

Tower Safety Signals



Spring 2002

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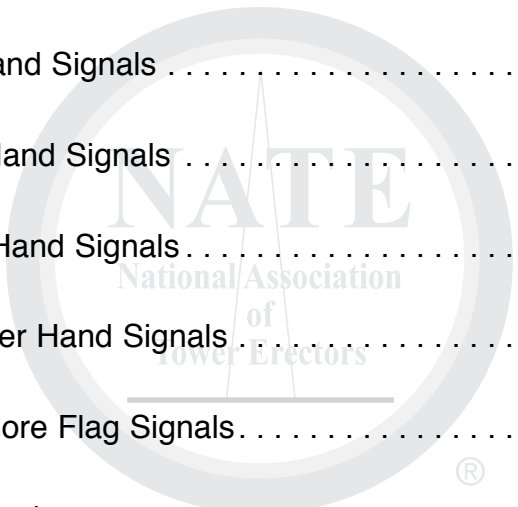
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Introduction

This reference publication was designed to provide NATE member companies with guidelines for alternate signaling at tower sites.

The information in this guide is intended to provide a generic, non-exhaustive overview of signaling standards. These various styles of safety signals are being used throughout the world. The Safety & Education Committee submitted these recommendations for NATE members' use.

Direct verbal communication by use of radios, or other electronic communication may be the preferred method of operational coordination.

This publication does not determine compliance responsibilities. Any company, whether or not a NATE member, using this publication as a guide to implement their "on-site" requirements, assumes all responsibility for their actions and agrees to hold harmless and completely indemnify the National Association of Tower Erectors, its Directors, Officers, Staff and any and all assigns, from any and all possible legal action.



General Recommendations

General recommendations for use of audible and hand signals are:

1. Only one person will be signalman.
2. Make sure operator can see signalman and is able to acknowledge the signal given.
3. Signalman must watch the load - the operator is watching the signalman.
4. Never raise or lower the load over the workmen. Warn them to keep out of the way.
5. Watch for overhead lines or other obstructions.
6. Do not disturb or interrupt the operator while he or she is being instructed by the person controlling the load.
7. Employer should be certain operator and signalman have received proper training in operation of equipment as well as the safety signals for operation of such equipment.

Hand signals may be assisted by the use of lights or flags.

When making these motions make sure that your body motions are distinct so that the operator will not be confused.



Audible Signals

While the expressions used may vary by crew, area, or type of equipment being used, the standard for audible signals is for a single expression to indicate stop or up and a double expression in succession to indicate down.

The following audible signals are simple and direct:

Up on the hoist:

- One ring of the bell;
- One blast of an air horn; or
- One “WHOOOP” from the signalman either on a radio or directly through the air to the operator.

Down on the hoist:

- Two rings of the bell;
- Two blasts of an air horn; or
- Two “WHOOOPS” from the signalman either on a radio or directly through the air to the operator.

Stop the hoist:

- One ring of the bell;
- One blast of an air horn; or
- One “WHOOOP” from the signalman either on a radio or directly through the air to the operator.

In addition to verbal signals, a whistle can be used. Three long blasts on a whistle draws attention to the individual. Whistling while waving arms, helmets, or flags usually indicates an all clear sign.



Hoist Hand Signals

These signals are used prior to standard hoist only signals to indicate the drum to be operated. Single drum hoists use standard hoist only hand signals.

Top Drum Operation



Tap fist on head to indicate use of top drum.

Raise Load



With forearm vertical, forefinger pointing up, move hand in small horizontal circle.

Lower Load



With arm extended downward, forefinger pointing down, move hand in small horizontal circle.

Stop Load



Arm extended, palm down, move arm back and forth horizontally.




Hoist Hand Signals

These signals are used prior to standard hoist only signals to indicate the drum to be operated. Single drum hoists use standard hoist only hand signals.

Middle Drum Operation



Slap palm on hip to indicate use of middle drum.

Raise Load	Lower Load	Stop Load
		
<p><i>With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</i></p>	<p><i>With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</i></p>	<p><i>Arm extended, palm down, move arm back and forth horizontally.</i></p>




Hoist Hand Signals

These signals are used prior to standard hoist only signals to indicate the drum to be operated. Single drum hoists use standard hoist only hand signals.

Bottom Drum Operation



Bend at waist and slap palm on knee to indicate use of bottom drum.

Raise Load	Lower Load	Stop Load
		
<p><i>With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</i></p>	<p><i>With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</i></p>	<p><i>Arm extended, palm down, move arm back and forth horizontally.</i></p>



Hoist Load



With forearm vertical, forefinger pointing up, move hand in small horizontal circle.

Lower Load



With arm extended downward, forefinger pointing down, move hand in small horizontal circle.

Raise Boom Tower Erectors Lower Boom



Arm extended, fingers closed, thumb pointing upward.



Arm extended, fingers closed, thumb pointing downward.

Swing



*Arm extended,
point with finger in
direction of swing of boom.*

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Crane Hand Signals

STOP

Stop



Arm extended, palm down, move arm back and forth horizontally.

Dog Everything



Clasp hands in front of body.

Emergency Stop



Both arms extended, palms down, move arms back and forth horizontally.

Retract Boom



*(Telescoping Booms)
Both fists in front of body
with thumbs pointing
toward each other.*

Extend Boom



*(Telescoping Booms)
Both fists in front of body
with thumbs pointing outward.*

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Crane Hand Signals

SLOW SIGNALS

Make Movements Slowly



Use one hand to give motion signal and place other hand motionless and palm forward, in back of hand giving the motion signal.

Raise Load Slowly



Extend one arm with palm down. With other forefinger pointing up, move hand in small circle under palm of other hand.

Lower Load Slowly

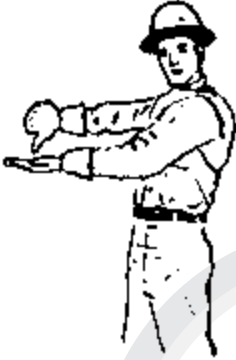


Extend one arm with palm up. With other forefinger pointing down, move hand in small circle over palm of other hand.

Crane Hand Signals

SLOW SIGNALS

Lower Boom Slowly



*Extend one arm with palm up.
Other arm extended, fingers
closed, thumb pointing
downward into other palm.*

Raise Boom Slowly



*Extend one arm with palm down.
Other arm extended, fingers
closed, thumb pointing
upward into other palm.*

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Crane Hand Signals

LOAD MOVEMENT

Lower the Boom and Raise the Load



With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.

Raise the Boom and Lower the Load



With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.

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Crane Hand Signals

WHICH HOIST?

Use Main Hoist



*Tap fist on head;
then use regular signals.*

Use Whipline



*(Auxiliary Hoist)
Tap elbow with one hand;
then use regular signals.*

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Close Clamshell Bucket



Arm extended, fist closed.

Open Clamshell Bucket



Arm extended, hand open forming a "U" shape with the opening downward.

Move Carriage Out



With forearm vertical, forefinger should point out away from head.

Move Carriage In



With forearm vertical, fingers closed, thumb pointing towards head.

Travel - Both Tracks



Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward.

Travel - One Track



Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body.

FOR LAND CRANES ONLY

Travel



Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.

Forklift Hand Signals

Stop



Arm extended, palm down, move arm back and forth horizontally.

Raise Load



With forearm vertical, forefinger pointing up, move hand in small horizontal circle.

Lower Load



With arm extended downward, forefinger pointing down, move hand in small horizontal circle.

Forklift Hand Signals

Tilt Forks Right



With both arms extended, palms down, tilt left arm down and right arm up.

Tilt Forks Left



With both arms extended, palms up, tilt right arm down and left arm up.

Tilt Forks Up



With left arm at side, extend right arm up at an angle.

Tilt Forks Down



With left arm at side, extend left arm down at an angle.

Forklift Hand Signals

Move Load Backward



With arms extended to same side, palms out, motion away from body.

Move Load Forward



With arms extended to same side, palms in, motion towards body.

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Helicopter Hand Signals

Move Right



Left arm extended horizontally; right arm sweeps upward to position over head.

Move Left



Right arm extended horizontally; left arm sweeps upward to position over head.

Move Forward



Combination of arm and hand movement in a collecting motion pulling toward body.

Move Rearward



Hands above arm, palms out using a noticeable shoving motion.

Helicopter Hand Signals

Release Sling Load



*Left arm held down away from body.
Right arm cuts across left arm in a
slashing movement from above.*

Hold - Hover



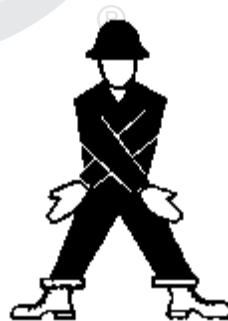
*The signal "Hold" is executed
by placing arms over head with
clenched fists.*

Takeoff



*Right hand behind back; left
hand pointing up.*

Land



*Arms crossed in front of body
and pointing downward.*

Helicopter Hand Signals

Move Upward



*Arms extended, palms up;
arms sweeping up.*

Move Downward



*Arms extended, palms down;
arms sweeping down.*

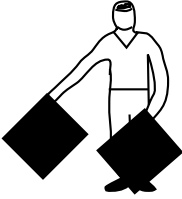
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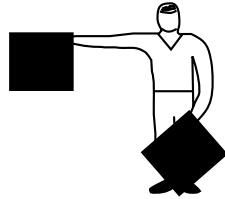


Semaphore Flag Signals

A



B



C



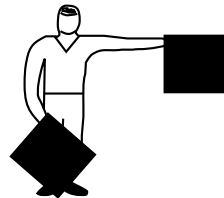
D



E

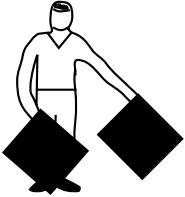


F

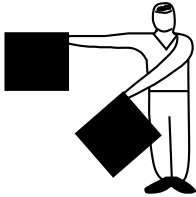


Semaphore Flag Signals

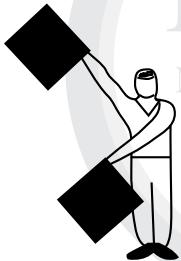
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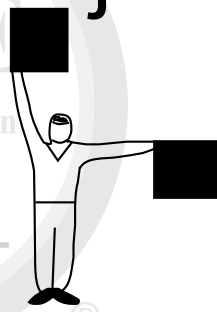
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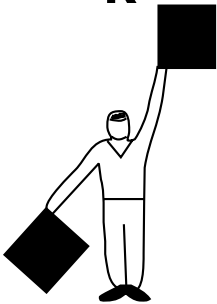
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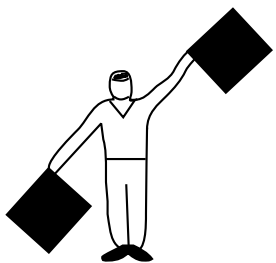
J



K

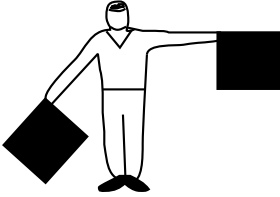


L

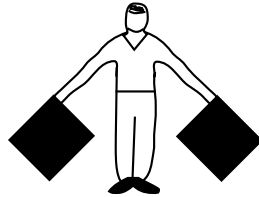


Semaphore Flag Signals

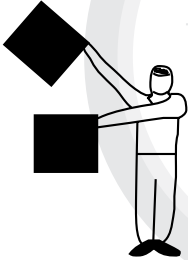
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N



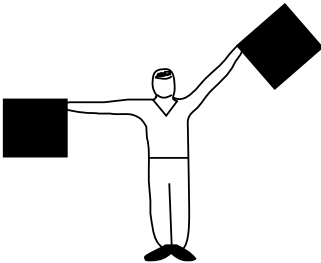
O



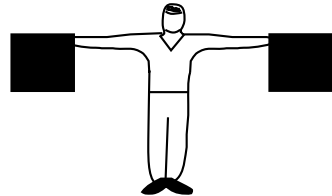
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Q

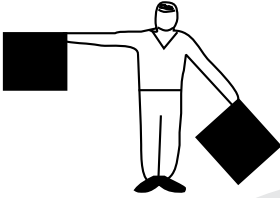


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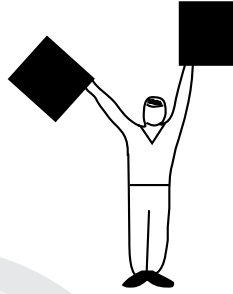


Semaphore Flag Signals

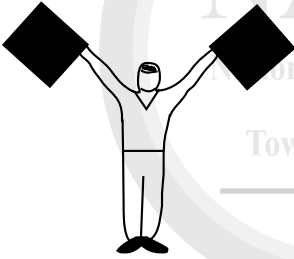
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T



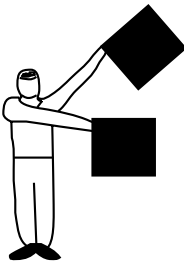
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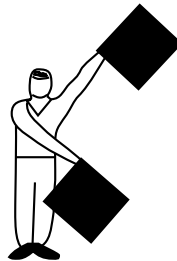
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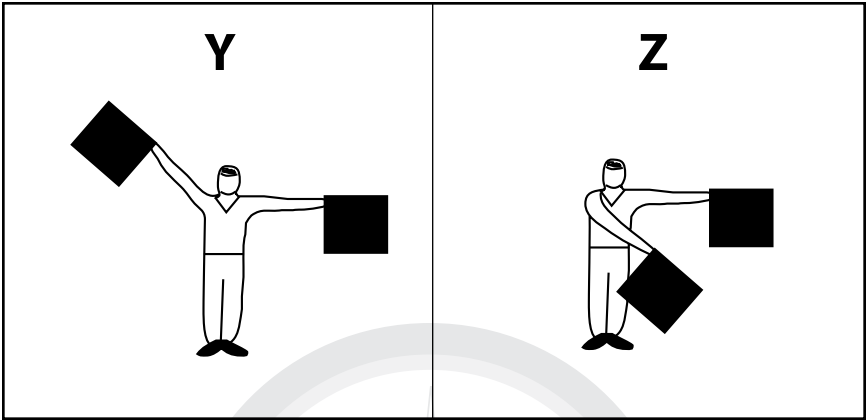
W



X



Semaphore Flag Signals



Morse Code

A ● —	N — ●	0 — — — — —
B — ● ● ●	O — — —	1 ● — — — —
C — ● — ●	P ● — — ●	2 ● ● — — —
D — ● ●	Q — — ● —	3 ● ● ● — —
E ●	R ● — ●	4 ● ● ● ● —
F ● ● — ●	S ● ● ●	5 ● ● ● ● ●
G — — ●	T —	6 — ● ● ● ●
H ● ● ● ●	U ● ● —	7 — — ● ● ●
I ● ●	V ● ● ● —	8 — — — ● ●
J ● — — —	W ● — —	9 — — — — ●
K — ● —	X — ● ● —	Fullstop ● — ● — ● —
L ● — ● ●	Y — ● — —	Comma — — ● ● — —
M — —	Z — — ● ●	Query ● ● — — ● ●

The International Morse Code is to be used for all general Public Service radio communications

- A **Dash** is equal to three dots
- The space between parts of the same letter is equal to **1 Dot**.
- The space between two letters is equal to **3 Dots**.
- The space between two words is equal to **7 Dots**.



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