

	Crane Set Home Handling Guidelines	DOC #	FIELDOPS-01
		Revision #	01
		Implementation Date	7.30.2023
HUD on Steel Frame Homes		Last Reviewed/Update Date	8.29.2023
	Total Pages 5	Approval	

Purpose: To present general information for safe operations lifting Clayton Homes by crane. Nothing takes the place of professional, insured, industry certified riggers and operators. Refer to the **American National Standards Institute (ANSI) B30.5** for rules and regulations covering Mobile Cranes and their use.

CRANE GUIDELINES:

1. The crane must be sized to hold the load or weight of the home and rigging at the required distance from the turntable to center of farthest pick plus a safety factor of 20%.
 - Include set back from the foundation for over dig or backfilled areas.
 - Areas of buried utilities must be considered when placing the crane.
 - Crane outriggers must be placed on solid, undisturbed soil and / or large load pads utilized to ensure proper support of the crane and home during lift.
2. All lift equipment and materials including straps and connectors shall be inspected prior to each lift and have a design rating clearly listed greater than 2x the calculated load based on actual weights.
3. Use properly rated straps with a minimum typical 2x safety factor.
 - Steel cables are not approved as they don't flex, are small diameter, and may easily cut through the homes wood structure resulting in severe damage.
4. Use a *properly sized* spreader bar to maintain a vertical lift, to avoid introducing horizontal forces on the home. Spreader bars should be wide enough not to damage facia or shingles or blocking the lifting strap is required to prevent damage.
5. Position the home section(s) and crane (taking the boom reach into consideration) such that they do not have to be repositioned during the set.
6. Use enough (see below for number of straps) properly sized straps to maintain balance of the home and to prevent damage to the structure.
7. Make provisions to retrieve the straps after the home is set. Notch the top member of double sill plate (mud sill) where the straps will fall. Modular homes may have a single sill plate (mud sill) when rim joist is notched and reinforced per *local building codes*. Do not notch the perimeter beam on a HUD / single member perimeter beam home.
8. If lifting point is within 24" of rim rail splice, install a ½"x4"x24" long 36 ksi steel plate (minimum) centered across splice of rim joist. Recommend using L4x4x1/2"x24" long angle. Fasten with minimum 6 number 8 x 2" wood screws on each side of splice (12 screws minimum). Fasten to face of side wall rim joist and bottom of matting wall rim joist so it can be removed once second box is set.



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9. Place straps under walls or post, including temporary walls used to support the opening. Do not position lifting straps under sidewall or marriage wall openings.

10. Tight-fitting temporary walls shall be installed at any door, porch, or mate line openings above lift points. The temporary walls should be approx. 4' wide, with 2"x4" studs at 2' on center max spacing, centered on the strap lifting location, and sheathed with OSB.

11. Straps must be placed under permanent chassis beams.

12. Avoid placing lift pressure on plumbing, electrical and HVAC equipment under the home.

13. Connect a tagline (rope) to each end of the home so it can be controlled while a loft. Typical tag line length should be at least 25 ft. Tag lines must be of non-conductive material.

14. Always set the home section farthest from the crane first so that subsequent section(s) will be easily visible and not lifted over previously set sections.

15. Rough estimating for Clayton home weight, 35Lbs / floor square foot for HUD homes and 40 Lbs for MOD. – Various options may increase these weights; the Crane operator should use Cranes scale for real time and specific loading information.

Examples for determining number and spacing of straps:

1. For box lengths 50' and smaller, use minimum of three (3) pick points per box. Use the formula below as starting point for determining the 3 pick points.

a. Take the overall length of the home and divide by 5. This is the pick point distance from each end of box. The 3rd strap is located in the center of the home.

50' box example: $50'-0" / 5 = 10'-0"$ (from each end of box) and 1 strap in the center.

2. For box lengths over 50' up to 64' use minimum of four (4) pick points. Use the formula below as starting point for determining the 4 pick points per box:

a. Take the overall length of the home and divide by 8. This is the first point from each end of the box. Take that value and multiply by 3. This is your second point, measured from each end of the box.

64' box example: $64'-0" / 8 = 8'-0"$ (first point from each end of box)
 $8'-0" \times 3 = 24'-0"$ (second point from each end of box)

3. For box lengths over 64' use six (6) pick points. Use the formula below as starting point for determining the 6 pick points per box:

a. Take the overall length of home and divide by 8. Use this as the distance between pick points at each end of box.

76' box example: $76'-0" / 8 = 9'-6"$ (first point from each end of box)
 $2 \times 9'-6" = 19'-0"$ (second point from each end of box)
 $3 \times 9'-6" = 28'-6"$ (third point from each end of box)

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General Safety Expectations:

- A Forman experienced and knowledgeable with craning homes and at least two additional team members should be on the minimum crew size.
- Only one person should be designated to direct the crane and use standard crane hand signals. (video link below)
- No one should be under home while lifting / suspended.
- Utilize safety cribbing when removing axles etc. from under suspended loads – box held by the crane.
- All OSHA regulations should be followed.
 - Refer to OSHA 1926 General Construction standards and
 - ANSI B30.5 for Crane and rigging Standards.
- Never use damaged straps or lifting equipment. Inspect before each lift.
- Use enough properly sized straps to maintain balance of home and to prevent damage to the structure.
- Use a properly sized spreader bar to maintain a vertical lift, to avoid placing compression forces on eaves and to reduce any tendency to slip.
- Crane Operator – Home should be lifted a few inches to check stability and ensure load is level. If not set home back down and adjust straps. Crane operator is responsible for adjusting to site conditions not included in these instructions.
- Foreman – must have experience lifting manufactured homes and proper crane signaling.

For off frame mods – where un-lagging is required place straps tight prior to un-lagging home. Then lift home a few inches to check stability and ensure load is level. If not, set home back on chassis and adjust straps.

Crew Safety Expectations: -Refer to OSHA 1926 – General Construction- for more information.

Safety will be prioritized to minimize the inherent hazards involved.

- Proper training is essential to maintaining a safe work environment.
- Safety policies and practices must be reviewed frequently, equipment kept up to date.
- Equipment must be kept in good working condition and repaired or replaced when found to be a possible hazard.

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Basic PPE: (Personal Protective Equipment)

- Hard Hat / Bump Cap – wide brim in the summer to keep the sun off the head and neck.
- Safety glasses – should also provide UV protection.
- High visibility vest or clothing.
- Hearing protection – when necessary.
- Handsfree wireless communication devise for signal man and operator.
- Work gloves
- Durable footwear.
- Suitable clothing appropriate for weather conditions.

General Safety Points:

- ALWAYS USE SAFETY BLOCKING when under suspended loads (homes).
- Fall protection is required when working on surfaces 6' or more above walking surface below.
 - Harness, retractor, and roof anchors should be used.
- Do not stand on the top of a step ladder or the top step of the ladder. Do not straddle the top of the ladder. Maintain 3 points of contact.
- All electrical circuits to have GFCI protection.
- Do not use cords or hoses that have cuts, bulges or missing the grounding plug.
- All fuel containers are to be metal and OSHA Approved.
 - Never refuel gas equipment in an enclosed area.
- Safety Data Sheets are to be kept up to date and available in each of the team trucks.
- All Team Members should complete OSHA 10 Hour Training on a bi-annual basis.
- All Crew Leaders should complete 1st Aid and Safety Training on an annual basis.

Safety Video links:

General Crane operations overview:

- <https://youtu.be/LxdjSG5IFds?si=3gZNWxD2WIO791Rh>

Hand signal training:

- https://youtu.be/Tb8QM_oJ91s?si=eeo_eDhPyS39zg89
- <https://youtu.be/0U6XpDYIChI?si=d407ctH5W3JXJYnj>

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