

Improving Frontline Supervision in Industrial Construction

CII Research Team 330

Presentation at COAA Best Practices Conference

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RT330- Improving Frontline Supervision in Industrial Construction



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Agenda

- The challenge of Frontline Supervision
- Research scope
- Competency levels
- A Foreman's and General Foreman's Day
- The impact of different productivity regimes (AWP vs traditional)
- Recommendations and call to action



The Challenge of Frontline Supervision

- Bob the Foreman
 - Good worker
 - Transient across companies
 - Has to lead people
 - Has received some training
 - Is tasked with a million things



Research Scope

- Focus on Foremen and General Foremen only
 - The Frontline Supervision
- Heavy Industrial Construction projects, no infrastructure or commercial



F/GF Competencies

1. General Construction Knowledge
2. Trade Specific Knowledge
3. Verbal Communication
4. Written Communication
5. Pre-Planning
6. Problem Solving
7. Ethical Value System (Trustworthy, fair, empathetic, and even handed)
8. People Management (Task assignments, delegating, conflict resolution, discipline)
9. Leadership
10. Proactive and Goal Driven



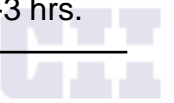
Ideal Day- Foremen (Shaded portion is ideal zone)

Task	Minutes/Hours Per Day Spent (Circle only one)		
1. Meetings – Client/Coordination/Scheduling/Look Ahead	15-60 mins.	1.5-2 hrs.	2-4 hrs.
2. Plan/Prioritize Tasks & Fallback Work (Plan “B”)	0-30 mins.	45-90 mins.	2-3 hrs.
3. Safety Related Activities – Meetings/JHA Development/Inspections/Action Items/Sign/Review FLHAs	0-15 mins.	30-60 mins.	1.5-3 hrs.
4. Complete Paperwork	10-25 mins.	30-60 mins.	65-90 mins.
5. Coordinate with other Crews/Support	0 mins.	5-15 mins.	16-25 mins.
6. Supervise/Motivate/Execute	4 hrs. or less	5-6 hrs.	8 hrs. or more
7. Plan for Future Work	15-35 mins.	45-1.25 hrs.	1.5-2 hrs.
8. Work on Tools with Crew	0-15 mins.	15-45 mins.	1-2 hrs.
9. Receive/Check/Verify Materials in Area	0 mins.	5-15 mins.	16-25 mins.
10. Move Crews to Contingency Work	0 mins.	5-15 mins.	16-25 mins.

Ideal Day- General Foremen

(Shaded portion is ideal zone)

Task	Minutes/Hours Per Day Spent (Circle only one)		
1. Meetings – Client/Coordination/Scheduling/Look Ahead	15-60 mins.	1.5-2 hrs.	2-4 hrs.
2. Plan/Prioritize Tasks & Fallback Work (Plan “B”) with Foremen	0-30 mins.	45-90 mins.	2-3 hrs.
3. Safety Related Activities – Meetings/JHA Development/Inspections/Action Items/Sign/Review FLHAs	0-15 mins.	30 -60 mins.	1.5-3 hrs.
4. Constraint Mgt. – Ensure FM has all Crane support/scaffold/ Material/Equipment	0-30 mins.	60-90 mins.	2-3 hrs.
5. Follow up with FM & Crews Throughout Day – Work Area Reviews/Productivity Check in Field	30-45 mins.	1.5-3 hrs.	4-6 hrs.
6. Work Package Development – Model Review/FIWP Review/FIWP Schedule/Close-Out FIWPs	0-30 mins.	1-2 hrs.	3-4 hrs.
7. Communicate with Field Engineers – Develop Estimates for Extra Work/RFIs	0-15 mins.	30-60 mins.	1.5-3 hrs.
8. Complete Progress/Timesheets/ Forecasts/Review Installed Quantities/Cost Codes	0-15 mins.	30-60 mins.	1.5-3 hrs.



Research Questions

- What are F/GF skills and skill levels?
- Do F/GF spend their time on the right tasks?
- Are there differences across populations?



Data Collection

Surveys

- CURT Construction Users Roundtable
 - 67 responses, Industry view of F/GF & Productivity
- CII- RT330
 - Superintendents and managers with craft knowledge - 86 responses
 - Foremen and General Foremen - 1140 responses (812 F, 328 GF)
 - » 242 AWP/WFP
 - » 642 Traditional
 - » 256 Maintenance



Data Collection

Interviews (Face to Face)

- 113 interviews (30 minutes, some longer)
 - 62 F
 - 43 GF
 - 8 - Others (Superintendents, Planners, and craft managers)
- Project totals and type - 9 projects overall
 - 2 AWP/WFP
 - 3 Traditional
 - 4 Maintenance



COMPETENCIES



Is Bob qualified?



Gen Foreman Competency Importance vs Performance

Competency	Importance	Performance
General Construction Knowledge	5.32	4.28
Trade Specific Knowledge	5.58	4.53
Verbal Communication	5.43	4.21
Written Communication	4.88	3.92
Pre-Planning	4.88	4.2
Problem Solving	4.88	4.17
Ethical Value System	5.58	4.45
People Management	5.53	4.32
Leadership	5.57	4.38
Proactive and Goal Driven	5.53	4.24

In general, this supports notion that best foremen are promoted to general foremen.

1
No Importance
/ Inadequate

2
Limited
/ Fair

3
Slight /
Adequate

4
Moderate / Good,
above average

5
High / Very
Good

6
Extremely high
Importance / Excellent



Foreman Competency Importance vs Performance

Competency	Importance	Performance
General Construction Knowledge	4.73	3.64
Trade Specific Knowledge	5.29	4.05
Verbal Communication	5.17	3.75
Written Communication	4.15	3.29
Pre-Planning	4.15	3.56
Problem Solving	4.15	3.56
Ethical Value System	5.46	4.15
People Management	5.15	3.76
Leadership	5.28	3.85
Proactive and Goal Driven	5.24	3.81

Foremen are struggling in some key areas – between 17% and 29% are judged to either fair or inadequate.

1
No Importance
/ Inadequate

2
Limited
/ Fair

3
Slight /
Adequate

4
Moderate / Good,
above average

5
High / Very
Good

6
Extremely high
Importance / Excellent



Is Bob spending his time effectively?



HOW FOREMEN AND GENERAL FOREMEN SPEND THEIR TIME



Industry Survey- Foremen

(Shaded portion is ideal zone, 789 Respondents)

Task	Minutes/Hours Per Day Spent (Circle only one)		
1. Meetings – Client/Coordination/Scheduling/Look Ahead	68.1%	26.5%	5.4%
2. Plan/Prioritize Tasks & Fallback Work (Plan “B”)	50.4%	43.7%	5.9%
3. Safety Related Activities – Meetings/JHA Development/Inspections/Action Items/Sign/Review FLHAs	19.5%	72.4%	8.2%
4. Complete Paperwork	29.4%	52.6%	18.0%
5. Coordinate with other Crews/Support	2.4%	47.1%	50.5%
6. Supervise/Motivate/Execute	24.2%	36.5%	39.4%
7. Plan for Future Work	33.7%	49.9%	16.4%
8. Work on Tools with Crew	40.8%	33.8%	25.4%
9. Receive/Check/Verify Materials in Area	5.4%	39.7%	55.0%
10. Move Crews to Contingency Work	6.8%	50.3%	43.0%

Industry Survey General Foremen

(Shaded portion is ideal zone, 315 Respondents)

Task	Minutes/Hours Per Day Spent (Circle only one)		
1. Meetings – Client/Coordination/Scheduling/Look Ahead	49.5%	36.1%	14.3%
2. Plan/Prioritize Tasks & Fallback Work (Plan “B”) with Foremen	28.9%	53.7%	17.4%
3. Safety Related Activities – Meetings/JHA Development/Inspections/Action Items/Sign/Review FLHAs	12.7%	74.9%	12.4%
4. Constraint Mgt. – Ensure FM has all Crane support/scaffold/ Material/Equipment	47.9%	38.7%	13.4%
5. Follow up with FM & Crews Throughout Day – Work Area Reviews/Productivity Check in Field	18.3%	47.8%	33.9%
6. Work Package Development – Model Review/FIWP Review/FIWP Schedule/Close-Out FIWPs	49.7%	45.8%	4.6%
7. Communicate with Field Engineers – Develop Estimates for Extra Work/RFIs	33.7%	53.2%	13.1%
8. Complete Progress/Timesheets/ Forecasts/Review Installed Quantities/Cost Codes	12.9%	70.0%	17.0%



SOME TASKS NEED TO BE RE-ASSIGNED TO GENERAL FOREMEN

Coordination with other crafts

Ensuring all materials are delivered to right place at right time

Having priority fallback work identified and ready to work

The right training can help!



DIFFERENT REGIMES



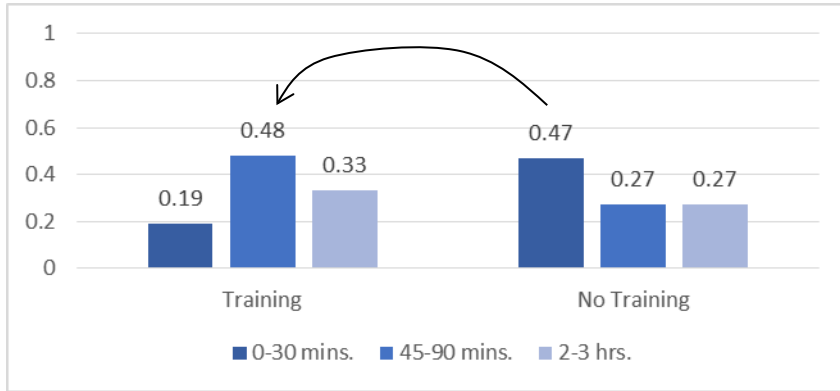
Does training make a difference?

- Who has had training?

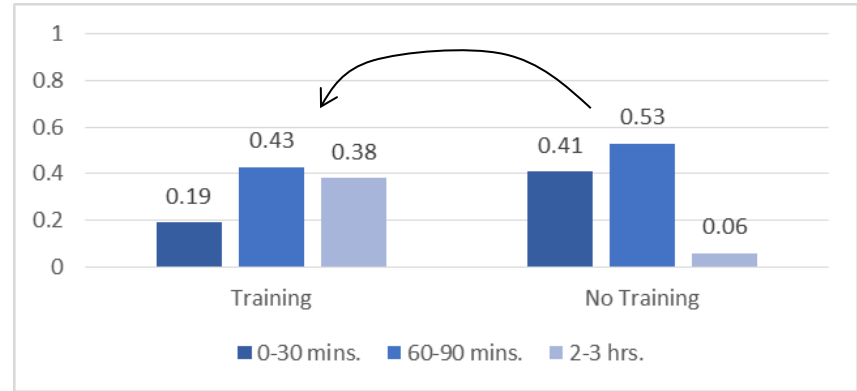
Type	General Foremen	Foremen
Safety	82.83%	75.63%
Quality Control	42.76%	36.83%
Scheduling	46.80%	29.69%
Estimating	30.64%	17.93%
Supervisory Skills	90.91%	85.71%
3D/BIM Model	10.10%	4.48%
Effective Communication	60.27%	47.76%
AWP/WFP	18.86%	15.13%



Traditional Projects: AWP Training and GF time allocation



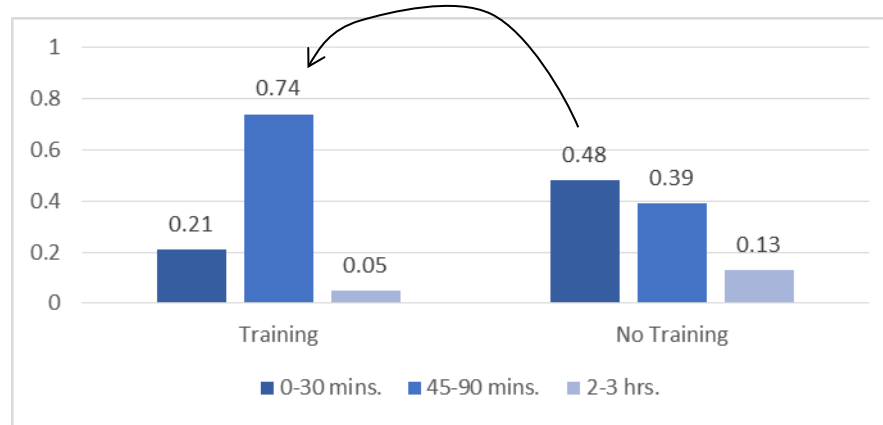
Plan/prioritize fallback work



Work package development



AWP Projects: AWP Training and GF time allocation



Plan/prioritize fallback work

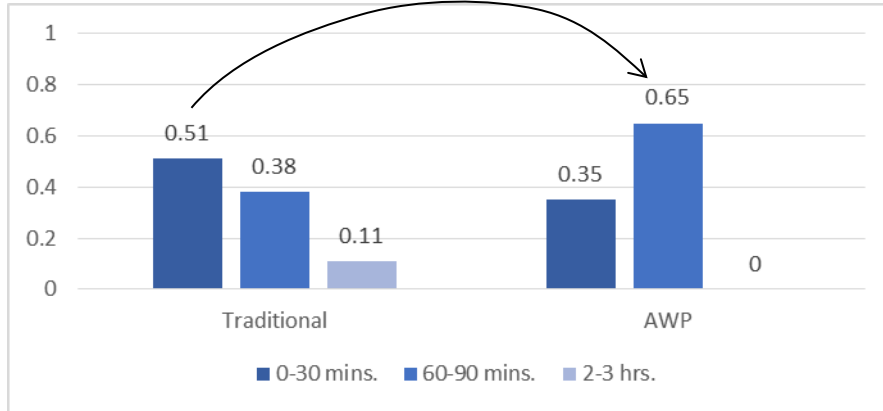


What about different contexts?

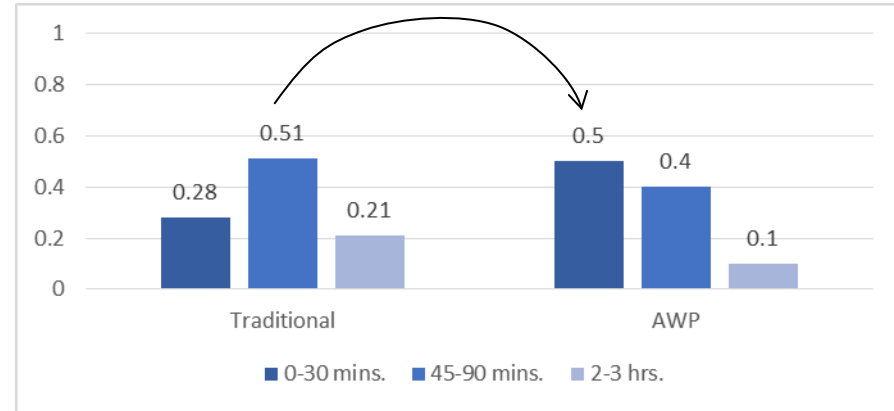
- AWP vs Traditional
- Maintenance is just different
- Notes from interviews



AWP vs Traditional GF Time Allocation



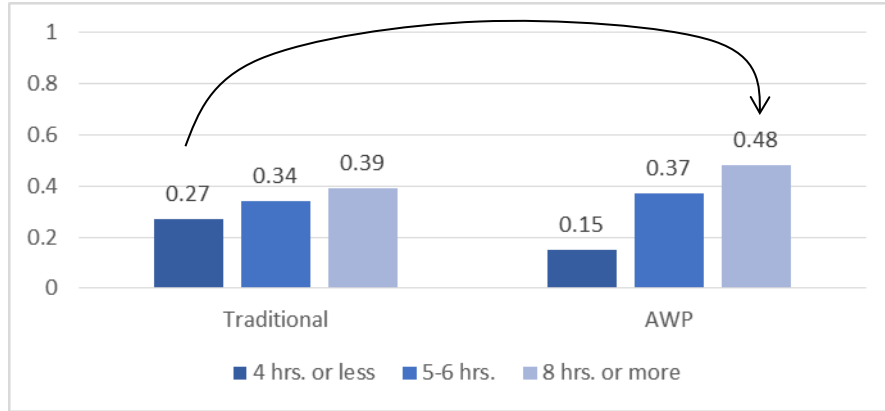
Constraint Management



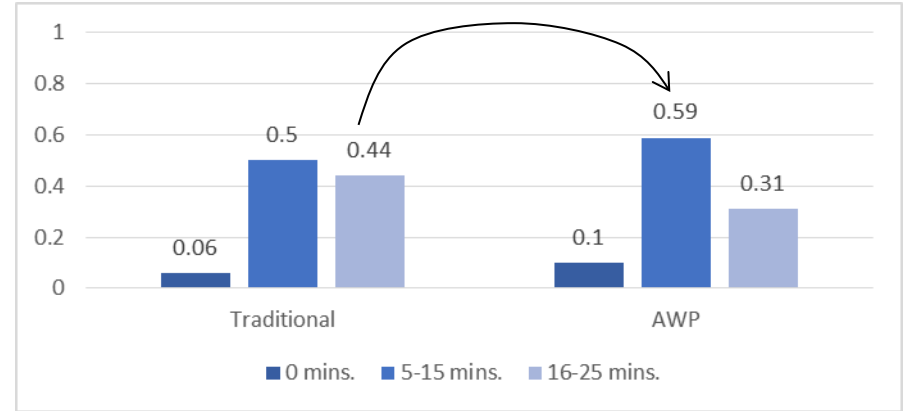
Prioritize tasks and fallback work
(limited statistical significance)



AWP vs Traditional F Time Allocation



Supervise, motivate, execute



Move crews to contingency work



RECOMMENDATIONS AND CALL TO ACTION



Recommendations

- Industry needs to address this problem
 - Industry level training – can't be isolated efforts due to transient nature of field level supervisors
 - AWP training is beneficial within each environment



Recommendations

- Need to better recruit/train/retain
 - Identify candidates through employee recommendations
 - Evaluate written communication skills
 - Allow minimum 3 days for onboarding – budget for these costs
 - Find ways to keep best on board

