.1.1 through 3.1.6**
- The structural steel specifications shall include any special requirements for the fabrication and erection of structural steel.

CoSP 3.1.2 – Changes to Scope

- CoSP 3.1.2 identifies the scopes of work
- When there are changes, the CoSP says you shall be entitled to a change order:
 - When the **actual quantity and/or details of any of the foregoing items differ from the bidding quantity and/or details, the contract price and schedule shall be adjusted equitably in accordance with Sections 9.4 and 9.5.**



Lump Sum and Unit Price Changes

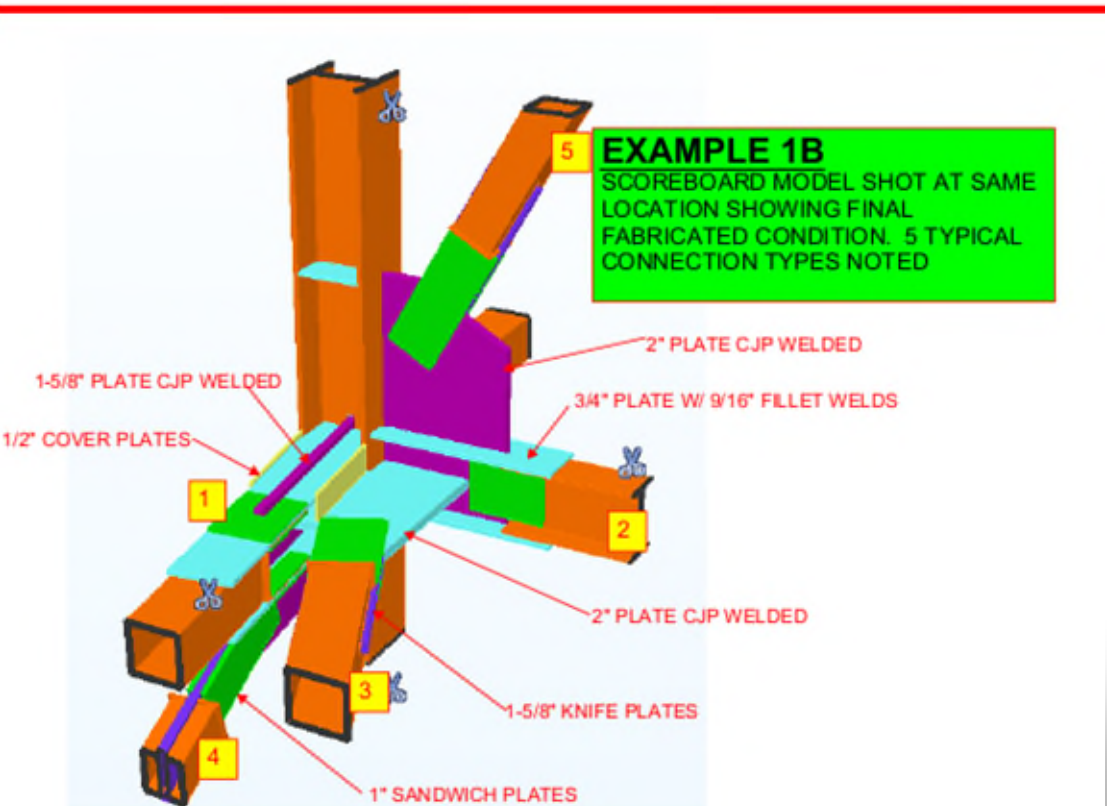
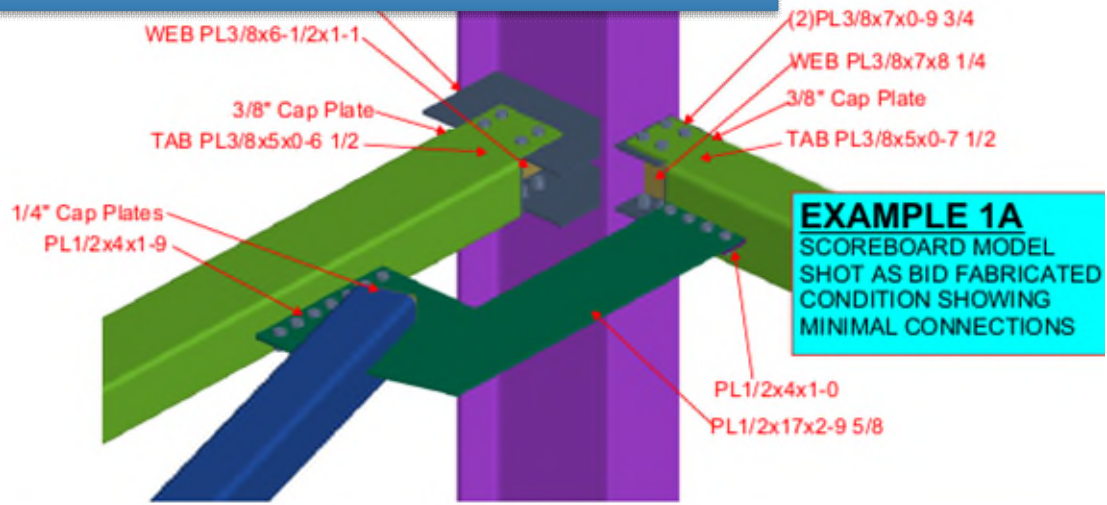
- CoSP 9.4.1 (Lump Sum): When the scope of work is changed, “an appropriate modification of the contract price shall be made.”
- “In computing the contract price adjustment, the fabricator and erector shall consider
 - The quantity of work that is added or deleted,
 - The **modifications in the character of the work**
 - **And the timeliness of the change** with respect to the status of material ordering, detailing, fabrication and erection operations.
 - » ALWAYS PAY ATTENTION TO SCHEDULE IMPLICATIONS
- CoSP 9.4.3 (Unit Prices): When changes are made
 - **to the character of the work at any time,**
 - or when additions or deletions are made to the quantity of the work **after it is released for detailing, fabrication, or erection,**
 - the contract price shall be equitably adjusted.”

How to Show Entitlement

- Use visuals – side-by-side comparison of drawings to show the change
- Computerize models
- Explanation regarding weld differences
- Technology to track weld times to support increase man-hours
- Bid documents vs. shop drawings
- Billing/descriptions from detailers
- Submittal logs
- Photographs

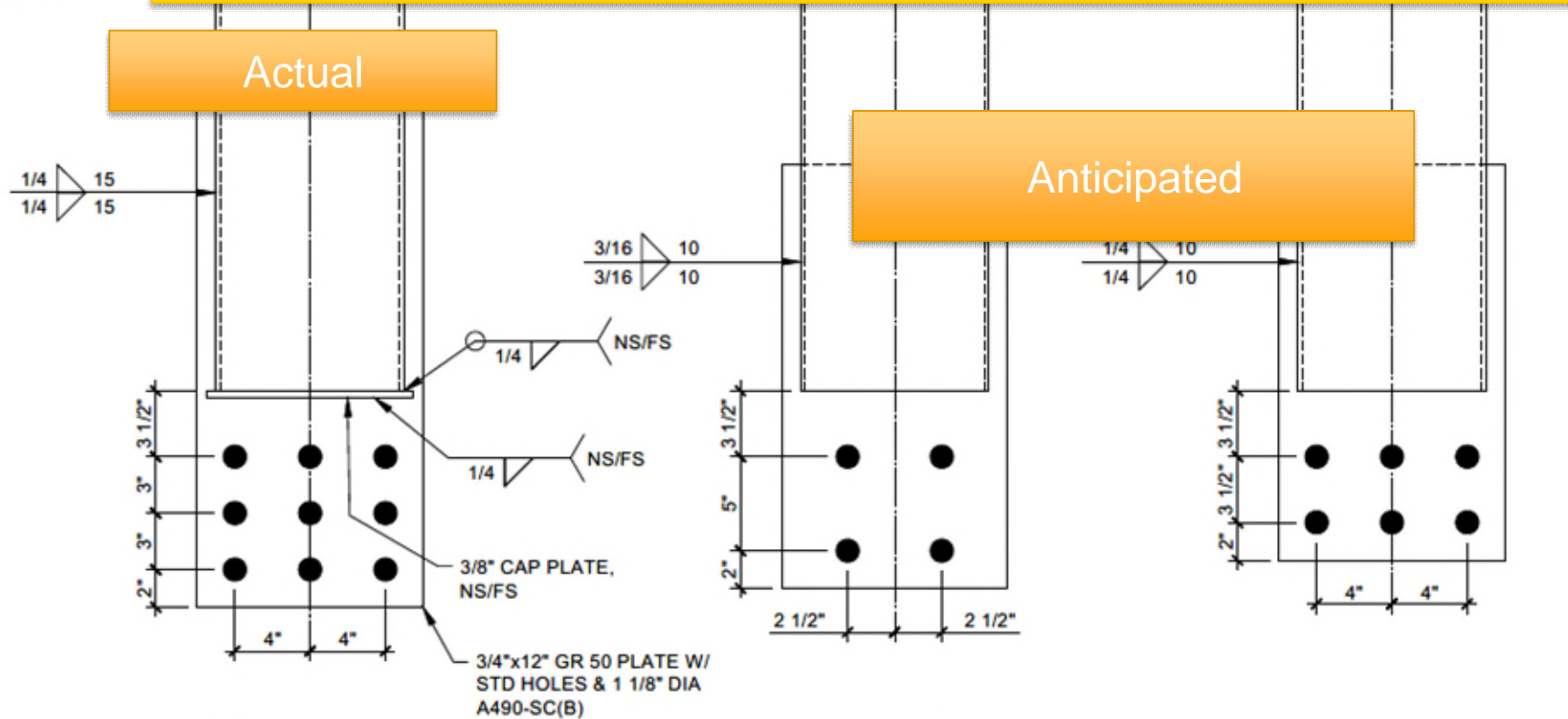


Changed drawings from what given at bid



Fitting & Welding Increased beyond What Was Necessary and Anticipated

HSS10x0.250
 A500 GR B,
 TYPICAL



1046 Connections

$\phi R_n = 270$ k HSS
 $\phi R_n = 295$ k Bolted Conx
 $\phi R_n = 334$ k Welds (24% Oversized)
 Cap Plate Weld = 52,212" 1/4" Fillet

1038 Connections

$R_u = 154$ k
 $\phi R_n = 201$ k HSS
 $\phi R_n = 181$ k Bolted Conx (44% Bolts)
 $\phi R_n = 167$ k Welds (38% Weld Volume)
 5,190 Fewer Bolts
 69,200" Less 3/16" Fillet

8 Connections

$R_u = 198$ k
 $\phi R_n = 201$ k HSS
 $\phi R_n = 271$ k Bolted Conx (67% Bolts)
 $\phi R_n = 223$ k Welds (67% Weld Volume)
 24 Fewer Bolts
 160" Less 1/4" Fillet

1/8" = 1'-0"



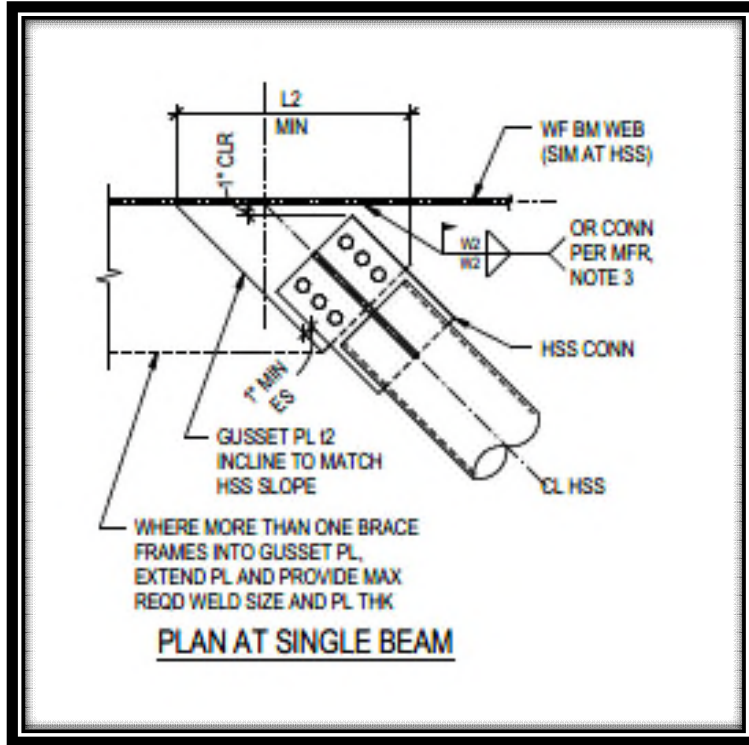
1 & 2/S5.401 (4/3/18 SET)

REDESIGNED USING ANALYSIS MODEL FORCES

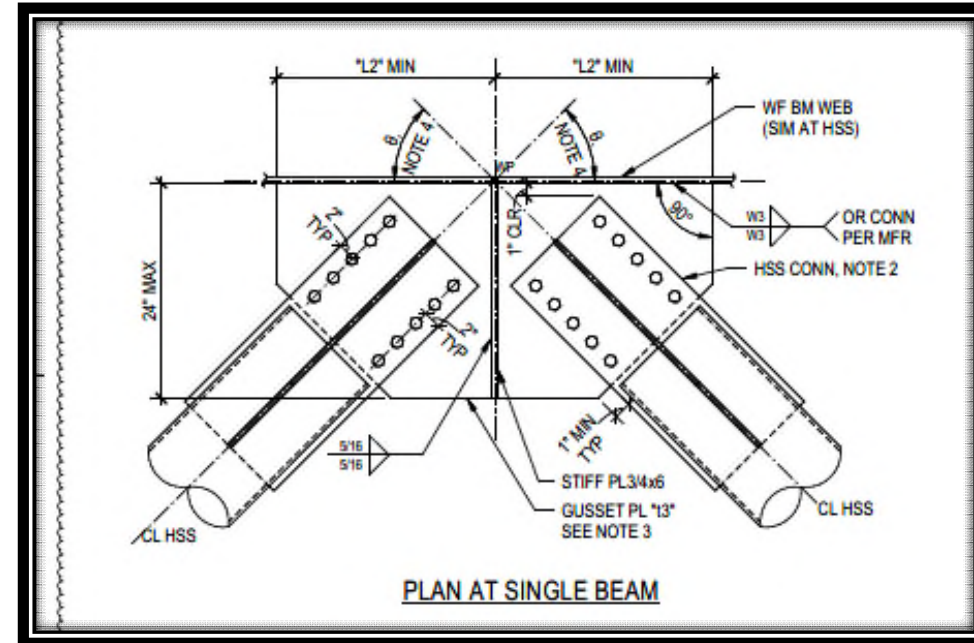
Model Files Used:
 20180303_NLVS_West
 20180304_NLVS_East
 20180305_NLVS_North

Bowl Steel Connections

RFP



Revised



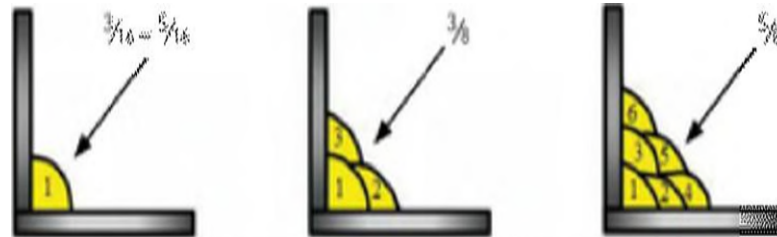
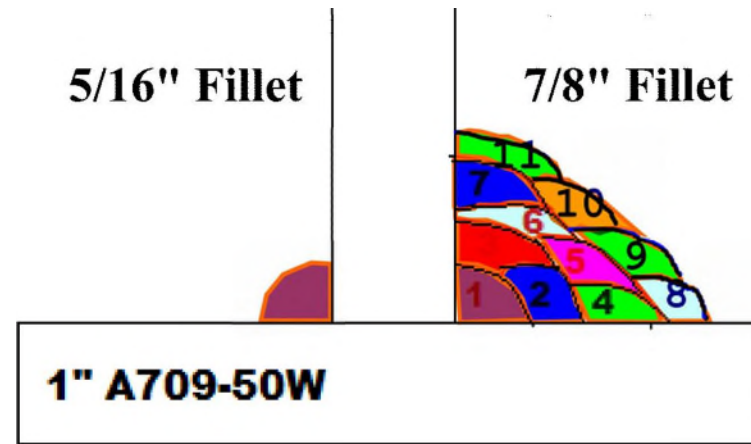
IMPACT NOTICE No. **5 - pg 1 of 11**
 CHANGES TO THE ORIGINAL PURCHASE ORDER

LETTER OF TRANSMITTAL

Use Your Detailers Wisely!!

This cost and schedule impact is due to the following changes to the original Purchase Order:

Ref :	Hrs:
- 2018-07-01 STRUCTURE- MKA- PHASE ONE PERMIT SET	
- 2018-07-16 - Progress Set	
- 2018-08-20 - ASI #1	
- 2018-09-04 - ASI #2	
- 2018-09-17 - ASI #4	
- 2018-10-02 - ASI #6	
- RFI-0001, RFI-0144	
- Penetrations Thru Box Beam_Diagrid 2018-10-12.pdf	
Phase One Permit Set vs 2018-07-16 Progress Set.	
Drawing S251: (see S251-Overlay - Markup Summary)	
- Beam revised from W27x84 to W27x178	0.50
- Beam revised from W18x60 to W27x84	0.50
- Bowl Brace revised from HSS8.625x0.375 to HSS12.75x0.250	0.50
- Framing geometry adjusted: BU-Rakers lengthed, beams relocated to suit	3.00
Drawing S252: (see S252-Overlay - Markup Summary)	
- '11' Beams revised from W18x50 to W18x46	1.50
- '13' Bowl Braces revised from HSS8.625x0.375 to HSS12.75x0.250	1.50
- '2' Bowl Braces revised from HSS8.625x0.375 to HSS12.75x0.500	0.50
- '5' Beams revised from W27x178 to W27x146	1.00



5. Use single-pass fillet welds. If possible, try to use single-pass filled welds. Figure 4 indicates that a 3/8-in. weld requires three passes, which is approximately three times the cost for a strength increase of 20%. Figure 5 indicates that doubling the fillet weld strength will increase the cost to approximately six times that of a single-pass weld. The increase in welding cost for multiple-pass welds is generally much more than increased material cost required to accommodate single-pass welds. - Modern Steel Construction, April 2019

CoSP 7.2 Job site conditions

- The owner's designated representative for construction shall provide and maintain the following for the fabricator and erector:
 - (A) Adequate access roads into and through the job site. . .
 - (B) **A firm, properly graded, drained, convenient and adequate space** at the job site . . .
 - (C) Adequate storage space, when the structure does not occupy the full available job site, to enable the fabricator and erector to operate at maximum practical speed.
- Otherwise, the owner's designated representative for construction **shall inform the fabricator and erector of the actual job site conditions . . . Prior to bidding.**"



NEDD – Don't Waive Your Claims

- **D = Don't Waive Your Claims**
 - Accept payment =waiver?
 - Fail to modify lien waivers = waived claims?
 - Missed deadlines for lien and bond claims
 - Failed to timely start dispute resolution procedures

RETAIN Rights to:

1. Unpaid contract amount
2. Retainage
3. Unpaid change orders

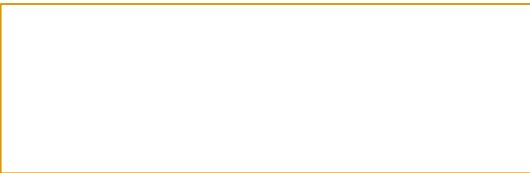


NEDD – DAMAGES

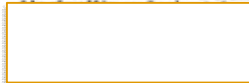
- **D = Damages**
 - Unit Price adjustment –provide for adjustment?
 - T&M
 - Lump Sum
- Best Practices to track damages:
 - Keep itemized records/document expenses:
 - » **Labor costs**
 - » **Material costs** (including transportation)
 - » **Rental costs** (exclusive of hand tools)
 - » Bond and insurance premiums
 - » Sales or use taxes
 - Additional supervision and field costs directly attributable to the change
 - Time cards
 - Utilize available technology to show increase in labor hours



Document Expenses



Please remit to:
WARE INDUSTRIES

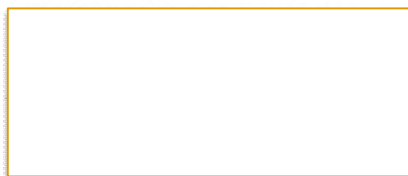


TRANSACTION			
ORDER #	TYPE	NUMBER	PAGE
415957	Shp	1060277	Page 1 of 1
REFER TO THIS NUMBER ▲ ON INQUIRIES			
DATE	DUE DATE	TERMS	
10/13/2010	11/30/2010	2% 10th net/30th	

888-757-9000 | 800-527-4651
 908-757-9251

Invoices

SHIP TO:



Labor
 Materials
 Equipment

CAIRO GA 39828

RECEIVED

ACCOUNT NO.	P.O. NUMBER	SALES PERSON		SHIPPED VIA		B/L NUMBER				
176550	WIT BARRACKS	Steve McDaniel		p/u						
LN	ITEM CODE	QTY SHIPPED	UNIT	SIZE	LINEAR FEET	DESCRIPTION/COMMENTS	PRICE	MLF	PER	AMOUNT
1	600ST16	24	PC	3.75	90	6 TRACK 16GA (600T125-54) 3ft 9in.	3.74	997.00	E	\$89.73
2	600SS16	32	PC	12.15	390	6 SW STUD 16GA (600S162-54) 12ft 2.25in. UnPunched	14.06	1,154.00	E	\$450.06

CAIRO, GA 39828

FIRST FEDERAL BANK FOR GEORGIA COUNTY
 64-19880612

11/10/2010

PAY TO THE ORDER OF



\$2,224.77

Two Thousand Two Hundred Twenty-Four and 77/100

DOLLARS



MEMO

Checks

VOID AFTER 90 DAYS
 TWO SIGNATURE REQUIRED OVER \$3000.00

[Signature]
 AUTHORIZED SIGNATURE

106670

Payroll & Daily Reports

Name and Address	Soc Sec No. Class Mar Exemp.	Hours Worked This Job							Tot	Pay Rate	Gross Pay This Job All Jobs	--- Deductions ---		Check # Net Pay	
		06/27 Mon	06/28 Tue	06/29 Wed	06/30 Thu	07/01 Fri	07/02 Sat	07/03 Sun				Fed. Fica State	Local Other Total		
[REDACTED]	R:	8.00	8.00	8.00	8.00	8.00	0.00	0.00	40.00	32.142	1285.67	216.99	26.22		
										+0.348FR.		94.09	55.79		
	1 O:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1285.67	46.16	439.25	846.42	
											+0.000FR. 40hrs				
	R:	8.00	8.00	8.00	0.00	0.00	0.00	0.00	24.00	19.974	479.38	74.11	12.52		
										+0.396FR.		42.66	57.86		
0 O:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	615.38	23.96	211.11	404.27		
										+0.000FR. 40hrs					
R:	8.00	8.00	8.00	8.00	8.00	0.00	0.00	40.00	27.551	1102.02	111.46	10.52			
									+1.300FR.		80.48	49.98			
1 O:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1102.02	54.96	307.40	794.62		
										+0.000FR. 40hrs					

ID extra time v. scope time

ID amount paid

Job History Detail Reports

Job History Detail Report
 171800 - Catwalk Module & Railings
 To 12/31/17

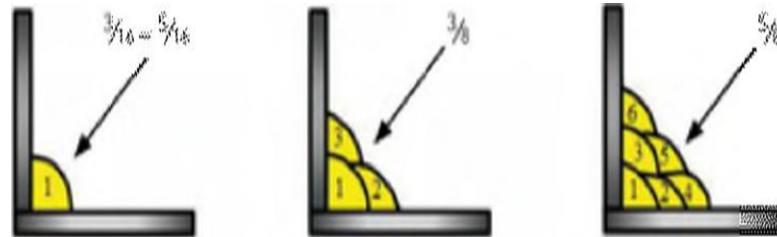
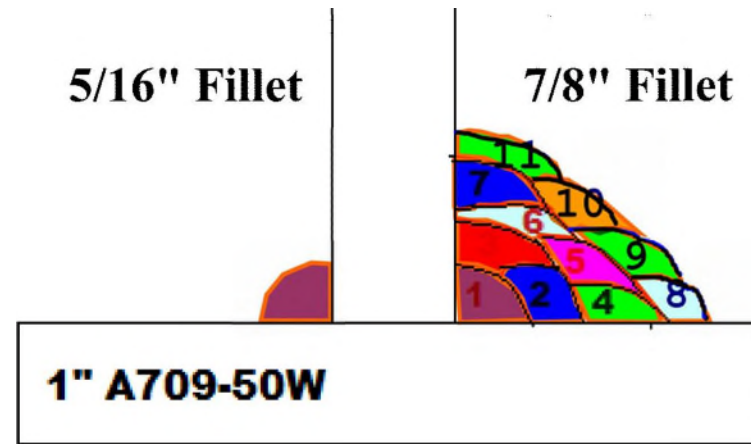
Cost Code	Description	Source	Date	Class	Category	Dollars	Hours/Units	Comment	
1	Phase 1								
620	Shop Mechanic	P/R	04/15/17	LAB	SH20	76.66	2.000	25185 Lechman, Michael	
		P/R	04/15/17	LAB	SH20	201.76	8.000	25185 Lechman, Michael	
		P/R	05/27/17	LAB	SH20	50.44	2.000	26902 Wall, John E	
		P/R	04/15/17	OHD		499.36	10.000		
		P/R	05/27/17	OHD		90.80	2.000		
		P/R	04/15/17	WCO		17.10	10.000		
		P/R	05/27/17	WCO		3.45	2.000		
		P/R	04/15/17	PTX		49.17	10.000		
		P/R	05/27/17	PTX		8.95	2.000		
		P/R	04/15/17	FRG		154.10	10.000		
		P/R	05/27/17	FRG		30.82	2.000		
		Cost Code 620 Total:		LAB		327.86	12.000		
				OHD		590.16	12.000		
				WCO		20.55	12.000		
				PTX		58.12	12.000		
				FRG		184.92	12.000		
						Totals:	1,181.61		

Proof of Damages

- Track Actual Costs
 - Set up phase codes
- If tracking is impossible, put GC on notice immediately – prior to work to discuss how to evaluate change cost:
 - Offer ROM
 - You may have to:

Analysis of As-Fabricated Shop Drawings - Estimate/Subcontract Sum = Damages

- » Not Total Cost Claim (Actual Cost – Estimate)
- » Modified Total Cost Method Supports this Analysis
- » Impossible to track actual change in weld requirements
- » Bid Reasonable (expert testimony)
- » Actual Cost Reasonable (fact & expert testimony)
- » Lack of Responsibility for added cost (fact & expert testimony)



5. Use single-pass fillet welds. If possible, try to use single-pass filled welds. Figure 4 indicates that a 3/8-in. weld requires three passes, which is approximately three times the cost for a strength increase of 20%. Figure 5 indicates that doubling the fillet weld strength will increase the cost to approximately six times that of a single-pass weld. The increase in welding cost for multiple-pass welds is generally much more than increased material cost required to accommodate single-pass welds. - Modern Steel Construction, April 2019

CheckPoint®

Tracking Weld Data Accurately



Michael Flagg
Global Segment Director – Structural
Curtis Hayes
Technical Sales and Applications -
Lincoln Electric Cutting Systems

Typical Structural Welding Data Applications

Common Challenges

- » Capture Data
 - Manual or Automated
 - What data is pertinent
- » Utilizing Data as Specifically Needed
 - Production / Engineering
 - Supervision
 - Accounting
- » Store Weld Data

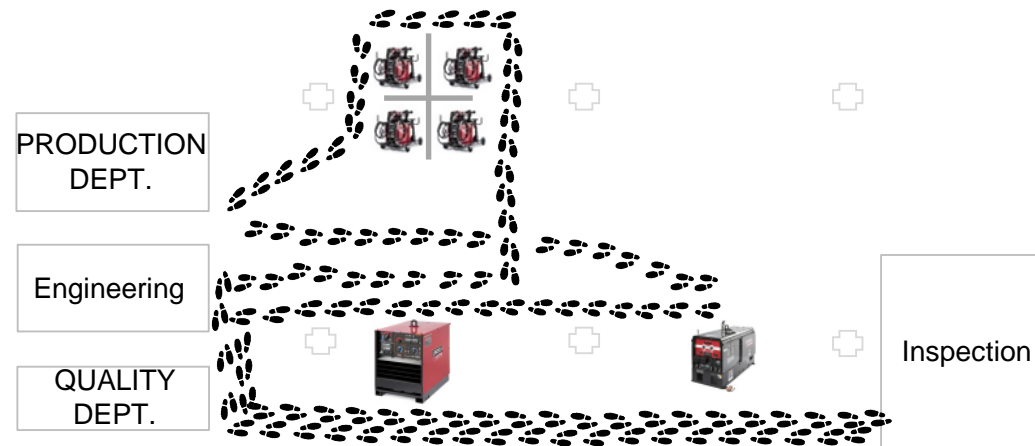
Typical Structural Welding Data Applications

Common Challenges

- » Estimating
 - How long will this weld take?
- » Change Orders
 - What do we charge for more complex welding?
- » Litigation
 - How do we prove our added cost?

Traditional Data Collection

- » An employee walks around the floor with pencil and paper and collects welding data
- » Time consuming
- » Only a sample
- » Questionable accuracy
- » Does not capture TRUE picture of operations

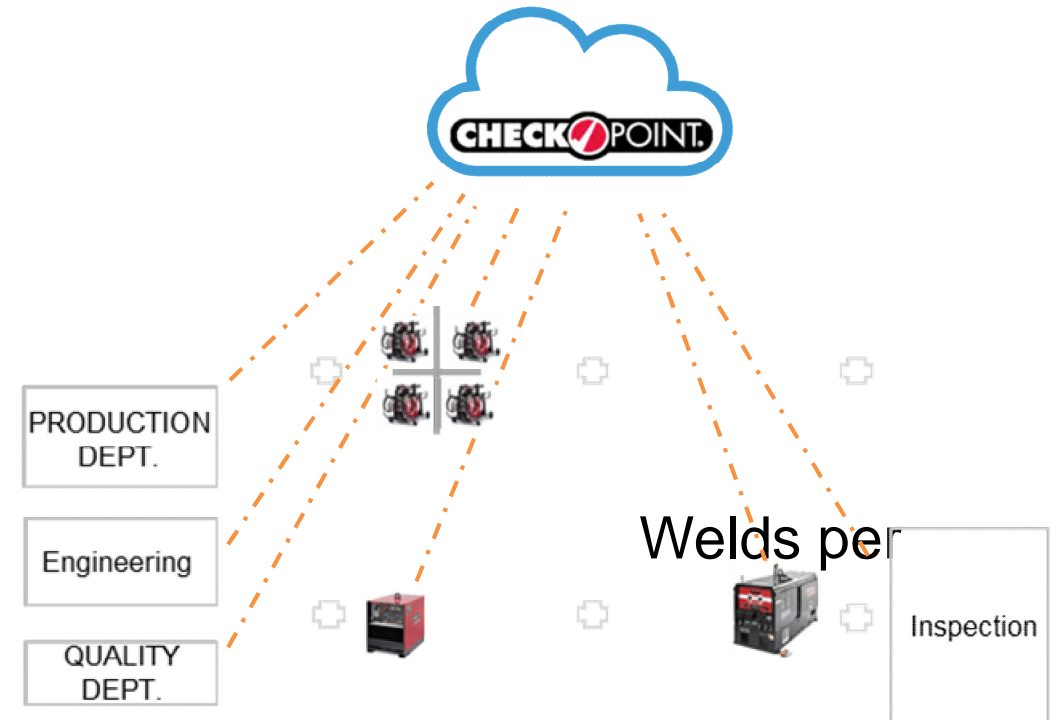


What is CheckPoint®?

- » CheckPoint® is a Cloud based Lincoln Electric production monitoring tool
- » Internet Based
 - Access anywhere you have Internet
- » View production welding data
 - Productivity data
 - Welding procedure data
 - Quality data
 - Welding cell Up time / Down time information
 - Complete Traceability of All welds made

CheckPoint Data Collection

- » Collects welding data electronically
 - WFS, Volts, Amps, True Energy, Weld Start Time, Weld Time
- » Data collected for every weld
 - Not just a sample
- » Quality Information
 - WPS verification
- » Productivity Information
 - Welds per day, Welds per shift, assembly
 - Time of first weld, Time of last weld

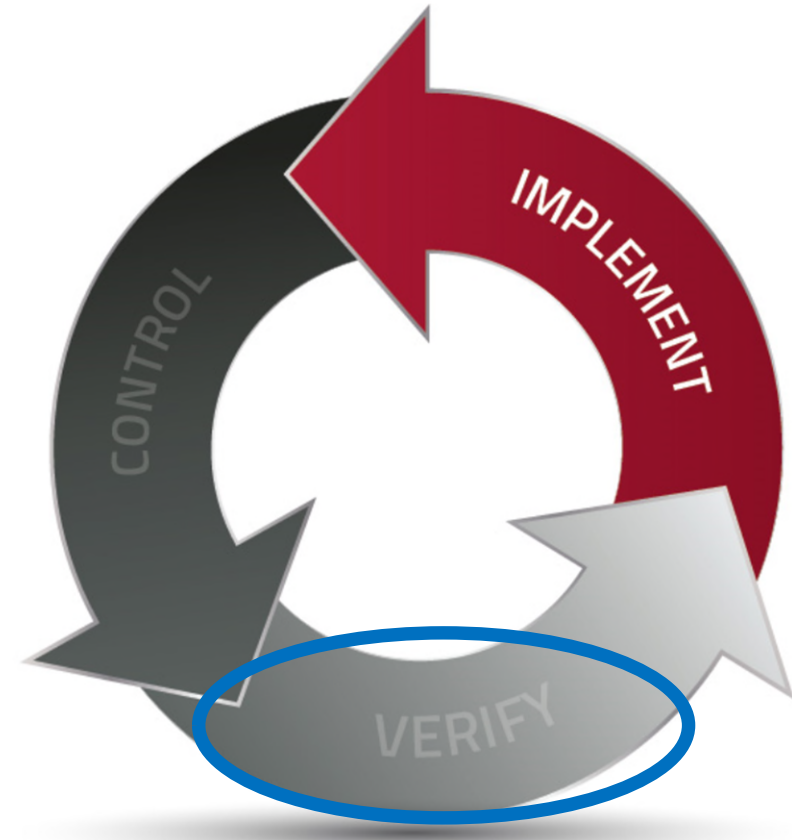


CheckPoint Data Collection Allows You to:

- » Gather real welding data
- » Estimate more accurately
- » Control welding variables
- » Provide accurate records to your clients
- » Defend your increased costs

Power Wave Improvement Program

- Addressing industry challenges through “A Philosophy of Process Control”
- *Transition from:*
 - Welding as a **SKILL** to
Welding as a **PROCESS**
 - What we **THINK WE DID** to
what we **ACTUALLY DID**



How do you easily access that data?

Input



Network

Output



CheckPoint – Advanced Power Sources



Arc Tracker[®] Data Monitor – Any Power Source

- » The Arc Tracker is an Advanced Process Module
- » Connect to any DC welding power source
- » Monitor Welding Parameters
 - Voltage
 - Amperage
 - Arc time
 - True Energy[®]
- » CheckPoint Ready
 - Sends data to CheckPoint if connected to a network



CheckPoint™ Data Collection – No Charge!!!



WELCOME TO THE NEWLY LAUNCHED CHECKPOINT!

As part of this exciting update, you can expect a new, fresh, and clean look, with many other enhancements. As part of this update, check your email for instructions on setting up your account; use of the email validation link is required to access this new CheckPoint system.

LOG IN

Email Address

jim_shields@lincolnelectric.com

Password

.....

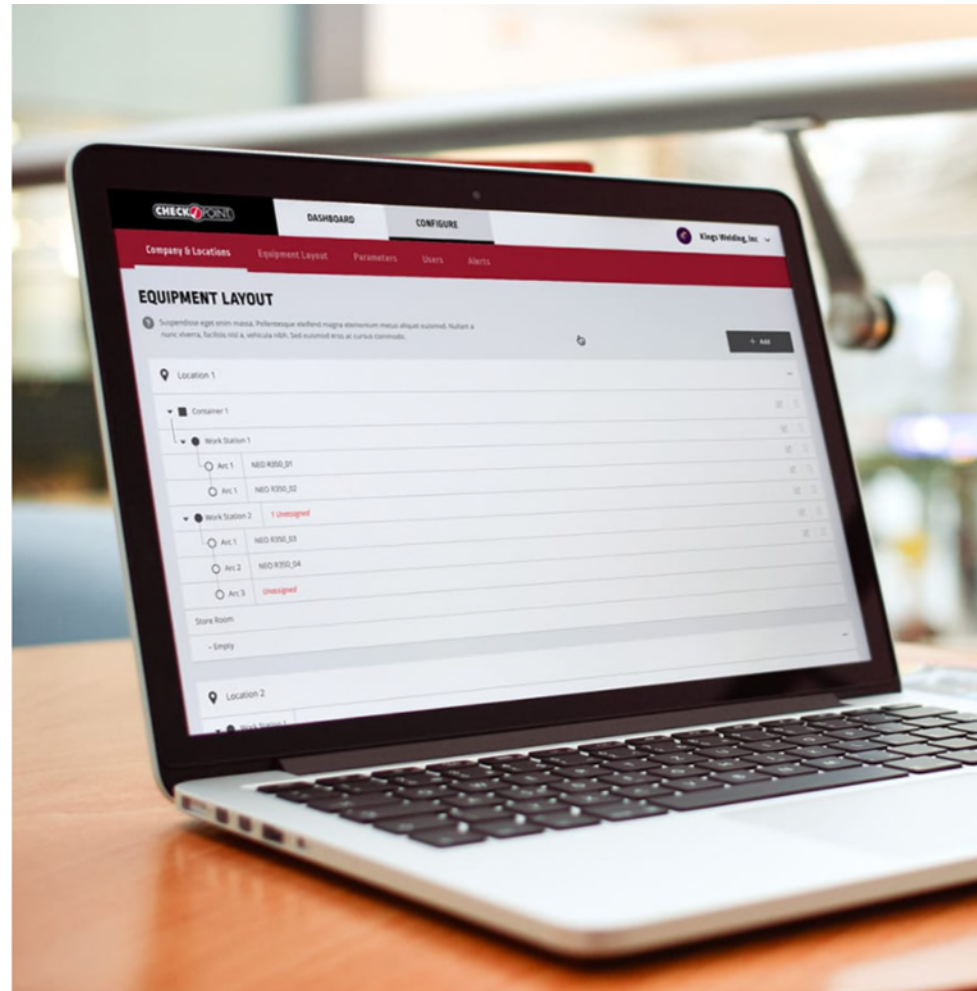
[Forgot Password?](#)

[Sign in](#)

[Don't have an account? Sign up now](#)

[Instruction Manual](#)

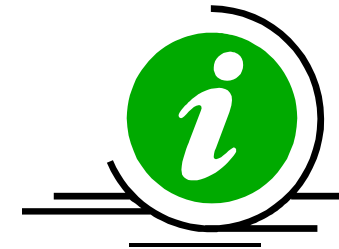
softwaresupport@lincolnelectric.com | 1-888-935-3877



Big Picture – Welding Data Management

- » To intelligently manage a welding shop, you must have information
 - Information is power!
- » Consistency - WFS, Volts, Amps
- » Quality – WPS verification
- » Productivity – Welds per day, Welds per shift
- » Traceability – Number, Amount, Time, Where, Who

- » CheckPoint is Lincoln Electric's software tool which allows customers to collect and manage their welding information



Information That Is Relevant to Your Role

» Production Management

- Meeting production schedule
- Improving production efficiency

» Welding Management

- Controlling welding performance
- Controlling welding costs

» Quality Management

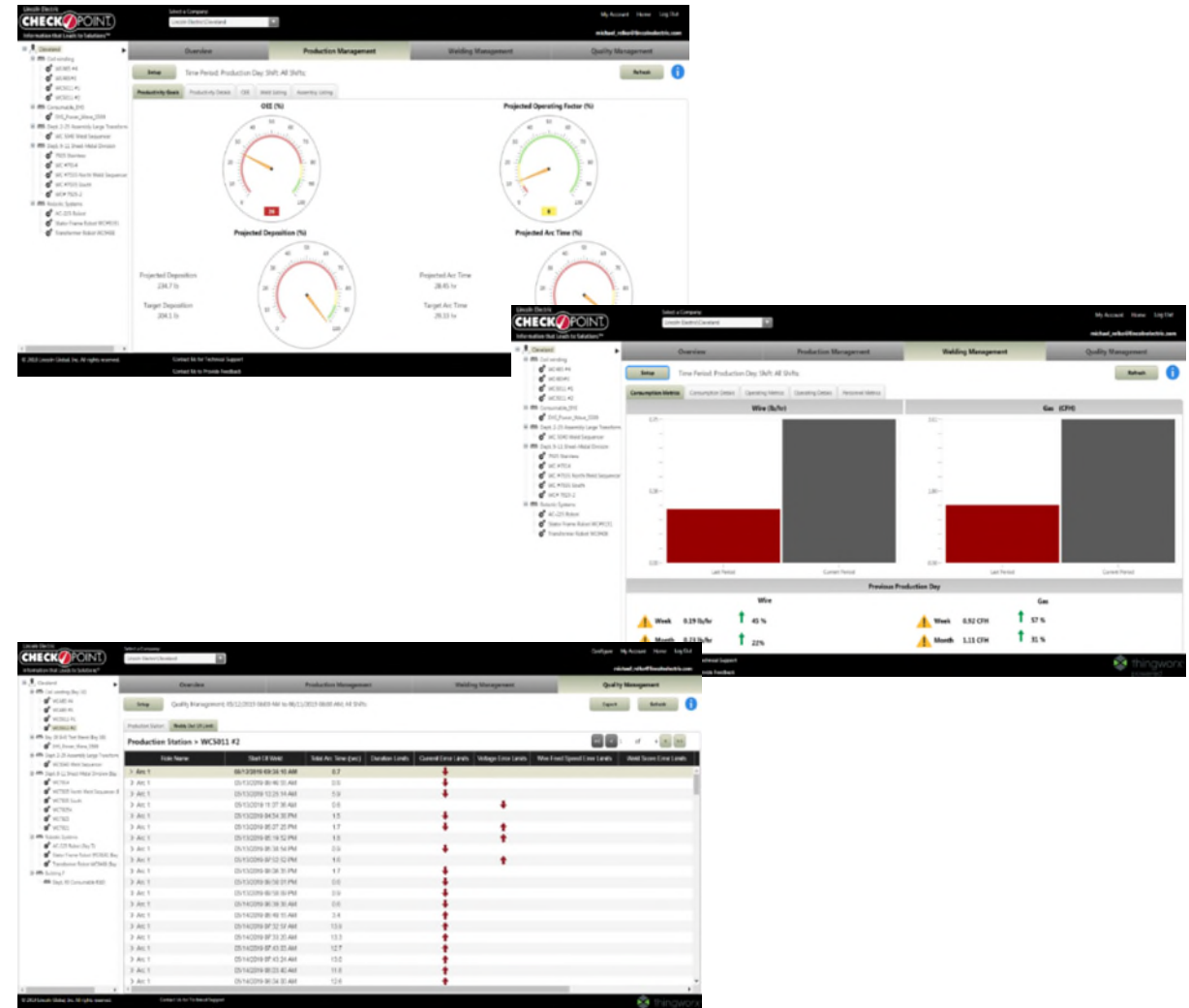
- Identifying quality issues
- Reducing defects
- Are welding parameters too low or high



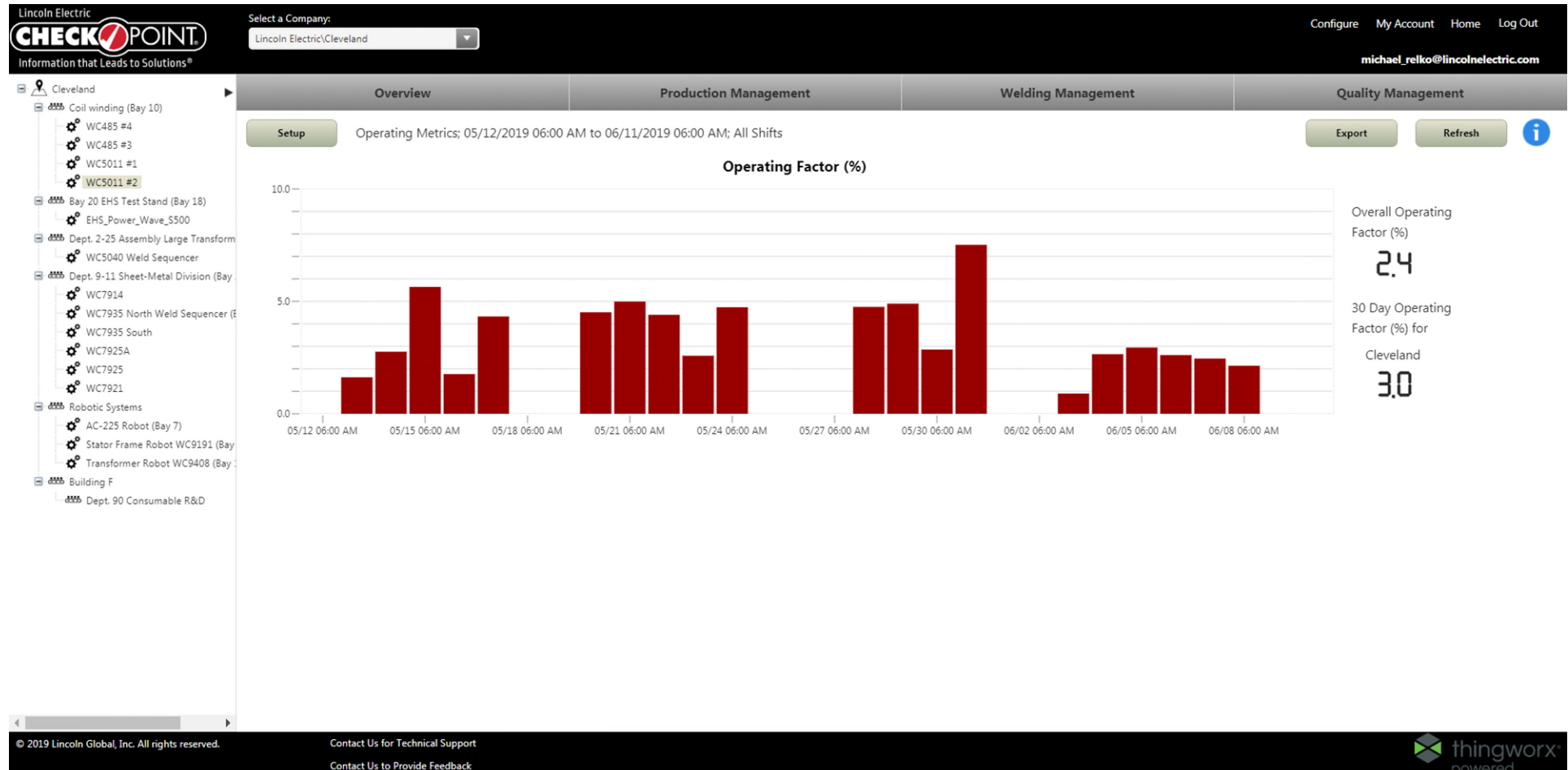
Information That Is Relevant to Your Role

» Accounting

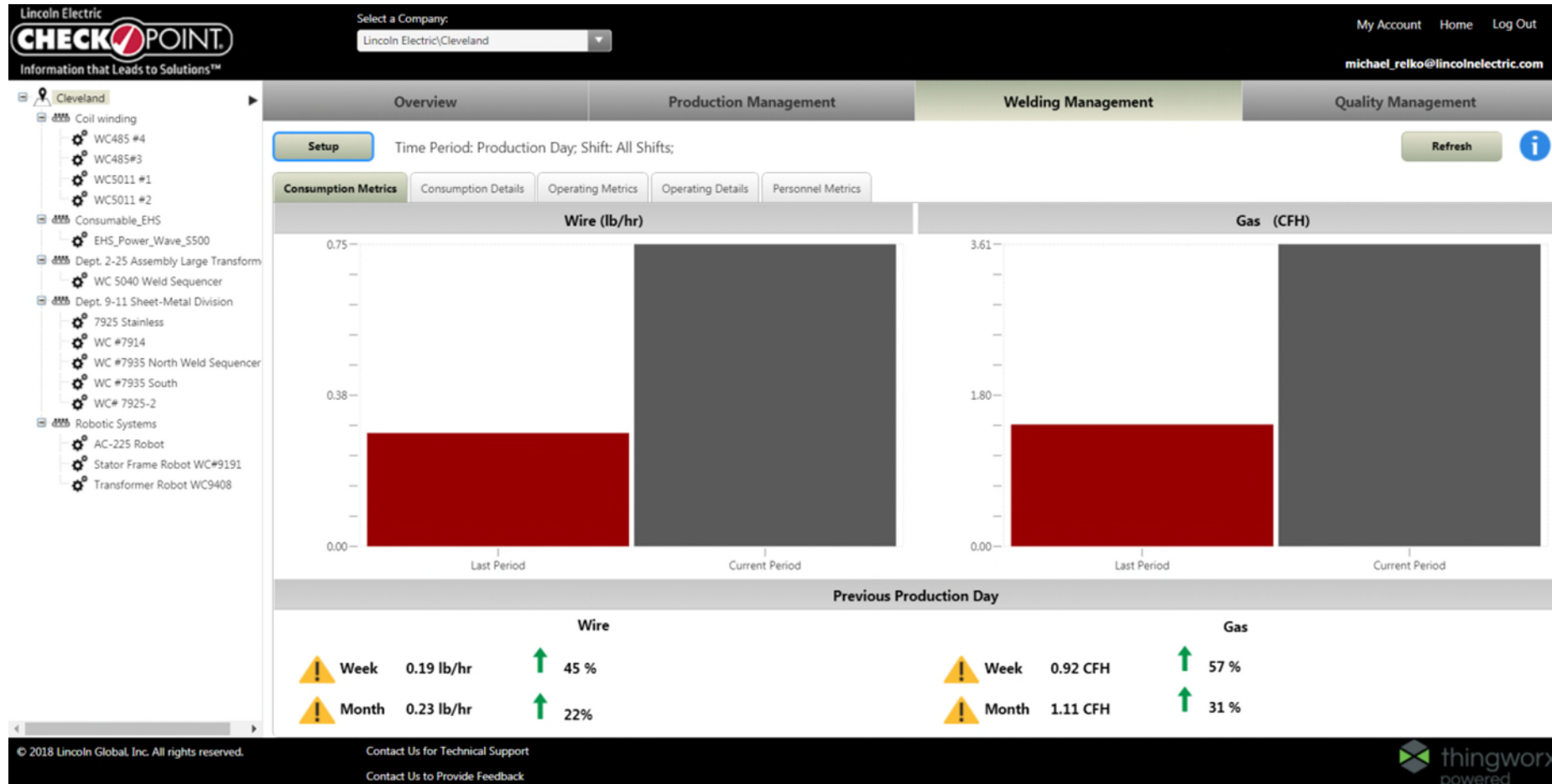
- Every weld recorded
- Every property of that weld
- Traceable to:
 - Assembly
 - Part
 - Operator
 - Consumable
 - Time and date stamped



Operating Factor Report



Welding Management



- Welding Engineer
- Data that pertains to the “Dollars” of welding

Consumption Details

The screenshot displays the 'Consumption Details' view in the CHECKPOINT application. The interface includes a navigation menu on the left, a top navigation bar with company selection and user information, and a main content area with tabs for Overview, Production Management, Welding Management, and Quality Management. The 'Welding Management' tab is active, showing a table of consumption metrics for various production stations.

Production Station	Wire Last Period (lb)	Wire Current Period (lb)	Current Period Wire Avg (lb/hr)	Gas Last Period (CF)	Gas Current Period (CF)	Gas to Wire Ratio (CF/lb)
WC485 #4	13.0332	2.4568	0.48	32.85	6.63	2.7
WC485#3	0.0000	0.0000	0.00			
WC5011 #1	0.0000	0.0000	0.00			
WC5011 #2	0.0000	0.0000	0.00			
EHS_Power_Wave_S500	0.0000	0.0000	0.00	10.21	2.01	0
WC 5040 Weld Sequencer	2.7699	2.4100	0.47	24.29	23.21	9.63
7925 Stainless	0.0000	0.0000	0.00			
WC #7914	0.0000	0.0000	0.00	59.99		
WC #7935 North Weld Sequencer	0.0000	0.0000	0.00			
WC #7935 South	0.0000	0.0000	0.00	9.9		

Production Station

Wire Last Period

Wire Current Period

Current Period Wire Average

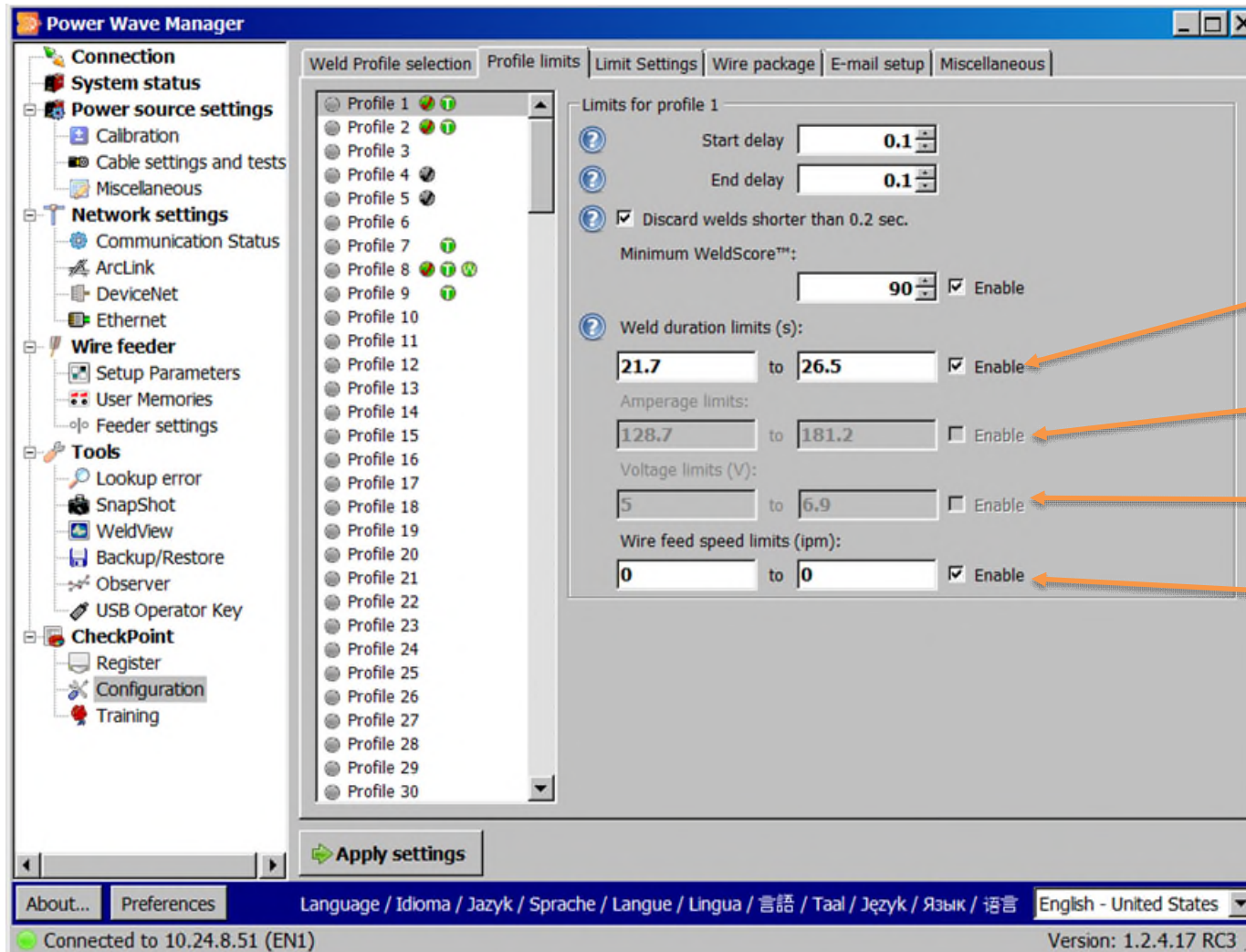
Gas Last Period

Gas Current Period

Gas to Wire Ratio



Using Limits to Validate Welds



Duration Limits

Amperage Limits

Voltage Limits

WFS Limits

USB Operator Key or Scan

Operator ID listed in every weld so easy to know who made the weld



CheckPoint Data – Cord Disconnected

- *What happens to CheckPoint data if the Ethernet cord is “**accidentally**” disconnected?*
 - *The power source remembers 1000 CheckPoint data records*
 - *Data is stored in RAM*
 - *Data is lost if the power is turned off*
- *If the cord is plugged back in before the power is turned off, all data will be sent*



CheckPoint Summary

- » Welding is a Process that should be controlled
 - **To control welding as a process, we need welding data**
- » CheckPoint is our answer
 - CheckPoint provides a way to get that data
 - Lincoln has been doing this since 1999
 - Easy to setup and use
 - Role based reports

For questions please contact us at:

mflagg@lincolnelectric.com

Curtis_Hayes@lincolnelectric.com

Or contact your local Lincoln Electric Representative

