FORT WORTH LEAN
TAKT TIME
TCU Worth Hills Village Greek Housing Phase 6
OVERVIEW

- What is Takt Time
- How it was set up at TCU
- Implementation
- Results
- Lessons Learned
- Where do we go from here
WHAT IS TAKT TIME

Takt - German word for the baton that an orchestra conductor uses to regulate the tempo of the music. **Takt time** may be thought of as a measurable “beat time,” “rate time” or “heartbeat.” It is the **flow of the job**.

Total Duration / (# of Activities + # of Areas – 1) = Duration per Activity
WHY TAKT TIME

- Safety
- Help subcontractors predict manpower issues
- More reliable and accurate schedule
- Efficiency
- Cleanliness of working area
STEP 1: DATA COLLECTION

- Knowledge from Phase 5
- FB1 and FB2 are almost identical buildings on the interiors. Offered a great chance for a case study.
- Duration input from the subcontractors and past projects
- Bathrooms and mechanical rooms are broken out from sequence
STEP 2: ZONE/TAKT TIME DEFINITION

Building FB1 was split in “half”

NORTH

SOUTH
STEP 3: IDENTIFY TRADE SEQUENCE

We came up with 13 activity groupings
STEP 4: BALANCE THE PLAN

Total Duration / (# of Activities + # of Areas – 1) = Duration per Activity

Our Calculation:
67 Working Days / (13 Activities + 8 Areas – 1) = 3.35 Days/ Activity

- @ a 3 day duration the total duration would be 60 days
- @ a 4 day duration the total duration would be 80 days
- We decided to
  - Make the first four activities have a 3 day duration
  - Make the next nine activities have a 4 day duration
  - Total duration of 75 Working days for all 4 floors
STEP 5: FINALIZE

Working Days

Level

1 North

Layout Frame

Fire

Tape

Elec

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

1 South

Layout Frame

Fire

Tape

Elec 1

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

2 North

Layout Frame

Fire

Tape

Elec 1 2

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

2 South

Layout Frame

Fire

Tape

Elec 1 2 3

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

3 North

Layout Frame

Fire

Tape

Elec 1 2 3 4

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

3 South

Layout Frame

Fire

Tape

Elec 1 2 3 4 5

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

4 North

Layout Frame

Fire

Tape

Elec 1 2 3 4 5 6

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable

4 South

Layout Frame

Fire

Tape

Elec 1 2 3 4 5 6 7

Duct

Plumb

Hydro

Fire

Insulate

Frame

Elec

Ceiling RI Cable
IMPLEMENTATION

- Buy in from the subcontractors (PMs, Superintendents, Foreman)
  - This does not work without the subs being 100% on board
  - $0 Change Orders

- Field Visual Aids, Daily Stand Ups

- Different type of thinking, areas will sit idle
OVERALL RESULTS

Building FB1 (Takt Schedule)
- Pre takt time rough-in duration: 67 working days
- Takt time rough-in duration: 75 working days
- Actual takt time rough-in duration: 68 working days

Building FB2 (Baseline Schedule)
- Baseline schedule rough-in duration: 70 working days
- Actual schedule rough-in duration: 62 working days

Subcontractor Results
- Mechanical used 5% less MHs in FB1 than FB2
  - 2,700 MHs planned, 135 MHs saved
- Framing/Drywall used 10% less MHs in FB1 than FB2
  - 2000 MHs planned, 200 MHs saved
SUBCONTRACTOR FEEDBACK

- **Framing:** Worked extremely well for them, no one was in the way and their men were very efficient not having to layout or work around plumbing piping.

- **Mechanical (HVAC):** Liked having the area completely to themselves and their men were very efficient, but not quite enough time on some of the areas.

- **Plumbing/Hydronic:** Were behind on levels 1-3, but beat their duration on level 4. When they manned up appropriately and had material organized they were efficient.

- **Fire Suppression:** They were handicapped by the subcontractor in front of them, but when given the area to themselves they beat all of their durations by almost half.

- **Electrical:** Activities needed to be grouped better for them. We made this change part way through.
LESSONS LEARNED

The Good:
- Building was clean and safe
- Subcontractors were efficient when given the chance by other subs
- Easy to see when you have to hold a sub accountable
- Extremely predictable

The Learning:
- Takt time is not perfect!
- More pre-planning is needed
  - Start in buyout process
  - Really understand the areas
  - More subcontractor input/buy-in
- Holding subcontractors accountable
- Logistics, logistics, logistics
- There will be more than one sub in an area at a time
- Do not be discouraged if the Takt schedule is longer than the baseline
LESSONS LEARNED – KNOW THE AREAS
LESSONS LEARNED – KNOW THE AREAS
WHERE DO WE GO FROM HERE

- Not everything can be “Taktical”, but we can look at scheduling differently
- Interior finish out of all buildings at TCU
- Baseline schedule for Buildings 4 and 5 at TCU
- Baseline schedule for Texas Health Mansfield Hospital
- Educate our subcontractors
- Takt Scheduling Template