

Trade Partner Prefabrication: Breaking the Mold

Andrew Rhodes, Jared Baughman, Arick Washington: Southland Industries



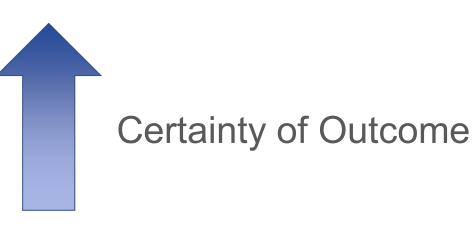
Strong Trade Partner Led Planning + Execution

Better Project
Outcomes



A quick reminder: Prefab has many benefits!





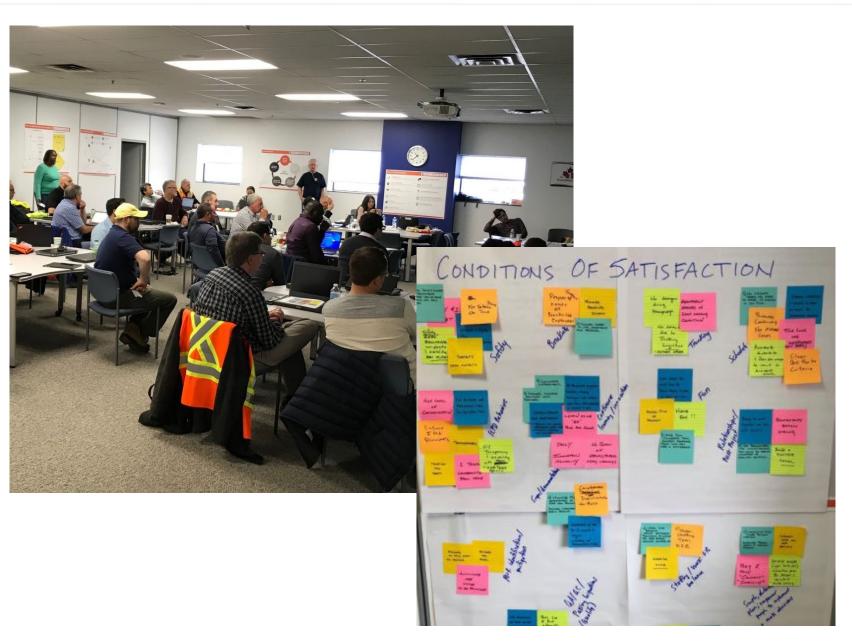


Project Planning: Leading the Effort

- Get the right people in the room
- Start early
- Make cost an input to the design

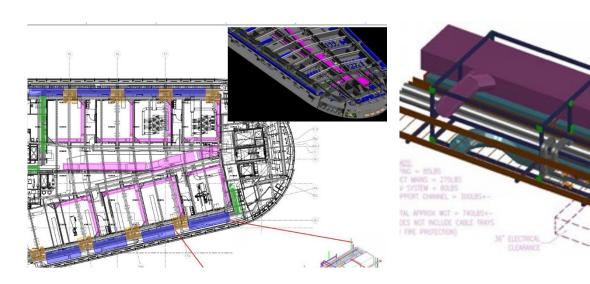


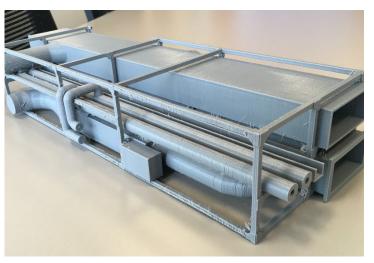
Get the right people in the room



- PEOPLE, not the brand
- Can the group speak to:
 - Design
 - Cost
 - Construction
- Waste is at the intersection of trades!
- How is success defined?

Start early



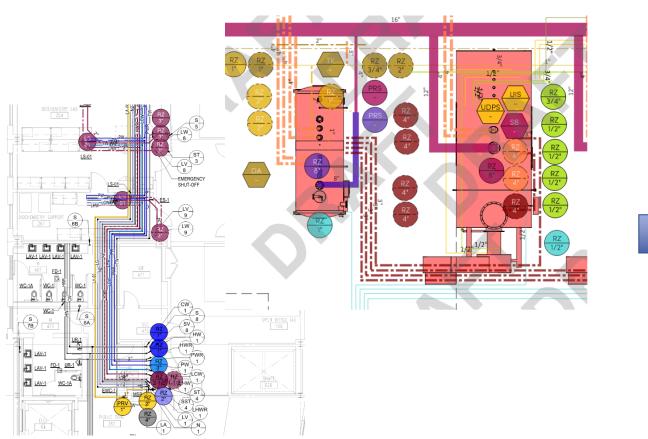




- Design for prefab
- Create design/construction schedule alignment

 Respect for people: Right resources at the right time minimizes impact to partners

Make cost an input to the design





Customer:

City: State: Virginia Precon Lead:			Job / Est #: CEB Version:		000000							
					v19.5							
Delivery Type: Design Assist - New Construction					Building GSF:	196,000				7.0		
Activity Code	Cost Type	Account Description	Labor Hours		Cost	Trade Totals	Notes	% of Cost	;	\$/SF	Cre	w Rati
		Sheet Metal Summary										
96100	10	Sheetmetal Detailing	1,650	\$	170,983			2.1%	\$	1.78	\$	103.6
10001	15	Sheetmetal Supervision	1,340	\$	130,205			1.6%	\$	1.36	\$	97.1
10101	20	Sheetmetal Field Labor	9,819	\$	852,598			10.4%	\$	8.88	\$	86.8
10200	20	Sheetmetal Shop Labor	1,851	\$	146,193			1.8%	\$	1.52	\$	78.9
1920	30	Sheetmetal Shop Material		\$	195,356			2.4%	\$	2.03		
1920	30	Sheetmetal Material		\$	206,091			2.5%	\$	2.15		
			Total Sheet Metal:			\$ 1,701,426		20.8%	\$	17.72		
		HVAC Piping Summary										
96110	10	HVAC Pipe Detailing	557	\$	59,858			0.7%	\$	0.62	\$	107.5
11001	15	HVAC Piping Supervision	696	\$	70,490			0.9%	\$	0.73	\$	101.3
11101	20	HVAC Piping Field Labor	4,527	\$	409,724			5.0%	\$	4.27	\$	90.5
11200	20	HVAC Pipe Shop Labor	1,275	\$	118,939			1.5%	\$	1.24	\$	93.2
11920	30	HVAC Piping Material	19 886 5566	\$	143,404	/		1.8%	\$	1.49		
			Total HVAC Piping:			\$ 802,416		9.8%	\$	8.36		
		Process Piping Summary						2 2				
96120	10	Process Pipe Detailing	5	\$	7			0.0%	\$	-	\$	-
12001	15	Process Piping Supervision	-	\$	*			0.0%	\$		\$	-
12101	20	Process Piping Field Labor	-	\$				0.0%	\$	-	\$	-
12200	20	Process Pipe Shop Labor	-	\$				0.0%	\$		\$	-
12920	30	Process Piping Material		\$	4	1973		0.0%	\$	-	\$	-
			otal Process Piping:			\$ -		0.0%	\$	- 4	7	
		Plumbing Piping Summary										
96130	10	Plumbing Detailing	1,042		108,825			1.3%	\$	1.13	\$	104.4
13001	15	Plumbing Supervision	1,191	\$	118,062			1.4%	\$	1.23	\$	99.1
13101	20	Plumbing Field Labor	7,268	\$	607,407			7.4%	\$		\$	83.5
13200	20	Plumbing Shop Labor -	1,356	\$	118,812			1.5%	\$	1.24	\$	87.6
13920	30	Plumbing Material		\$	454,826			5.6%	\$	4.74		
13921	30	Plumbing Fixtures		\$	290,178			3.6%	\$	3.02		

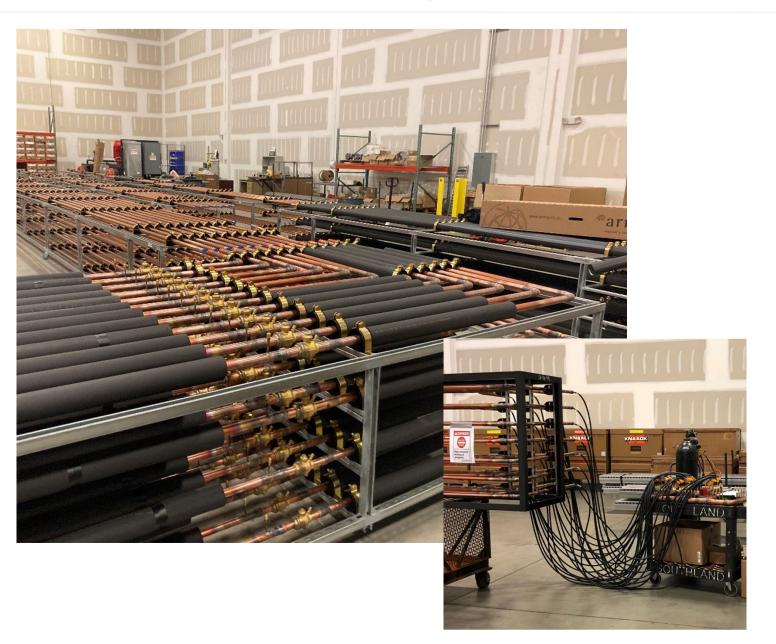
- Conceptual Estimating + Rapid Feedback
- TVD / Set-Based Design / Innovation

Follow those steps = Success



- 70% of project labor moved off site
- 7,500 LF of 18"-30" CHW Piping
- Pipe installed BEFORE steel support structure
- Over \$1M and 3 months saved

Follow those steps = Success



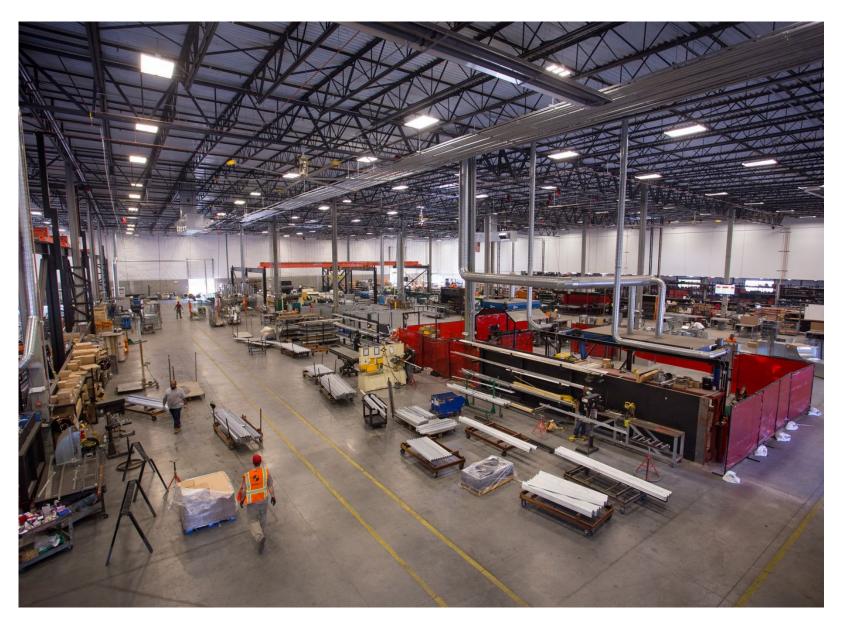
- Over 52,000 LF of refrigerant piping
- Purge/Test manifold used in Fab Shop
- All racks (including risers) dry-fit in the shop
- Doubled the expected field productivity
- 7,800 hours shifted to the fab shop

Project Execution: Building Better Outcomes

- Be flexible in your fab shop approach
- Manage trade interactions
- Do the little things well

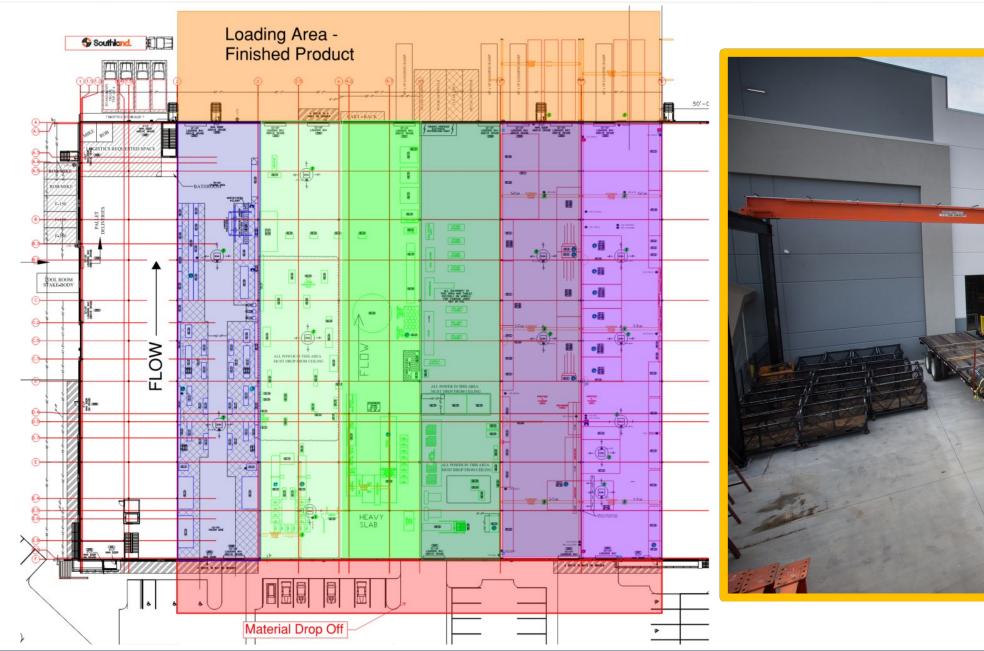


A Typical Southland Fabrication Facility



- 150,000 Total SF
- Currently 270 employees
- Sheet Metal: 4,000,000 lbs/Year
- 170,000 Welded diameter in/Year
- Copper Racks: 2,000 assemblies
- Process Piping: 20,000 SF (segregated)

A Typical Southland Fabrication Facility





A Typical Southland Fabrication Facility







Innovative Fab Solutions – Temporary Facility

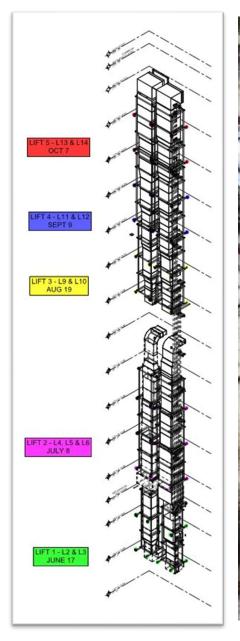






- 20,000 SF process piping shop
- 10 mins from project site
- 6-20 orbital welding machines
- Tube bending
- Tig welding capabilities
- Rack fab and assembly

Innovative Fab Solutions – Leveraging Partners





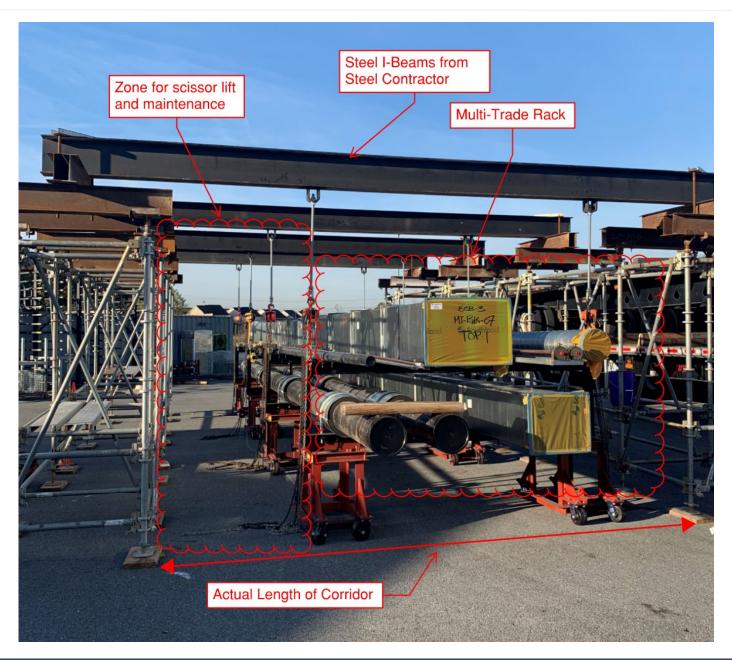


Setting Southland Apart – Manage Trade Interactions



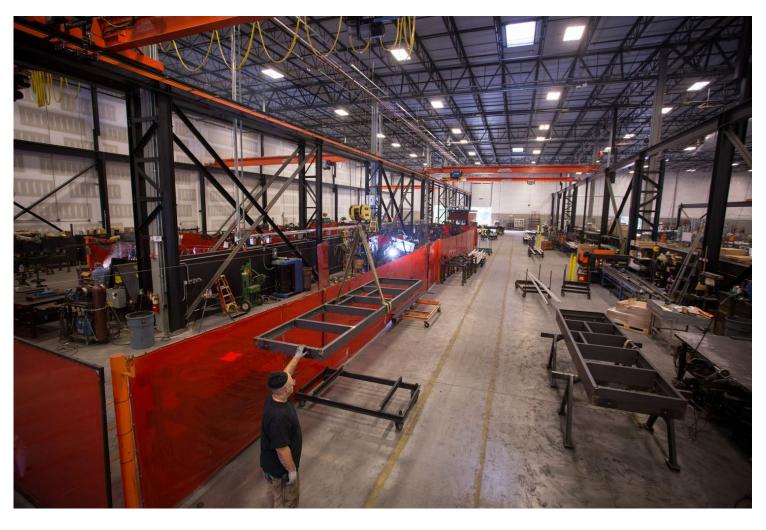
- Know what other trades need
 - What is important to them?
- Work with trades to benefit the collective
- Other Examples:
 - Equipment Skid Electrical Tie-Ins
 - Precast Walls

Setting Southland Apart – Mock-ups to Inform Design



- Use mock-ups to inform design before the design is completed
- Design with maintenance in mind!

Setting Southland Apart – Optimized Flow and Trucking





Setting Southland Apart – Optimized Flow and Trucking





JOB TITLE:

REF DWG:

DATE: 8/04/2020

BY: CPA

SCALE: NTS

SK-LVL.TR1

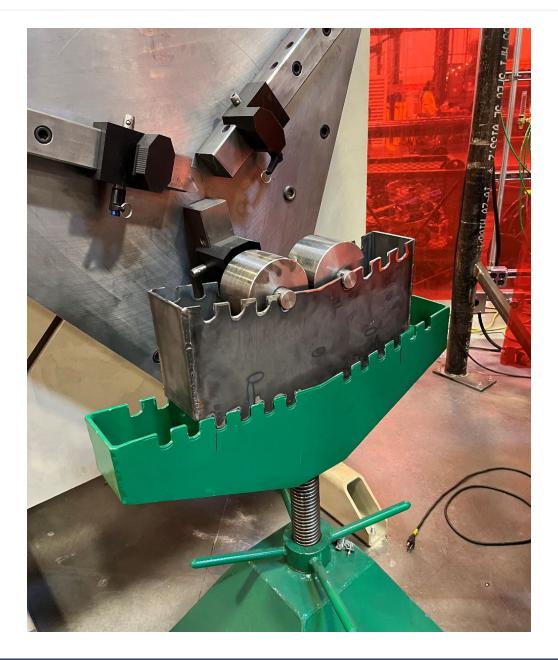
Setting Southland Apart – Utilize Kitting



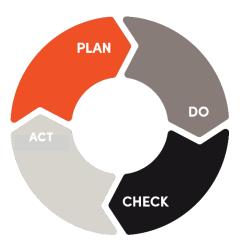


- Less trash on site
- Reduced movement on site
- Less walk/push/pull injuries
- Examples:
 - Plumbing fixture carts
 - Cast iron piping
 - Bolt kits / mechanical couplings

Focus on Continuous Improvement



- Suggestion boxes allow all voices to be heard
- Small changes add up
- Work with our partners, too



Focus on Continuous Improvement





- All changes, no matter how small, will add up over time!
- Do not be afraid to bring in other trade partners

22

A Rising Tide Raises All Ships



- Wired actuators in shop
- Allowed for early testing
- Saved BAS contractor time
- Didn't touch actuators twice
- Saved over 1,400 labor hours
- Cx Gained 3 days per area
 - Total of 120 days!

Be open-minded: You can apply this tomorrow!



Trade Partners:

- Find waste, remove it
- Designers:
 - Listen to Trade Partner feedback
- GCs:
 - Pick the right partners
- Owners:
 - Push for Lean IPD

24

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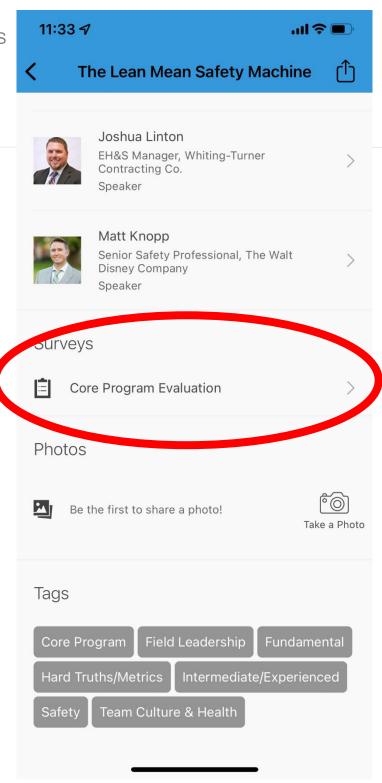


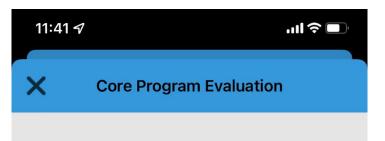
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- 1. Find the session under "schedule"
- 2. Click on it then scroll down
- 3. Click "core program evaluation"
- 4. Complete the 5-question evaluation

This information will determine the top 5 presentation teams and the top Live Lab





Overall, how valuable was this presentation to you?

Please select an answer:

1 - Not at all2 - Slightly3 - Moderately4 - Very5 - Highly

Next >





In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.



Contact Us

Andrew Rhodes

Southland Industries

arhodes@southlandind.com

Jared Baughman

Southland Industries

jbaughman@southlandind.com

Arick Washington

Southland Industries

awashington@southlandind.com



Thank you for attending this presentation. Enjoy the rest of the 24th Annual LCI Congress!

